An empirical investigation of organisational virtualness and end user acceptance of technology.

Murphy, Genefa

Murphy, Genefa (2008) *An empirical investigation of organisational virtualness and end user acceptance of technology..* thesis, Swansea University.
http://cronfa.swan.ac.uk/Record/cronfa42929

An Empirical Investigation of Organisational Virtualness and End User Acceptance of Technology

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Submitted to the University of Wales in fulfilment for the Degree of Doctor of Philosophy

Swansea University

2008

Volume 1 of 3

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Abstract

Increasing globalisation, the growth of electronic commerce, and the ability to work in seemingly virtual environments have been among the most significant catalysts of change in business in recent years. However, despite the exponential growth and investment in ICT by many organisations it has not always yielded the expected benefits. Reasons for this include: ICT is often implemented without a supporting framework thereby resulting in project failure, there is still confusion in the field as to what is meant by the virtual organisation and the range of ICT enabled products and services continues to outgrow our understanding of the marketplace. The research outlined in this Thesis therefore aims to strengthen the existing propositions in the literature and contribute to the understanding of these contemporary aspects of modern business by empirically examining two models which encapsulate these phenomena (one of which has not been quantitatively tested before). The models in question are Travica's (2005) Interoperability, Switching, Special Product, Aggregation, Anchoring and Cybernization (ISSAAC) model used to examine the key characteristics of organisational virtualness and Venkatesh *et al's* (2003) Unified Theory of Acceptance and Use of Technology (UTAUT) used to examine the determinants of technology acceptance. The resulting analysis shows that within the context of organisational virtualness the most dominant characteristics which define the form are aggregation, switching and special product and in the context of UTAUT the most significant determinant of technology acceptance is effort expectancy.

In addition to identifying the key determinants of ICT enabled success the work presented also highlights areas for future research which will develop understanding of organisational virtualness and consumer acceptance of new technology beyond the scope of the current work.

Acknowledgements

First and foremost I would to thank my family; my father John, mother Maria Assunta and sister Sonia without their support, words of encouragement and belief in me this Thesis would not have been possible. They have always stood by me and my parents in particular have always taught me to strive for excellence, which I have tried to do and for that I thank you. This work is for you – The Murphys.

I would also like to thank my partner Tristan for not only his support but also for helping me to understand the importance of clarity in my work.

Finally I would like to thank my Professor Mike Williams for the guidance he has offered throughout my research and for challenging me to set my own path and look at things from a different perspective.

Contents

Abstract	1
Acknowledgements	2
Contents	3-5
List of Tables	6-7
List of Figures	8
List of Appendices	9
Abbreviations and Acronyms Used	10-12
1. Introduction	13
1.1 Background Information and Motivation for the Research	13
1.2 Aims & Objectives	17
1.3 Methodology	17
1.4 Thesis Outline	18
2. Literature Review	20
2.1 Introduction	20
2.2 Traditional Organisational Structures	21
2.2.1 The Simple Structure	21
2.2.2 The Functional Structure	22
2.2.3 The Divisional Structure	22
2.2.4 The Matrix Structure	23
2.2.5 Team-Based Structure	24
2.2.6 Project-Based Structure	24
2.3 Drivers of New Organisational Forms	25
2.3.1 Information and Communication Technologies	26
2.3.2 Increased Competition	27
2.3.3 Globalisation	28
2.3.4 Policies and Politics	29
2.3.5 Enlightened and Diversified Populations	30
2.4 Degree of Virtualness	31
2.5 The Virtual Organisation	34
2.5.1 Key Characteristics of the Virtual Organisation	35
2.5.2 Stages of the Virtual Organisation	40
2.6 The Virtual Team	43
2.6.1 Key Characteristics of the Virtual Team	44
2.6.2 Stages of the Virtual Team	53
2.7 External Impact of ICT	56
2.8 Adoption of Innovations	57
2.8.1 Characteristics of Adoption	57

2.8.2 Adopter Categories	61
2.8.3 Consumer Adoption Life Cycle	62
2.9 Consumer Acceptance of New Technology	67
2.9.1 Technology Acceptance Model	68
2.9.2 Extended Technology Acceptance Model	70
2.10 Summary	72
3. Theoretical Models	74
3.1 Introduction	74
3.2 Organisational Virtualness (ISSAAC)	74
3.2.1 Constructs of ISSAAC	76
3.3 Consumer Acceptance of New Technology (UTAUT)	86
3.3.1 Extant User Acceptance Models	88
3.3.2 Constructs of UTAUT	98
3.4 Summary	106
4. Methodology	108
4.1 Introduction	108
4.2 Epistemological Approx and Taxonomy	108
4.2.1 Epistemologies	109
4.2.2 Taxonomies	111
4.3 Data Collection and Analysis	112
4.3.1 Data Collection Approach	114
4.3.2 Data Analysis Technique	116
4.3.3 Sample Population (Background InterAirlines)	120
4.4 Validation of Study	122
4.4.1 Pilot Test	122
4.4.2 Focus Groups	123
4.4.3 Validity and Reliability Testing	124
4.4.4 Maturity of Instrument	129
4.4.5 Ethics	129
4.5 Summary	130
5. Results	132
5.1 Introduction	132
5.2 Instrument Development and Pre Test	135
5.3 Data Screening	137
5.3.1 Descriptive Statistics and Normality Testing	138
5.3.2 Correlation Testing	139
5.3.3 Data Reduction	141
5.4 Confirmatory Factor Analysis	143
5.4.1 Measurement Model Analysis	151
5.4.2 Structural Model Analysis	165
5.5 Model Modification	175
5.5.1 Suggested ISSAAC Modifications	177

5.5.2 Suggested UTAUT Modifications	187
5.6 Summary	191
6. Findings and Discussion	193
6.1 Introduction	193
6.2 ISSAAC	193
6.3 UTAUT	205
6.4 Summary	215
7. Conclusions and Future Work	218
7.1 Introduction	218
7.2 Conclusions	218
7.3 Practical Implications	220
7.3.1 ISSAAC	220
7.3.2 UTAUT	221
7.4 Limitations	222
7.5 Recommendations for Future Research	224
7.5.1 ISSAAC	224
7.5.2 UTAUT	228
7.6 Summary	233
Appendices	Volume 2/3
Bibliography	233 -255

List of Tables

Table Number	**Title**	**Page Number**
2.1	Examples of Virtuality within Organisations	33
2.2	Characteristics of the Inter-Organisational Form - Virtual Organisations	35
2.3	Characteristics of the Intra-Organisational Form – Virtual Teams (adapted from Saabeel *et al*, 2002)	44
2.4	Applications of TAM in the Extant Literature	70
3.1	Interoperability: Root Constructs, Definitions and Scales	78
3.2	Switching: Root Constructs, Definitions and Scales	80
3.3	Special Product: Root Constructs, Definitions and Scales	81
3.4	Aggregation: Root Constructs, Definitions and Scales	82
3.5	Anchoring: Root Constructs, Definitions and Scales	84
3.6	Cybernization: Root Constructs, Definitions and Scales	85
3.7	Performance Expectancy: Root Constructs, Definitions, and Scales (source: Venkatesh *et al*, 2003)	100
3.8	Effort Expectancy: Root Constructs, Definitions, and Scales (source: Venkatesh *et al*, 2003)	101
3.9	Social Influence: Root Constructs, Definitions, and Scales (source: Venkatesh *et al*, 2003)	103
3.10	Facilitating Conditions: Root Constructs, Definitions, and Scales (source: Venkatesh *et al*, 2003)	105
4.1	Quantitative and Qualitative Research Approaches	112
4.2	Qualitative and Quantitative Data Analysis Techniques	116
5.1	Normality Analysis – ISSAAC and UTAUT	139
5.2	KMO and Bartletts Test of Sphericity – ISSAAC and UTAUT	141
5.3	Insignificant Extraction and MSA Values - ISSAAC	142
5.4	Insignificant Extraction and MSA Values - UTAUT	142
5.5	Relationships amongst Latent Variables of ISSAAC	146
5.6	Relationships amongst Latent Variables of UTAUT	146
5.7	Formal Specification of ISSAAC	148
5.8	Formal Specification of UTAUT	148
5.9	Fitted Residuals for Hypothesised Model – UTAUT	155
5.10	Statistical and Practical Significance Analysis - ISSAAC	158
5.11	Statistical and Practical Significance – UTAUT	158
5.12	Insignificant Factor Loadings -ISSAAC	159
5.13	Shared Variance Analysis – ISSAAC	159

Table Number	**Title**	**Page Number**
5.14	Shared Variance Analysis – UTAUT	160
5.15	Reliability Analysis – ISSAAC	161
5.16	Reliability Analysis – UTAUT (All Data Sets)	162
5.17	Removal of Insignificant Indicators – UTAUT	163
5.18	Reliability Analysis – ISSAAC	164
5.19	Reliability Analysis – UTAUT	164
5.20	Co-Efficients and *t*-values of UTAUT Structural Model	167
5.21	Bivariate Analysis - ISSAAC	168
5.22	Bivariate Analysis – UTAUT	168
5.23	R^2 Values - ISSAAC	169
5.24	R^2 Values - UTAUT	170
5.25	GFI Analysis - ISSAAC	173
5.26	GFI Analysis – UTAUT	173
5.27	Relative Fit Indices Analysis - ISSAAC	174
5.28	Relative Fit Indices Analysis - UTAUT	174
5.29	ECVI analysis – ISSAAC	175
5.30	ECVI analysis - UTAUT	175
5.31	Insignificant Paths - ISSAAC	178
5.32	Removal of the Path between Cybernization and Interoperability	179
5.33	Insignificant Paths M^1	180
5.34	Removal of Path between Cybernization and Special Product	181
5.35	Removal of path between Aggregation and Special Product	182
5.36	Results of the removal of path between Cybernization and Switching	183
5.37	Largest MI for modified model M^4	184
5.38	R^2 and Reliability Scores for ISSAAC and M^4	185
5.39	Shared Variance Analysis for M^4	186
5.40	Addition of path between Facilitating Conditions and RAI	188
5.41	Addition of path between Facilitating Conditions and OE7	189
5.42	Deletion of path between Social Influences and Behavioural Intention	190
6.1	Summary of Findings – ISSAAC	199
6.2	Summary of Findings – UTAUT	207
7.1	Limitations of Current Study	223

List of Figures

Figure Number	**Title**	**Page Number**
2.1	Dimensions of Virtualness (source: Griffith *et al* (2003), p. 267 Fig. 1	32
2.2	Characteristic Dispersion of the Virtual Organization Adapted from (source: Burn et al, 2002, p.20 Fig 2.2)	36
2.3	Likely Impact of Dispersion and Mediated Communication on Mutual Knowledge and on Collaborative Outcomes (Taken from Cramton, 2001, p. 351)	50
2.4	Mapping Adopter Determinants to Adopter Categories of Rogers (1995) (source: Venkatesh and Brown, p.21, Fig 2, 1998)	62
2.5	Steps in the Adoption Process (adapted from Assael, 2004)	63
2.6	Technology Acceptance Model (Taken from Davis et al, 1989)	69
3.1	The ISSAAC Model (source: Travica, 2005)	75
3.2	Travica's ISSAAC Model with Hypotheses	86
3.3	Unified Theory of Acceptance and Use of Technology (source: Venkatesh *et al,* 2003, p. 447 Fig 3.).	88
4.1	Sequential Steps in EFA (source: Diamantopoulos and Siguaw, 2000)	118
4.2	Stages of CFA (adapted from: Hair *et* al, 1998; Diamantopoulos and Siguaw, 2000)	120
5.1	Travica's (2005) ISSAAC Model with Hypothesised Paths	147
5.2	Adapted from the Unified Theory of User Acceptance of Technology (source: Venkatesh *et al,* 2003, p. 447 Fig 3.).	147
5.3	Worked Examples of Identification Formula for ISSAAC and UTAUT	151
5.4	Stem Leaf Plot - ISSAAC	154
5.5	Construct Reliability	164
5.6	Co-Efficients and *t*-values of Structural Model Pertaining to ISSAAC	166
5.7	Modified ISSAAC Model M^4	186

Figure Number	Title	Page Number
6.1	Final ISSAAC Model (M^4)	204
6.2	Final UTAUT (OLS Data Set)	214
6.3	Final UTAUT (OBT Data Set)	214
6.4	Final UTAUT (SSK Data Set)	215

List of Appendices

Appendix	Title	Page Number
A	Goodness of Fit Formulae	2
B	Questionnaires	3
C	Pilot study and Focus Group Feedback Forms	10
D	Covariance Matrices	21
E	Descriptive Statistics	48
F	EFA Output	56
G	Latent Variables and Associated Indicators	71
H	Measurement Model Path Diagrams	76
I	LISREL Notation	81
J	SIMPLIS Syntax	84
K	LISREL Output	86
L	SIMPLIS Output	399
M	Reliability Analysis	421
N	Goodness of Fit Indices	

Abbreviations and Acronyms

Abbreviation / Acronym	**Definition**
A	Attitude
AGFI	Adjusted Goodness of Fit Index
Aggre	Aggregation
AIC	Akaikes Information Criterion
Anch	Anchoring
ATM	Automated Teller Machine
AVE	Average Variance Extracted
BI	Behavioural Intention
CAIC	Consistent Version of Akaikes Information Criterion
CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CN	Critical Number
C-TAM-TPB	Combined Technology Acceptance Model and Theory of Planned Behaviour
CVI	Cross Validation Index
Cyber	Cybernization
df	Degrees of Freedom
DV	Degree of Virtualness
DWLS	Diagonally Weighted Least Squares
E-booking	Electronic Booking
E-Commerce	Electronic Commerce
ECVI	Expected Cross Validation Index
EE	Effort Expectancy
EFA	Exploratory Factor Analysis
E-Services	Electronic Services
FC	Facilitating Conditions
GFI	Goodness of Fit Index
GLS	Generalised Least Squares
H	Hypothesis
HR	Human Relations
ICT	Information and Communication Technologies
IDT	Innovation Diffusion Theory
IFI	Incremental Fit Index
Inter	Interoperability
IOS	Interorganisational Systems
IP	Internet Protocol
IS	Information Systems
ISR	Information Systems Research

Abbreviation / Acronym	**Definition**
ISSAAC	Interoperability, Switching, Special Product, Aggregation, Anchoring and Cybernization
IT	Information Technology
IV	Instrumental Values
KMO	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.
LISREL	Linear Structural Relationships
MDS	Multi Dimensional Scaling
MI	Modification Index (indices)
MISQ	Management Information Systems Quarterly
ML	Maximum Likelihood
MM	Motivational Model
MPCU	Model of Personal Computer Utilization
MSA	Measures of Sampling Adequacy
NCP	Non-Centrality Parameter
NFI	Normed Fit Index
NNFI	Non-Normed Fit Index (NNFI)
PC	Personal Computer
PE	Performance Expectancy
PEOU	Perceived Ease of Use
PGFI	Parsimonious Goodness of Fit Index
PLS	Partial Least Squares
PNFI	Parsimony Normed Fit Index
PU	Perceived Usefulness
R&D	Research and Development
RFI	Relative Fit Index
RMR	Root Mean Square Residual
RMSEA,	Root Mean Square Error of Approximation
SAS	Statistical Analysis System
SCT	Social Cognitive Theory
SEPC	Standardized Expected Parameter Change
SEM	Structured Equation Modelling
SI	Social Influence
SME	Small / Medium Enterprise
SP	Special Product
SPSS	Statistical Package for the Social Sciences
SRMR	Standardised Root Mean Squared Residual
SSK	Self Service Kiosk
Switch	Switching
TAM	Technology Acceptance Model
TCP	Transmission Control Protocol
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
TSLS	Two-Stage Least Squares

Abbreviation / Acronym	**Definition**
UK	United Kingdom
ULS	Unweighted Least Squares
USA	United States of America
UTAUT	Unified Theory of Acceptance and Use of Technology
WAN	Wide Area Network
WLS	Generally Weighted Least Squares

Chapter 1

Introduction

1.1 Background Information and Motivation for the Research

Traditionally, organisational structures fall into three distinct groups; *simple structures, functional structures* and *divisional structures* (Mintzberg, 1979, 1992; Bolman and Deal, 1999; Daft, 2001). However, due to growing economic pressures such as globalisation, hyper-competition and the increasing trend towards off-shoring resources, management have realised that if they wish to succeed in today's complex and rapidly shifting marketplaces they need to embrace more dynamic structures which can accommodate flexible working practices and help them to sustain their competitive advantage (Anderson, 1999; Cooper and Muench, 2000; Mcphee and Scott Poole, 2001; Bauer and Koszegi, 2003; Nguyen and Mintzberg, 2003). According to Johnson and Scholes (2002), this move is already visible through the development and increased use of structures such as the *matrix, team* and *project-based structures* (Applegate *et al*, 1998; Palmer and Hardy, 2000). In line with this Turban *et al* (2002) amongst others argue that this trend will continue and one of the key drivers and enablers behind this shift to flexibility is the use of Information and Communication Technologies (ICT) and Information Systems (IS). Indeed authors such as Avison and Fitzgerald (2003) argue that ICT allows a more effective and efficient way of working as it enables flexibility and dynamicity without the need for major restructuring or large financial outlay (see also Barner, 1996; Saabeel *et al* 2002; Powell *et al,* 2003). Venkatesh *et al* (2003) (quoting Westland and Clark (2000)) support this and state that since the early 1980s, approximately 50 percent of all new capital and company investments have centred around IS and ICT thus clearly demonstrating the significant and expanding role that technology plays in shaping today's organisations (Gefen and Straub, 2003; Sambamurthy *et al,* 2003; Venkatesh *et al,* 2003).

This trend towards ICT-enabled organisational structures is commonly referred to in the literature as the degree of organisational virtualness. According to Bauer and Koszegi (2003), by measuring the amount of ICT within an organisation practitioners and researchers are able to categorise organisations along a continuum of virtuality. This scale of virtuality ranges from traditional (no ICT) and hybrid (partially reliant on ICT) to pure virtual (completely reliant on ICT), and allows categorisation of organisational structures without the need to examine neither hierarchy nor span of control (Griffith *et al,* 2003). Examples of varying forms of organisational virtualness include virtual universities, who combine remote learning and virtual classrooms with traditional teaching methods, to virtual offices/banking/financial services which use ICT as a means of providing 24 hour customer service (Volery and Lord, 2000; Tianfield and Unland, 2002). As a result of this trend toward organisational virtualness there has been an exponential growth in research relating to the characteristics, drivers, and enablers of different levels of ICT dependency within organisations (see for example Cooper and Muench, 2000; Mcphee and Scott Poole, 2001; Bauer and Koszegi, 2003). However, despite the abundance of literature that examines the individual characteristics of varying virtual forms, there remains a lack of empirical research that explores the relationships between these characteristics (see for example, Ratcheva and Vyakarnam, 2001; Saabeel *et al,* 2002; Gibson and Cohen, 2003; Kirkman *et al,* 2004; Travica, 2005; Shekhar, 2006). The first model examined in this study, namely Travica's *Interoperability, Switching, Special Product, Aggregation, Anchoring* and *Cybernization* (ISSAAC) model goes beyond previous analyses of organisational virtualness by drawing upon both existing literature and past research to define a set of constructs and supporting interrelationships that can be used to define both the general concept of organisational virtualness and the characteristics of a variety of virtual forms. According to Travica (2005), by examining the characteristics of organisational virtualness within the context of a single model not only will researchers be able to identify the common characteristics of virtual forms, but it will also help researchers and practitioners alike to understand what combination of factors contribute towards successfully enabled ICT organisations in a 'real world' context.

Alongside this, an area of equal importance within the fields of IS and ICT is the subject of consumer acceptance of new technology (Szjna, 1996; Koufrais, 2002; Venkatesh *et al,* 2003; Mallat, 2004). One of the key reasons for this is because as ICT increasingly dominates organisational structures it also starts to affect the products and services produced by those organisations (Avgerou, 1998; Christiaanse and Kumar, 2000; Straub and Watson, 2001; Koufrais, 2002). Indeed, many authors argue that organisations are not only using ICT to increase structural flexibility but also to increase service and product flexibility. Examples of ICT-enabled products vary across a wide host of industries, ranging from private sectors companies such as Nike, to local and national governments (Hamill, 1997; Leonard, 1999; Kanter, 2001; Tianfield and Unland 2002). However, according to Venkatesh (1999), if organisations want to see a positive Return on Investment (ROI) from their ICT and the products it enables, they must understand the determinants that motivate customers to accept innovations and consequently adopt them for use.

In light of this, it is therefore unsurprising that the psychology behind user acceptance of new technology has received wide and intense interest among both IS practitioners' and researchers alike (Chau, 1996; Mathieson *et al,* 2001). Amongst the most widely revisited theories on user acceptance of technology is the Technology Acceptance Model (TAM) originally developed by Davis in 1986 (Veiga *et al*, 2001; Gefen *et al*, 2003; Wang and Butler, 2003; Chen *et al,* 2004). TAM suggests that voluntary use of a system is based upon the user's perceived usefulness (PU) and perceived ease of use (PEOU) of the system. This means that if a technology is seen to be useful and easy to use by the individual, the more likely the individual is to change their behaviour and accept the technology (Davis, 1986, 1989; Szjna, 1996; Mathieson *et al,* 2001; Gefen and Straub, 2003). However, though TAM has become one of the most pre-eminent models associated with understanding IS and ICT usage a new model, which is based on TAM and seven other prominent theories associated with innovation acceptance is swiftly becoming regarded as one of the most explanatory models in the field (Mallat, 2004; Pu Li and Kishore, 2006). The Unified Theory of Acceptance and Use of Technology (UTAUT) is a relatively new model developed by Venkatesh *et al* (2003), which is capable of explaining as much as 70 percent of the variance in intention to use (the most achieved by any one model). UTAUT suggests than an individual's intention to use a system and actual system usage is based on four direct determinants: *performance expectancy* (the degree to which an individual believes that using the system will help him or her to attain gains in performance), *facilitating conditions* (the degree to which an individual has the necessary resources that ultimately facilitate use), *effort expectancy* (the degree of ease associated with using a system) and, *social influence* (the degree to which an individual perceives that important others believe he or she should use the new system) (Venkatesh *et al,* 2003). Venkatesh *et al* (2003) argue that by examining the presence of each of these constructs in a 'real world' environment, researchers and practitioners will be able to asses an individual's intention to use a specific system, thus allowing for the identification of the key influencers of acceptance in any given context. UTAUT was selected for use in this study as not only is it a comprehensive model covering a broad range of innovation theories thereby allowing for a more detailed analysis of the phenomenon, but also it is expected that by testing UTAUT outside of its original boundaries a greater understanding of consumer acceptance of new technology will be attained.

The work presented in this Thesis employs the models described (ISSAAC and UTAUT) alongside the extant literature in order to examine the phenomena of organisational virtualness and user acceptance of technology. It is anticipated that by examining the effect of ICT from both an internal and external perspective the findings of this study will not only help to increase the general understanding of these contemporary areas of modern business, but they will also help both researchers and practitioners to better understand the determinants of technology acceptance and the success factors associated with ICT-enabled organisations. Furthermore, by empirically testing both models in new contexts it is argued that a contribution will be made to the statistical validity of the models.

1.2 Aims & Objectives

The overall aim of the research described in this Thesis is to investigate the concepts of organisational virtualness and user acceptance of technology via the use of pre-defined models associated with the phenomena (namely ISSAAC and UTAUT). The research recognises the gap for empirically tested models in these subject areas and attempts to use the extant literature in order to enhance both the theoretical and statistical support for each of the models defined (Venkatesh *et al,* 2003; Travica, 2005). Furthermore, by quantitatively and qualitatively testing the models in a 'real world' environment the study aims to make a contribution to the overall understanding of organisational virtualness, and consumer acceptance of new technology. The programme of research endeavours to achieve the following objectives in realising these aims:

- Provide background information relating to traditional organisational structures, organisational virtualness, adoption of innovations and technology acceptance so that the models examined in this Thesis can be viewed in the correct context.
- Define the constructs and relationships of both ISSAAC and UTAUT.
- Empirically test each of the models and their associated hypotheses thereby determining the most significant constructs and relationships associated with organisational virtualness and consumer acceptance of new technology.

1.3 Methodology

The methodology used to carry out the investigation described in this Thesis follows the most common approaches used throughout prominent IS journals such as Management Information Systems Quarterly (MISQ) and ISR (Information Systems Research). It also follows common methodologies such as those advocated in such works as Orlikowski and Baroudi (1991), Chen and Hirschheim (2004) and Dwivedi *et al* (2008). In short, the study takes a positivist philosophical perspective assuming that reality is objective and is therefore measured using pre-defined hypotheses and theories. The hypotheses in the case of ISSAAC are derived predominantly from the extant literature, and in the case of UTAUT are taken directly from Venkatesh *et al's* (2003) pre-existing research. In order to empirically test both sets of hypotheses quantitative data was collected via surveys (where answers are based on the Likert scaling method), and was subsequently analysed using a range of methods including simple descriptive statistics and exploratory and confirmatory techniques such as EFA and CFA through to multivariate methods such as Structural Equation Modelling (SEM). This multifaceted approach has allowed a variety of aspects to be tested including the reliability and validity of the research instruments, the explanatory power of the models and the fit of the models in relation to the data collected. In parallel to this, supplementary data was collected via semi-structured interviews in order to provide further insights into the phenomena under investigation.

Surveys and semi-structured interviews were selected as the primary means of data collection as surveys were both easy to administer, they provided a means by which to test theoretical propositions in an objective fashion, and they are one of the most common forms of data collection in IS research focused around diffusion of technology (this is especially important in the case of ISSAAC, as it is yet to receive any quantitative validation) (Straub *et al,* 2004; Dwivedi *et al,* 2008). In addition to this, semi-structured interviews helped to test the internal validity of the research instrument(s) by allowing alternative themes to emerge that were not guided by the questions asked thereby allowing for a deeper understanding of research topic(s) (Atman *et al,* 2000).

1.4 Thesis Outline

The Thesis is organised into seven Chapters. This Chapter has briefly outlined the motivation for the current research, summarised the research objectives and detailed how these have been achieved. Chapter Two provides a detailed review of the extant literature associated with the concepts of organisational virtualness and user acceptance of new technology, with the aim of providing sufficient background so that the remainder of the Thesis can be viewed within the appropriate context. Chapter Three continues the review of the literature and provides a discussion of the theoretical models used within this study (ISSAAC and UTAUT). It examines both the constructs of each model (and their roots in the extant literature) and specifies the hypotheses which form the base for later exploratory / confirmatory analysis. It is not the intention of this Thesis to provide a complete review of all models and theories associated with organisational virtualness and technology acceptance.

Chapter Four provides an overview of the most commonly used research methodologies within the field of IS, it highlights the methods selected for use in this study and outlines the techniques put in place to ensure the validity of the research findings presented. Following this, a brief description of the international airline used as a source of data in this Thesis is presented and the key features that make the airline a suitable candidate for use in this investigation are identified. Chapter Five then presents the results of the exploratory and confirmatory analysis examining each stage of the analysis process from the initial data screening stages through to hypotheses testing and model modification. The chapter concludes by presenting the final research model(s). Chapter Six then uses the results of the analyses to provide a comprehensive discussion of the overall findings of the Thesis - examining whether the initial research question(s) have been answered and discussing the implications of the present work on the current body of research.

Finally, Chapter Seven concludes the Thesis by highlighting the practical implications and associated limitations of the current work and identifying potential areas for future research within the fields of organisational virtualness and user acceptance of technology.

Chapter 2

Literature Review

2.1 Introduction

This Chapter provides an overview of the field of research concerned with the growing influence of ICT on organisational structures and consumer products and services. The Chapter does not aim to examine all aspects of the subject area but instead provide sufficient background material so that the remainder of the Thesis can be viewed within the appropriate context.

Overall, the Chapter is divided into eight sections: *traditional structures, drivers of new organisational forms, degree of virtualness, the virtual organisation, the virtual team, external impact of ICT, adoption of innovations* and *consumer acceptance of new technology.*

The first section identifies and briefly examines the most common forms of organisational structure; ranging from the simple structure through to the more complex matrix and functional structures. The second and third sections develop this and explain how factors such as ICT and socio-economics have spurred the need for new organisational forms that encourage flexibility and embrace the move towards technologically enabled products and services. This is then followed by a discussion of the various levels of organisational virtualness whereby the concepts of both inter and intra organisational virtualness are introduced and examples of both forms given. The characteristics associated with these forms in turn provide the foundations upon which the constructs of Travica's (2005) ISSAAC model are conceptualised in Chapter Three.

2.2 Traditional Organisational Structures

The structure of an organisation is determined by a mix of three core elements: *relationships* (connections between members of the organisation and their roles), *boundaries* (limitation on the structure of the organisation), and *processes* (the actions of the business according to functional lines) (Pugh *et* al, 1968; Aldrich and Herker, 1977). In turn, each of these elements are centred around the principal dimensions of *hierarchy* (concerned with the division of labour and the assignment of roles and responsibilities) and *span of control* (concerned with attaining equilibrium between the amount of subordinates and the degree of management) (Ackroyd, 2002; Kulshrestha, 2003). By manipulating hierarchy and span of control, organisations are able to adapt themselves so that their structure continually reflects the demands of the marketplace (Palmer and Hardy, 2000). Usually, this means as the pressures of the marketplace grow the structure of the organisation becomes more dynamic and organisations move from being simple structures (with basic hierarchies and spans of control) managed by individuals, through to complex structures which are able to cope with greater external pressures managed by groups (Bolman and Deal, 1999; Daft, 2001).

The following sections outline the six most common forms of organisational structure starting with the basic simple structure and moving through to more complex entities such as the functional and matrix structures (Mintzberg, 1979, 1992; Palmer and Hardy, 2000; Johnson and Scholes, 2002, 2004). The structures that will be examined are: *simple, functional, divisional, matrix, team-based and project-based.*

2.2.1 The Simple Structure

Simple structure organisations are traditionally associated with sole ownership or Small to Medium Enterprises (SME), where most if not all managerial responsibilities are undertaken by either an individual (traditionally the Chief Executive Officer (CEO)) or a small partnership (Palmer and Hardy, 2000; Johnson and Scholes, 2002). Such a structure creates a simple chain of command which is normally centred on a single process that does not require a great deal of specialist knowledge, skills or resources (Ackroyd, 2002). In turn, the focus of the organisation centres on in-house processes and relationships that the individual or partners can create and maintain on their own

(Johnson and Scholes, 2002). The major downside of the simple structure organisation is that it can only operate effectively up to a certain size, and beyond this point the organisation becomes too burdensome for an individual to successfully control (Johnson and Scholes, 2002). In turn, this means that the simple structure does not always have the flexibility required to meet the demands of a modern and rapidly changing marketplace.

2.2.2 The Functional Structure

The functional structure or as Palmer and Hardy (2000) refer to it, the *inputs* model is based on a centrally co-ordinated decentralised network where the labour force is divided into individual departments which are associated with either the primary activities of the workforce or, the core competencies of the business (Miles and Snow, 1992; Maurin and Thesmar, 2004). Although functional structures do offer a variety of advantages, such as simplified control mechanisms and clear definition of roles and responsibilities (Johnson and Scholes, 2002). They also hold a clear disadvantage, in that, because management are focused on specific functions appose to strategic objectives, there is a tendency to create short term instead of long terms goals. This short-term focus in a shifting and increasingly competitive marketplace can in turn result in functional structures being less able to respond to changing market trends and can ultimately cause problems in the areas of competitiveness and flexibility.

2.2.3 The Divisional Structure

The divisional structure came about in line with the development and peak of unitary mass production in the United States of America (USA) (Ackroyd, 2002). The divisional structure is made up of a series of decentralised units that operate independently across geographies in order to serve a specific product, service, or geographical location (Allen, 1978; Habib and Victor, 1991). Each unit in turn is centrally assessed based on their economic performance with the possibility of three outcomes: *expansion* (to include more units or functional groups), *contraction* (downsizing), or *redirection* (reallocations of goals and objectives). Each outcome can in turn be applied to either the individual units, the organisation as a whole or both (Miles and Snow, 1992). This continually reactive approach allows the organisation to more efficiently serve either their regional, national or global market.

However, while the divisional form appears to offer a solution to the problems presented by the simple and functional structures, a major downside to divisionalisation is that the organisation can often become over burdened (Galunic and Eisenhardt, 1996; Ackroyd, 2002). This in turn can lead to a lack of managerial control and the dilution of resources away from the organisations' core competencies, thus resulting in inefficiency and therefore a drop in economic performance.

2.2.4 The Matrix Structure

The matrix structure represents a collective approach whereby aspects of the simple, functional, and divisional forms are used in tandem dependant upon the needs of the organisation. Conventionally, matrix structures are used when there is more than one factor around which the knowledge and resources of the organisation needs to be built (Johnson and Scholes, 2002). This in turn results in the members of the organisation becoming associated with both a geographical (for instance regional) and functional (for instance marketing) department or team (Needham and Dransfield, 1990). However, because members of the organisation are operating across functions there is a tendency for management of the matrix structure to become too complex, subsequently this results in lengthier decision chains and the possibility of reduced operating efficiency (Cackowski *et al,* 2000). Therefore, in order to succeed organisations adopting the matrix structure must ensure that all resources and activities are effectively coordinated. If this does not occur the overall operating efficiency of the organisation can potentially decline and the organisation will become inflexible (Anderson and Vincze, 2000). As a solution to this problem, Atkinson (2003) suggests that managers use a combination of close management of resources and activities and the development of flexible and innovative HR policies that actively encourage and support the organisation's members. This in turn will create a system of confidence whereby employees are able to manage themselves (by using pre-established HR guidelines), thereby resulting in the successful overall management of activities and resources across functional departments.

2.2.5 Team-Based Structure

Team-based structures are created in order to reflect the diverse demographics and consumer requirements that may be present in one organisation (McHugh *et al*, 2001). They manipulate the dimensions of hierarchy and span of control in order to segment the organisation according to cross-functional teams which are built around specific business processes rather than physical variables such as product or location (Johnson and Scholes, 2002). Consequently, this means that within a single organisation there may be a series of individual multi-skilled teams, each of which are responsible for a particular task within the overall production of a product, and which have a specific business purpose, such as R&D, product specifications or marketing etcetera. Creating these multi skilled, job specific teams allows the organisation to be multi-functional and can result in an increased degree of innovativeness (Zenger, 2002). However, according to Buchanan and Huczynski (2004) because there can often be a large degree of discrepancy between the skill levels of different teams this can also lead to significant challenges in terms of both resource allocation and management, as managers will not want to discriminate against any one team. However, despite this McHugh *et al* (2001) argue that the team-based structure is superior in many ways to other structures as it represents a means by which organisations can achieve the necessary levels of flexibility, innovation, and sensitivity to the current dynamic marketplace.

2.2.6 Project-Based Structure

Project-based structures are made up of a series of project teams each comprising of a number of individuals who have been brought together from across the organisation in order to complete a *management-specified task* within a defined period of time (Buchanan and Huczynski, 2004). Throughout the task teams share responsibility for outcomes and communicate across organisational boundaries. However, once the task has been completed teams members are either re-assigned or, a new task developed (Cohen and Bailey, 1997). One of the most common forms of project-based teams is the *cross-functional project team;* this is made up of a number of employees from different work areas or functions but who exist on the same hierarchical level (Buchanan and Huczynski, 2004). Dyer (2004) argues that although cross-functional project teams are traditionally associated with one-off projects they are rapidly gaining wider acceptance as a permanent business structure; as they provide a means by which organisations can break down internal barriers between functional departments which in turn facilitates the development of more dynamic solutions to often-complex problems. Dyer (2004) further argues that the development of cross-functional project teams does not have to be confined to within the organisation; in the sense that, they also represent a means by which organisations can link teams across geographical locations or disciplines. Johnson and Scholes (2004) agree with this and argue that project and cross-functional teams are becoming more widely accepted as they represent an effective means through which organisations can either slightly modify or completely re-model their organisational structure dependant upon their changing business requirements.

2.3 Drivers of New Organisational Forms

Traditionally, there are six standard organisational structures which are built around the dimensions of hierarchy and span of control. Over the past 50 years these structures have undergone few or no changes and are consequently viewed as being static (Gray *et al*, 1985). A common name for this is *structural inertia;* this represents a state where organisations are prevented from implementing change due to *"powerful conservative forces"* which can range from internal inhibitors such as sunk costs or internal politics through to external variables such as exchange rates, taxes or legal restrictions (Hannan and Freeman, 1984; Colombo and Delmastro, 2002; Guillén, 2002).

However, according to both Ackroyd (2002) and Nguyen and Mintzberg (2003), this period of stagnation is about to change as management are beginning to realise that adaptation of organisational structures to their environments is essential if they wish to succeed in a more complex and rapidly shifting marketplace, a concept referred to as *"complexity theory"* (Anderson, 1999). Johnson and Scholes (2002) argue that the process of organisational change has already begun through the rise of the matrix, team, and project-based structures, which allow organisations to be more responsive to changes in the marketplace without the need for complete restructuring (Stough *et al,* 2000). Applegate *et al* (1998) and Palmer and Hardy (2000) support this and argue that future organisational structures will be less focused on traditional pyramid style hierarchies and gradually more focused on compact and networked configurations that make use of clustered arrangements. Powell (1987) suggests a reason for this is because networked and hybrid organisations represent a better fit to the new and technologically enhanced markets of today which are unavoidably more demanding.

This need for alternatives to traditional business structures is fuelled by a wide variety of social and economic factors, of which one of the most significant is an acknowledged move towards ICT dependence (McPhee and Scott Poole, 2001; Turban *et al,* 2002; Walters and Buchanan, 2001). In business terms the introduction and increased presence of ICT has most notably affected and has the most potential to affect organisational structure, communication, management and the nature of the products and services produced (Barner, 1996; Turban *et al,* 2002). Some key examples of the changes that are already emerging as a result of ICT is the increased presence of ICT consumer services, such as online or self-service products and the rising dominance of virtual and networked organisations (so called *new organisational forms*).

At present, the extant literature suggests that there are five key drivers pushing through virtual organisations and ICT-enabled consumer services. Whilst some drivers are widely accepted such as *ICT, increased competition,* and *globalisation* (See for instance Cooper and Muench, 2000; Mcphee and Scott Poole, 2001; Bauer and Koszegi, 2003), others such as, *policies and politics and enlightened and diversified populations* are associated with individual authors (See Igbaria *et al,* 1999). The following sections describe each of these drivers within the high level context of organisational structure, and consumer products and services.

2.3.1 Information and Communication Technologies

ICT is primarily concerned with the hardware and software that supports the gathering, conversion and circulation of information throughout the organisation (Beynon-Davies, 2004). It can be argued that this flow of information contributes towards the structure of the organisation by providing a system of governance around which the people of the organisation are built. Consequently, this means that any changes in the nature of this flow and subsequently the ICT that supports it will also affect the physical structure of the organisation (Lucas and Baroudi, 1994). Whilst traditionally this has not been a major issue (primarily because ICT only played a minor role in many organisations), throughout recent years there have been number of developments which have meant that ICT has moved to the foreground; in turn this has meant organisations are now more often using ICT in order to instigate major organisational changes (Stough *et al*, 2000; Powell *et al*, 2004). In extreme cases, developments in ICT have led to the evolution of completely new organisational structures, such as the virtual organisation (Cooper and Muench, 2000; Stough *et al*, 2000). This has subsequently meant that there is a need to implement changes in the way that organisations communicate and ultimately how they are governed (Lucas and Baroudi, 1994; Applegate *et al*, 1998; Rosenberg, 2003).

However, whilst the introduction of ICT is often seen by organisations as a means to re-structure and become more innovative, organisations must also be aware that the introduction of ICT does not come without its drawbacks. Indeed, according to Applegate *et al* (1998), an organisation can use ICT to increase their ability to process information at a faster pace thereby also increasing their operating efficiency. However, as soon as the speed of processing goes beyond the point at which the data can be monitored, that data is no longer of any extra benefit to the organisation thereby resulting in inefficiencies. Furthermore, because in many cases it is not always clear which variable is driving which; that is do changing business requirements and communication networks fuel the need for new technology or, do developments in ICT create new work systems and enable new methods of communication. There is often disagreement as to what organisational changes are needed in order to achieve the greatest advantages from ICT (Orman, 1998). Despite these discrepancies, the literature is clear in acknowledging that the two variables support and sustain each other, such that without ICT new organisational forms would be less likely to develop, and similarly without changing organisational needs ICT would not have a platform upon which to advance (Cooper and Muench 2000; Powell *et al*, 2003).

2.3.2 Increased Competition

Competition as defined by Dibb *et al* (1997) characterises the situation in which firms produce a series of products that are similar or can be substituted for another firm's product in the same geographic location. Traditionally competition is categorised according to three groups, either *monopolies* (a marketplace where products or services are in some way differentiated and the principal method of survival is through continuous innovation), an *oligopolies* (there exists only a limited number of producers or sellers who dominate the marketplace by using brand loyalty and continuous research and development as leverage), or, *perfect competition* (this is where there is no product or service differentiation and the consumers have perfect knowledge of all the products available) (Needham and Dransfield, 1990).

However, due to the rapid rise in globalisation organisations have been forced to alter their traditional ideas on competition and localised markets, and instead the concept of combined markets where the formerly defined *rules* of competition no longer exist have become dominant (Cooper and Muench, 2000). McPhee and Scott Poole (2001) view this process as being the development of *hyper-competition,* or in other words, an environment of progressively fierce competition amongst organisations where companies can no longer sustain the competitive advantages necessary to succeed (D'Aveni, 1994; Cooper and Muench, 2000). A short-term solution to this problem would be to create a series of interim competitive advantages that attack competitors in a variety of areas such as cost, price, or functionality amongst others. However, in doing this companies would ultimately end up cannibalising their own markets and losing their market share. For this reason, a long-term solution that allows organisations to remain competitive without undercutting each other and cannibalising the market must be found. Such a solution is presented in the form of virtuality, and most notably the virtual organisation (Mowshowitz, 2002). The virtual organisation provides an optimal solution to hyper-competition as not only does it allow companies to dynamically assign and reassign goals dependant upon need, it also allows individual members to leverage techniques such as switching which in turn open up a wider variety of available skills and resources. These amongst other characteristics enable the virtual organisation to effectively manage the effects of hyper-competition whilst at the same time achieve a greater combined competitive advantage than any other single organisation in the marketplace (Franke, 2001).

2.3.3 Globalisation

Globalisation can be defined as the integration of national economies into an international economy through amongst others factors trade, capital flows, migration and foreign direct investment (Statt, 1991; Bhagwati, 2004). One of the key enablers of globalisation has been the increasing advancements in ICT and IS. These advancements have helped to increase the ease of communication between countries and enabled the spread of knowledge further a field (Gabbert, 2003). In turn, this has created a genre of organisations that are reliant on global networks for many of their business processes (Igbaria *et al*, 1999). Indeed, according to Bleecker (1994), organisations are developing a greater interest in globalisation in order to both cut costs and decrease the lead time to market thereby making the organisation more competitive.

Although globalisation presents a series of positive opportunities for organisations it can also give rise to a number of threats. For example, those organisations that are negatively affected by globalisation are those that are unable to create or do not have the necessary technical infrastructure to support and sustain global networks. This results in the organisation being ultimately forced to respond in a rapid manner that is beyond their means (Thoumrungroje and Tansuhaj, 2004). One solution to this is for individual and less capable organisations to become members of a larger, multi skilled virtual organisation. Stough *et al* (2000) argue that the desire to cater to globalisation has fuelled the development of organisations such as the virtual and networked organisation as they allow individuals to expand their businesses beyond that of the domestic marketplace and beyond their individual capabilities. In turn, these multi-organisations help to breakdown the barriers of trade, create new opportunities to develop global marketplaces (with global monetary standards and policies), and help to develop a common language for conducting business (Igbaria *et al*, 1999).

2.3.4 Policies and Politics

An infrastructure can be defined as the systems, policies, politics, and technology that permit social organisation and support human activity (Igbaria *et al*, 1999; Beynon-Davies, 2004). As the social infrastructure develops it also allows the infrastructures of the organisations within it to expand. Over the past ten years the rapid increase in the use of and development of new technologies has led to the existing laws concerning commerce being severely strained, especially within the areas of intellectual property and trade across jurisdictions (Lunseth II, 2001; Piazza, 2001). In many cases, this has meant that organisations have been less willing to expand and operate on a global basis unless they invested directly in a foreign market. However, governments are playing an increasingly significant role in helping to create opportunities for communication with other nations by developing new policies and informing businesses of the worth of telecommunications and global commerce (Anon, 2000; Wayne, 2001). The development of new policies and laws has led to the development of what Igbaria *et al* (1999) refer to as a *"national backbone"* (Igbaria *et al*, 1999, p.29). According to Igbaria *et al* (1999), this "*backbone*" has enabled the growth of the social infrastructure necessary to support organisational development which in turn has been a key driver behind the development of new organisational forms such as the virtual organisation.

2.3.5 Enlightened and Diversified Populations

The extent to which the concept of virtuality will grow within organisations and society as a whole is dependant upon the extent to which the actors within society understand, accept, and implement the consequences of the new virtual culture (Igbaria *et al*, 1999; Mowshowitz, 2002). For instance, at present there are many examples of the widespread use and impact of ICT which vary from virtual universities, (who unify distance/remote learning and virtual classrooms) to virtual offices/ banking/ financial services to the proposed target by the United Kingdom (UK) government to achieve an electronic based government by 2005 (Volery and Lord, 2000; Tianfield and Unland, 2002). However, if these changes are not embraced, understood and ultimately accepted by society the potential for growth in these areas will become stunted. Conversely, if, as suggested by the Tech Briefs Article "*Accounting Today*" (Anonymous, 2004) the investment in ICT grows and the actors within society become more ICT literate the skill sets within organisations will also change and they will to become more ICT-focused, eventually resulting in a change in organisational structure (Igbaria *et al,* 1999).

2.4 Degree of Virtualness

Of the five drivers discussed in section 2.3 and possibly the driver with the most influence is ICT. Increasingly, ICT has been seen to affect many aspects of organisations, ranging from the actors within the organisation (in terms of skills) through to the overall structure of the organisation (Barner, 1996; Turban *et al*, 2002). As a result, this has lead to organisations being less likely to be categorised according to hierarchy and span of control and more likely to be categorised according to their degree of ICT dependency (Bauer and Koszegi, 2003; Griffith *et al,* 2003). This level of *organisational virtualness* as it is referred to in the literature (see for instance Bauer and Koszegi, 2003; Kirkman *et al*, 2004; Shekhar, 2006) is in part what this Thesis is concerned with as it is felt that by understanding what is meant by the degree of virtualness of an organisation we can attain a greater overall understanding of the phenomena of ICT dependency both within organisations and on society as a whole (Shekhar, 2006). Note that, although understanding what is meant by the degree of virtualness of an organisation does form a part of this Thesis. A complete investigation of the various categorisations of degrees of virtualness is beyond the scope of this study and instead the aim is to briefly examine the key aspects of the subject area so that the overall concept of organisational virtualness and its impact on organisational forms can be explored and understood within the appropriate context.

According to the literature, the degree of virtualness of an organisation can be defined using a variety of different means ranging from the extent to which ICT is used to enable dynamic communication; through to the cultural tendencies of an organisation and its members (Bauer and Koszegi, 2003; Chinowsky and Rojas, 2003; Goodbody, 2005). However, perhaps the most common and well known means of categorising an organisations degree of virtualness is via Griffith *et al's* (2003) dimensions of virtualness model (Shekhar, 2006). Griffith *et al's* model, which is shown in Figure 2.1, is made up of three axes. The x-axis shows the percentage of work that is preformed across time and space, the y-axis represents the level of technological support and the z-axis is concerned with the physical distribution of organisation members. By calculating the extent to which each of these components exists within an organisation Griffiths *et al* (2003) argue that the degree of virtualness of an organisation can be accurately determined, and organisations can subsequently be categorised along a scale of virtualness ranging from traditional and hybrid to pure virtual.

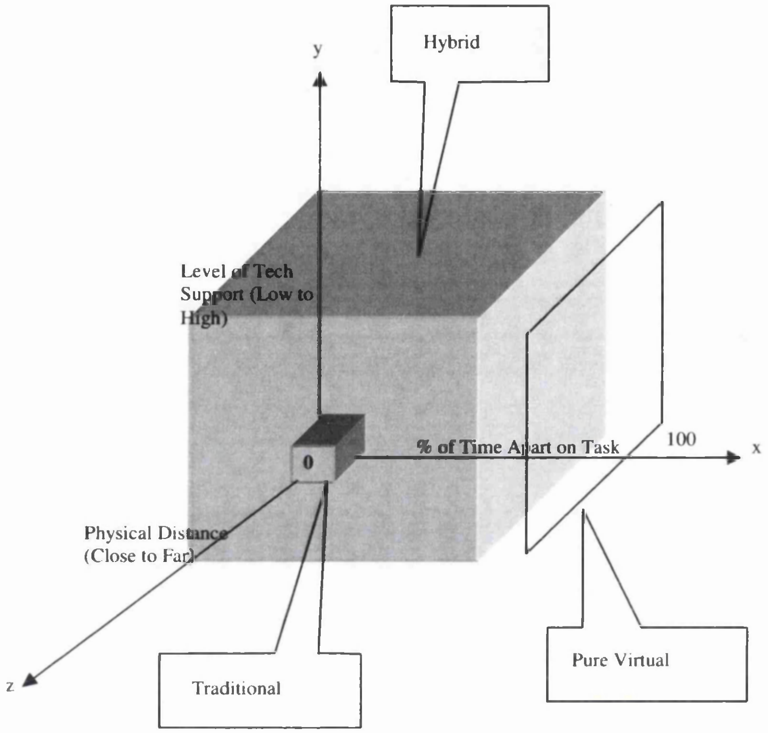


Figure 2.1: Dimensions of Virtualness (source: Griffith *et al* (2003), p. 267 Fig. 1

In addition to Griffith *et al's* (2003) categorisation of organisational virtualness Travica (2005) argues that the degree of virtualness of an organisation can also be classified according to different levels. Travica (2005) argues that essentially there are two levels of virtualness within organisations (inter and intra organisational virtualness) each of which deal with the external and internal alliances of an organisation respectively. Shekhar (2006) agrees with this and adds that by examining both levels of organisational virtualness in unison some indication as to the overall degree of ICT dependency within an organisation can be attained. However, because inter and intra organisational virtualness are not operational in themselves and instead describe a concept, in order to understand their actual characteristics it becomes necessary to examine the manifestations of these concepts in physical form. In view of this, Table 2.1 presents a brief overview of key examples of inter and intra organisational virtualness and identifies the relevant authors that have commentated in this field.

Table 2.1: Examples of Virtuality within Organisations

Virtual Concept	**Definition**	**Examples in the Literature**
Corporations /Organisations	A series of temporary associations between several organisations that unite in order to satisfy a particular business need.	Byrne (1993) Davidow and Malone (1993) Mowshowitz (1994 / 1997 / 2002) Hale and Whitman (1997) Strader *et al* (1998) Burn *et al* (2002)
Teams	Groups of workers who operate and communicate through the use of electronic means.	Jarvenpaa and Leidner (1999) Lipnack and Stamps (1999) Gibson and Cohen (2003) Powell *et al* (2004) Malhotra and Majchrzak, 2005
Offices	An almost paperless office whereby new technologies enable workers to operate remotely and communicate electronically (Nimsky, 2004).	Cascio (2000) Karlgaard (2004) Morgan (2004) Arnn (2005)
Tasks	Traditional tasks such as communication and meetings etc are preformed virtually instead of face-to-face.	Mowshowitz (1994 /1997)
Alliances	A coalition between organisations whereby they group together in order to share core competencies, skills and knowledge.	Strader *et al* (1998) Anderson and Vincze (2000) Introna (2001) Coletti *et al* (2005)

From this table (2.1) and a review of the extent literature, it becomes evident that the two most commonly cited examples of inter and intra organisational virtualness are the virtual organisation and the virtual team respectively (see for example Byrne, 1993; Hale and Whitman, 1997; Jarvenpaa and Leidner, 1999; Lipnack and Stamps, 1999). The following sections therefore examine the key characteristics and stages of formation associated with both these forms with the aim of conceptualising for the reader what is meant by organisational virtualness and with the aim of gaining a greater understanding of the increasing dominance of ICT in business with particular emphasis of its effect on organisational structure.

2.5 The Virtual Organisation

Inter-organisational alliances such as the virtual organisation represent a means by which stand-alone organisations can work together in order to share competencies and perform tasks focused towards a central goal (Rittenbruch *et al*, 1998; Paré and Dubé, 1999; Afsarmanesh and Camarinha-Matos, 2005). According to Dushnitsky (2004) and Shekhar (2006), inter-organisational alliances are becoming particularly important in today's market as they provide a means by which organisations can increase their innovativeness thereby also increasing their competitive advantage.

At present, there is no generally accepted definition of the virtual organisation and according to Marshall *et al* (2001) and Shekhar (2006), there is even confusion in the literature by what is meant by 'virtual' and the 'virtual organization'. Therefore in order to define what it means to be virtual we must look to the characteristics which typify the genre (Rittenbruch *et al*, 1998). According to the literature, one of the most common characteristics associated with the virtual organisation is the use of ICT to create temporary networks amongst different companies, suppliers, consumers and in some instances rivals so that knowledge and resources to be shared regardless of geographical location (Rittenbruch *et al*, 1998; Byrne, 1993; Burn, 2002). According to May (2000) and Bauer and Koszegi (2003) amongst others, in many cases the partnerships and alliances created by virtual organisations only remain for as long as it is in the interests of all parties and as long as there exists a need to fulfil a particular business opportunity. Other common features which are of significant in characterising the virtual organisation include: the ability to share core competencies, access to global markets, the production of specialist goods and a lack of general hierarchy and span of control (Byrne, 1993; Saabeel *et al*, 2002; Travica, 2005). However, it must be noted that whilst introducing ICT and virtuality can be beneficial, organisations do not have to become completely virtual in order to enjoy the benefits of virtualisation (Introna, 2001; Travica, 2005). Instead, Introna (2001) and Travica (2005) argue that organisations can be hybrid organisations and can combine virtual aspects (such as a reliance on ICT for communication) with more traditional features (such as a bricks and mortar presence) thereby allowing them to benefit from the advantages of both forms whilst not having to completely change their working methods.

With these considerations in mind and with the aim of clarifying what is meant by the virtual organisation, the following sections outline the most common characteristics associated with the form as defined by the extant literature in addition to this the chapter examines briefly the key stages in the life cycle of the virtual organisation.

2.5.1 Key Characteristics of the Virtual Organisation

The literature suggests there are six prevalent characteristics associated with the virtual organisation: s*trategic alliances, core competencies, organisational restructuring, outsourcing, interorganisational systems (IOS)* and *trust* (See for example O'Leary, 1998; Fitzpatrick and Burke, 2000; Barnes and Hunt, 2001). However, this list is not exhaustive and other authors propose subsequent less widespread characteristics, such as *opportunism, excellence and lack of organisational borders* (See for instance, Davidow and Malone, 1992; Byrne, 1993; Bleecker, 1994). Table 2.2 and the subsequent paragraphs that follow define each of the prevalent characteristics associated with the virtual organisation and identify their respective roots in the extant literature.

Table 2.2: Characteristics of the Inter-Organisational Form -Virtual Organisations

Term	**Definition**
Interorganisational Systems	Relationships enabled by ICT that geographically co-locate organisations that would otherwise be separated by vast differences in time and space (Axelsson, 2003; Burn et al, 2002).
Trust	Trust can be defined as being both a means of social control and coordination leading to the development of mutual respect amongst individuals, and the willingness of an individual to allow others to perform actions irrespective of the ability to monitor and control (Mayer *et* al, 1995; Jarvenpaa and Shaw, 1998)
Outsourcing	Outsourcing allows organisations to develop their skill and resource base externally, in order to meet both the short and long term needs of the organisation; without having to incur any great costs (Mowshowitz, 1997; Fielding, 2005).
Organisational Restructuring	Organisational restructuring is concerned with the ability and need for organisations to redesign their operations so that their structure reflects both current market and organisational demands (Bowman *et al,* 1999).
Strategic Alliances	Partnerships between two or more organisations, who come together in order to achieve a *"strategically significant objective",* that benefits both parties. Traditionally strategic alliances fall under two distinct headings: *technological alliances* (for example R&D, manufacturing know how and licensing agreements etc) and *marketing alliances* (for example shared distribution channels or combined promotional offers) (Elmuti and Kathawala, 2001; Das *et al,* 2003).
Core Competencies	The core skills, knowledge, abilities and aptitudes of an organisation or individual. In organisational terms, combining core competencies can result in an organisation increasing their competitive advantage in any given marketplace (Gottfredson *et al,* 2005; Shewchuk *et al,* 2005).

Interorganisational Systems

IOS are ICT-enabled relationships that transcend legal and organisational boundaries and form bridges between organisations that may be geographically dispersed. By joining previously separate organisations IOS provide the means through which previous barriers to trade such as language, culture and time can be overcome (Axelsson, 2003; Burn et al, 2002).

In line with the recent rise and popularity of the Internet and other ICT-enabled technologies there has been an acknowledged move by organisations to externalise their processes, meaning that the focus of business is no longer on internal relationships but instead on processes outside of the home organisation. Subsequently, this has meant that IOS have gained greater credibility and significance within organisations as a whole (Siau, 2003; Walters, 2004). Gallivan and Depledge (2003) argue that because of this increased credibility IOS are fast becoming key features in modern day organisations as they present an effective way to remain prosperous in today's increasingly competitive marketplace without the need for the large capital outlays often associated with total transference to foreign markets. This means that organisations can use IOS in order to develop their flexibility and consequently grow without the restrictions of time and space (Rittenbruch *et al*, 1998; Burn et al, 2002). Figure 2.2 shows this growth and depicts how ICT provides a solution to overcoming the problems of time and spatial dispersian thereby facilitating the development of new organisational forms such as the virtual organisation.

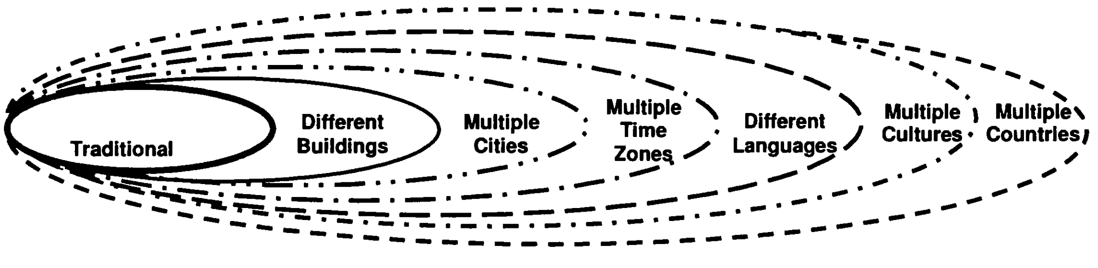


Figure 2.2: Characteristic Dispersion of the Virtual Organization Adapted from (source: Burn *et al*, 2002, p.20 Fig 2.2)

Trust

In recent years there has been an acknowledged move towards an Internet-based society that has affected not only our general culture but more significantly the manner in which business is conducted (Walker, 1999, Turban *et al*, 2002). Consequently, this has meant that a greater amount of sensitive data and knowledge is being disseminated across a wider range of organisations. In turn this has led to a decreased amount of trust amongst organisations as they have little to no way of knowing who is gaining access to their company's data (Arriss *et al*, 2002). In light of this, it is unsurprising that the issue of trust has gained and is continuing to gain greater credence throughout all levels of management (Clases, 2003). In some cases trust is being used as an explanation for changes to organisational structure, processes, relationships and overall business dynamics, and authors argue that without trust, both old and new organisational forms will find it difficult to operate and therefore also find it difficult to succeed in the marketplace (Adler, 2003/2004; Classes, 2003).

Though trust is significant across organisational forms it is arguably of greater significance amongst new organisational forms such as the virtual organisation. The main reason for this is because of the diverse nature of the communication patterns and the lack of formal governance that exist amongst virtual organisations in comparison to those found in classic hierarchical structures (Rittenbruch *et al,* 1998; Stough *et al,* 2000; Travica, 2005). The importance of trust within organisations is further compounded by manager's fears that there is a positive correlation between lack of trust and a decrease in operating efficiency (Handy, 1995). This fear solidifies the claim that if trust does not exist within a virtual organisation then the concept of virtuality will fail, as a virtual organisation is dependant upon the partners communicating, relying, and supporting one another. Barnes and Hunt (2001) encapsulate this theory via the metaphor of a house of cards, stating that in a virtual organisation if one partner fails then all others partners in the alliance as result also become likely to fail. This taken alongside the arguments made by both Davidow and Malone (1992) and Lipnack and Stamps (1999) that trust is often the glue that holds the virtual organisation together demonstrates the importance of trust as a critical success factor and defining feature of amongst other forms the virtual organisation.

Outsourcing

Outsourcing occurs when management look for external assistance because they have recognised that their current needs fall outside of their existing capabilities (Richman and Trondsen 2004). Outsourcing is often viewed as an alternative to organisational restructuring and provides organisations with a cost effective means by which to attain additional skills without having to commit to the acquisition of permanent staff or resources (Stough *et al,* 2000; Burn *et al*, 2002; Fielding, 2005). According to Burn *et al* (2002) and Heugens and Schenk (2004), if organisations were not to outsource certain skills they would continually have to restructure their organisation and as Mowshowitz (1997) argues this would result in a significant rise in costs and increased time to market. Bernhard and Vittoris (2004) and Lee *et al* (2003) agree with this, and add that in order to remain competitive in future marketplaces organisations must not only outsource, but must take advantage of the current developments in ICT so that they develop cross-organisational networks which in turn will give them access to a wider variety of skills and knowledge without the need for a large financial outlay.

Organisational Restructuring

An organisation's structure is generally considered as being the framework within which communications and relationships amongst the actors of the organisation are developed, and the brands of the organisation are managed (Hankinson, 1999; Jablin, 1987). However, as an organisation's internal and external environment changes it becomes necessary for organisations to restructure in order to maintain a value creating approach that contributes to their overall success (Barnes and Hunt 2001). Considering the perceived benefits of organisational restructuring, it is unsurprising that the subject has risen as an important phenomenon in many industries and organisational sectors (Burke and Cooper, 2000; McKinley and Scherer, 2000).

According to Bowman *et al* (1999) and Chu and Smithson (2003), organisational restructuring is defined as being the means by which organisations create a balance between external market pressures and their internal strategic objectives. In order to achieve this balance organisations have traditionally made changes to their *portfolio* (changes to products and services), their *financial status* (for example reducing free cash flow) or their *organisational structure* (including downsizing and changes to the administrative the structure) competencies (Bowman and Singh, 1993). However, as the pressures of the marketplace continue to grow and move into the realm of *hypercompetition,* the pressures to find new ways of restructuring have also grown (McKinley and Scherer, 2000). According to Coetzee and Eloff (2003) an ideal solution to the need for dynamic restructuring is represented by the virtual organisation as it allows multiple parties to work together to share skills, knowledge and strategies without the need to delayer, physically change their location or revise their overall strategic objectives. Faucheux (1997) supports this and adds that virtual organising provides a means by which organisations can harness the power of collaboration, thereby allowing them to meet marketplace demands without incurring the costs usually associated with complete restructuring.

Strategic Alliances

A strategic alliance is defined as a formal or informal relationship that creates a new partnership within the context of an organisation's short or long-term strategic plan (Byrne, 1993; Anderson and Vincze, 2000). Both Byrne (1993) and Burn *et al* (2002) argue that strategic alliances, planning, and the creation of partnerships form crucial elements of any organisation as without them independent organisations would both dilute their core competencies and possibly cave under the financial and time pressures that are present in today's market. Therefore, in order to exploit business opportunities organisations must enter into alliances in order to gain the best of everything in terms of the relevant skills, knowledge, resources and infrastructure necessary to succeed (Barnes and Hunt, 2001). Indeed, over the past three decades, collaborative enterprises such as strategic alliances and joint ventures have surfaced as one of the most significant business trends in today's marketplace (Coletti *et al*, 2005).

In terms of the virtual organisation, strategic alliances are extremely important as they allow the virtual organisation to develop both short and long-term plans concurrently, this in turn allows the virtual organisation as a whole to be more flexible and respond quickly to changes in the marketplace (Cooper and Muench, 2000). Introna

(2001) argues that the flexible nature of a virtual organisation and its members means that in some cases in order to meet both short and long-term goals and objectives, it may be necessary for an organisation to be a member of several virtual organisations at one time, thereby creating multiple alliances.

Core Competencies

Hamel and Prahalad (1990) define core competencies as being core skills that represent the value creating capabilities of an organisation. Overall, core competencies embody areas of activity within organisations that competitors find hard to replicate and therefore allow a particular organisation to gain a competitive advantage (Giardino and Pearce, 1993; Ogilvie, 1994). Examples of core competencies range from intellectual property through to product design, marketing collateral and human resources (HR). However, due to rapid changes in the marketplace such as the rise of globalisation, advancements in technology and the rise of hyper-competition; organisations are more often than not almost being forced to band together in order to share core competencies so that they can maintain their competitive edge via enhanced service offerings and productivity (Afsarmanesh and Camarinha-Matos, 2005; Gottfredson *et al*, 2005).

According to Fitzpatrick and Burke (2003), an optimal means of sharing core competencies is via the creation of a virtual organisation. They argue that virtual organisations are more equipped to deal with hyper-competitive and advancing marketplaces because they have a *HUB* of core competencies that members can share depending on their needs at any given time Introna (2001) argues that this *HUB* of core competencies allows virtual organisations to react at a more rapid rate than traditional organisations and allows members to ultimately bring products to the marketplace faster thereby allowing for a quicker return on investment (Introna, 2001; Afsarmanesh and Camarinha-Matos, 2005).

2.5.2 Stages of the Virtual Organisation

In order to understand how the individual characteristics of the virtual organisation come together, it is necessary to examine how virtual organisations are formed and what processes they go through at each stage of their life cycle. According to Saabeel *et al* (2003), every virtual organisation is made up of a series of control structures, interdependencies and exchange relations which, according to Faucheux (1997) vary according to the opportunity the virtual organisation has been created to fulfil. Consequently, as the individual organisation's internal and external environments change (and in turn the virtual organisations environment changes) in order to remain competitive the virtual organisation as a whole must change either its structure or its operating environment (Stough *et al*, 2003). This can be done either via the introduction of new partners, the enhancement of control structures, or the destruction of previously established exchange relations (Anderson and Vincze, 2000; Introna, 2001). Overall, this process of continuous adjustment can be seen as a form of organisational restructuring. However, the difference between this process in a normal organisation and in a virtual organisation is that virtual organisations exploit advancements in areas such as ICT (for example IOS) to allow them access to a wider variety of skills and partners in a shorter space of time, thus resulting in a quicker response time to the market need (Faucheux, 1997; Burke and Cooper, 2000). This ability by the virtual organisation to modify itself according to market need means that it is more adequately able to identify and seize the latest business opportunities ahead of its traditional stand-alone competitors (Mowshowitz, 2002). According to Strader *et al* (1998), this derivative of organisational restructuring is conceptualised perfectly via the four stages of the virtual organisation life cycle: *identification, formation, operation,* and *termination.* The following sections provide a brief overview of each stage of Strader *et al's* (1998) life cycle so that the overall concept of organisational virtualness and how and why it occurs can be better understood.

Identification

The identification phase is concerned with the identification, assessment and selection of an appropriate business opportunity. Strader *et al* (1998) believe that these decisions are sequentially related and the overall aim is to match and locate the required core competencies needed to fulfil the market opportunity at the least cost to individual organisations. In the case of the virtual organisation this means locating other companies with whom partnerships can be formed so that access can be obtained to the resources, skills and or knowledge that the individual organisation is lacking. Once this has been accomplished, the organisation or organisations must ensure that they have the necessary

ICT to facilitate working as a single unit, and if this can be achieved they are free to move on to the second stage of the life cycle known as formation.

Formation

Formation is concerned with bringing together the organisations that will be able to fulfil the core competencies as identified in stage one. At this point the virtual organisation is formed and the process of defining the tasks and goals that need to be completed in order to execute upon the business opportunity are decided upon. Once a partnership is formed according to Nayak (2001), its members must be given an identity and other credentials that will allow them to operate successfully. Examples of such credentials include amongst others: creation of trust, development of ICT networks and the formation of cross organisational relationships (see Table 2.2 for a definition of each). By incorporating these and other significant elements such as shared core competencies members of the newly formed virtual organisation are able to ensure they have the necessary attributes to facilitate success and successfully create job roles.

Operation

The third stage of the life cycle deals with assigning the tasks that were established during formation (Strader *et al*, 1998). At this stage, the members of the virtual organisation must work together in order to allocate the appropriate tasks based on the individual organisation's core competencies. In addition to this, the operation stage is concerned with establishing the boundaries within which the virtual organisation will operate. According to Saabeel *et al* (2002), establishing boundaries is particularly important as it helps to clearly define what role each member of the virtual organisation plays. Similarly, it also provides members with some clarity as to not only their rights on the knowledge and resources that are available within a virtual organisation, but also to their legal rights as part of a virtual entity, an area which as highlighted previously in section 2.3.5 is of growing concern (Piazza, 2001; Rash, 2001).

Termination

Termination is the fourth and final stage of any virtual organisations life cycle. It occurs when either the original business opportunity has been fulfilled (such as the production of a specific product) or the opportunity ceases to exist (such as the end of a fashion or fad) (Strader *et al*, 1998). As a result, the virtual organisation is terminated and members can chose to either disband and operate independently or form another virtual organisation to fulfil a different market opportunity. If this is the case, and members go on to form another virtual organisation the life cycle begins again and members must re-establish their goals and reassign tasks based on the different make up of core competencies that will now be present in the newly formed virtual organisation.

2.6 The Virtual Team

One of the primary examples of intra organisational virtualness within the literature is the virtual team (Jarvenpaa and Leidner, 1999; Lipnack and Stamps, 1999; Gibson and Cohen, 2003). Examining the concept of virtual teaming is of particular significance as according to Stough *et al* (2000) virtual teams are gaining greater credence in both the literature and in practice as team working has been proven to have a positive effect on amongst other aspects production levels and morale, factors which in turn have been proven to positively effect an organisations overall success in the marketplace.

Traditionally, teams are characterised by close tight knit entities that encompass the least number of people across the shortest distance with the broadest range of complimentary skills. However, due to the rise of factors such as increased competition and globalisation as discussed in earlier in section 2.3.2 organisations are being forced to operate on a global basis (Cooper and Muench, 2000; McPhee and Scott Poole, 2001). Consequently, this means that the tight co-located teams associated with traditional organisational structures are no longer able to cope under the mounting demand for dispersed working environments. As a result, new organisational teams are now characterised by a need to transcend geographical boundaries and an ability to operate across functions (Bock, 2003; Brennan and Braswell, 2005). However, in order to successfully manage the growing trend for dispersed global teams' organisations must utilise the current advancements in ICT so that dispersed teams can operate as a single unit in the same manner with which they would if they were in traditional face-to-face environments (Grosse, 2002). This use of ICT to create and maintain global teams is what is essentially referred to as the creation of a temporal virtual team (Hinds and Bailey, 2000). With these arguments in mind, the following sections aim to clarify the definition of a virtual team through an examination of some of the most common characteristics associated with the form as defined by the extant literature. In addition to this, as with the virtual organisation beforehand a brief explanation of the key stages in the formation of virtual teams will also be discussed.

2.6.1 Key Characteristics of the Virtual Team

The literature suggests there are eight prevalent characteristics associated with teams, some of these are general characteristics associated with both traditional and virtual teams, such as *goal-specificity, heterogeneity, interdependence, complexity and diversity, formalisation and modularity* and *trust;* whilst others are only applicable to the virtual team, such as: *technology* and *time and spatial dispersion* (See for example: Lipnack and Stamps, 1999; Saabeel *et al*, 2002; Bock, 2003; Chinowsky and Rojas, 2003; Gibson and Cohen, 2003). This list is not exhaustive and this Thesis acknowledges that there are other characteristics associated with the virtual team which are not contained within the aforementioned lists. Since an examination of all characteristics is beyond the scope of this Thesis please refer to Saabeel *et al,* 2002 and Powell *et al*, 2004 amongst others for additional attributes of the virtual team.

Table 2.3: Characteristics of the Intra-Organisational Form – Virtual Teams (adapted from Saabeel *et al*, 2002)

Term	**Definition**
Goal-Specificity	All activities and job roles are specifically and clearly assigned so that precise portions of the end goal are achieved. Further to this the method my which to assign roles and activities is unambiguous and therefore transferable (Xue *et al,* 2004/2005; Brennan and Braswell, 2005).
Technology	The enabling factor that allows the breakthrough and makes the virtual form possible (Shao *et al,* 1998)
Heterogeneity	The degree to which members of the team or organisation have a set of diverse but

Term	Definition
	complementary skills that are interchangeable amongst members (Jackson, 1999; Souren *et al,* 2004/2005; Brennan and Braswell, 2005)
Time and Spatial Dispersion	The extent to which the members of the organisation or team are separated by distance and time (Bal and Foster, 2000).
Interdependence	The extent to which the members of the organisation or team are interdependent, so that an individuals work, processes or actions will impact upon the overall state of the team (Gibson and Cohen, 2003)
Complexity and Diversity	Tendency to use collaborative work processes in order to complete a wide range of tasks and functions simultaneously (Jackson, 1999; Chinowsky and Rojas, 2003).
Formulisation and Modularity	The extent, to which intra-organisational forms collectively manage their own relationships and formulise a structure that can be built, destroyed and re-built through the development of individual units made up of members with differing skills and abilities. It is also concerned with the degree to which these units are integrated (Gibson and Cohen, 2003).
Trust	The extent to which the members of the intra-organisational form create social ties that lead to cohesion amongst team members and enable a team structure to form (Jarvenpaa and Shaw, 1998).

The following sections expand upon the definitions presented in Table 2.3 in order to provide a more rounded view of the key characteristics of the virtual team and intra-organisational virtualness as a whole.

Goal-Specificity

Goal-Specificity deals with both the specific attributes of a particular job role and the detailed specification of the end goal that the team is aiming to achieve. According to Handy (1999), there are four key factors that must be considered when teams are establishing tasks and goals: *nature, salience, clarity of task* and *criteria for effectiveness.* Nature, is concerned with establishing the type of task that needs to be completed, in nearly all cases the nature of the task directly influences the genetic make of the group (Handy, 1999). For example, if the overall aim of the group is idea formulation then a supportive style group is needed where individuals feel free to express ideas. However, if the team is to be multifunctional, then a more structured approach is required whereby each individual is assigned a specific role with a unique deadline and budget. The second and third components of goal specificity are concerned with the saliency and the clarity of the overall task. Saliency according to the Collins dictionary (2004) is defined as something that has a level of importance or prominence attached to it. Clarity of task on the other hand is concerned with reducing the level of task ambiguity amongst team members. According to Handy (1999), the more salient a task is and the less uncertainty there is associated with a task, the more commitment team members are likely to show and the more likely it is that team members are able to clearly establish their goals so that they can work towards them appropriately. In addition to this, Handy argues that clearly establishing the aims of the team will help the team in the forming and norming stages of group development as will be discussed later in section 2.6.2. The fourth and final stage of goal specificity is concerned with creating a criterion for effectiveness. The criterion for effectiveness is essential, as it is one of the key determinants affecting how the group will operate. For example if effectiveness is measured by time taken to complete a project, the team must have a more structured orientation whereby tasks are completed quickly and efficiently. However if effectiveness is gauged by cost of project then more significance and subsequently team focus should be placed on financial budgeting so that overspends do not occur.

All of the factors discussed are essential to the success of teams and in particular virtual teams; as according to the literature research has shown that lack of face-to-face communication and the use of rich media forms such as e-mail or video conferencing as substitutes for this can often lead to workers believing that tasks do not hold as much importance. This in turn can often result in lack of team cohesion, a decrease in the level of trust, and an overall greater risk of project failure (Mark, 1998).

Technology

Technology is a key characteristic of the virtual team as it provides the tools with which team members are able to co-locate themselves. The most common technologies used throughout virtual teams are similar to those used by virtual organisations and are either concerned with the development of strategic ICT-enabled networks (such as IOS), the use of rich media (for example, video conferencing and Halo technology) or the use of Internet technologies such as transmission control protocol (TCP), Internet protocol (IP) or packet switching (Carmarinha-Mastos and Afsarmanesh, 2003; Beise *et al*, 2004). Camarinha-Matos and Afsarmanesh (2003) support the use of ICT as an enabler of team co-location and argue that by 2015 most enterprises will be part of some sustainable collaborative ICT network, whether as a part of a complete unit such as the virtual organisation or as part of individual units such as virtual teams. Similarly, Wildstrom (2000) and Griffith *et al* (2003) argue that it is only through embracing new technologies that virtual teams are able to develop ICT infrastructures which in turn allow them to more adequately manage the transfer of information across time and space. Altogether, this means that not only are organisations being presented with new and innovative means of communication that no longer require team members to be geographically co-located. Furthermore, the apparent benefits of face-to-face teams such as the increased sense of trust and unity can now be replicated in the virtual environment, thereby breaking down the previously perceived barriers to adoption (Beynon-Davies, 2004; Steinheider and Bayer, 2004).

Heterogeneity

The Collins dictionary (2004) defines hetero as meaning something that is opposite or different. Within the context of the virtual team heterogeneity is concerned with both the variety of skills that are present within individual teams and the ability of the organisation as a whole to create a balance between the amount of employees with unique skills and those with interchangeable skills (Jackson, 1999 and Kirkman *et al,* 2004). Brennan and Braswell (2005) support this argument and propose that if any team wishes to succeed it is essential that team members have a variety of strengths and skills that other team members lack as this makes them more likely to respect one another's role within the group as a whole. A particular measure of the variety of skills within an organisation is associated with the level of knowledge that is present within individual members of that organisation. According to Griffith *et al* (2003), unless virtual team members have the necessary mix of knowledge to know when to utilise various skills and resources, then both the skills and knowledge that are present within the team are rendered worthless. Griffith *et al* (2003) argue that there are three main types of knowledge: *individual, social*, and *organisational*, each of which can be used to explain and better understand heterogeneity and ultimately the degree of successful skills transference within teams. For example, according to Griffith *et al* (2003), the first type of knowledge is individual knowledge, this they argue is concerned with the amount of *explicit* (communicated through the use of formal language, mathematical expressions and manuals), *implicit* (specific instructions are given and in carrying out such instructions underlying rules of operation are learnt without intent) and *tacit* knowledge (information and processes that are learnt through work and cannot be easily transferred) that is present within the virtual team (Berry and Broadbent, 1988; Perruchet *et al*, 2003; Koskinen, 2004). In understanding the degree of individual knowledge team members inherently become able to develop social knowledge. Social knowledge as defined by Spender (1996) is a collective form of knowledge that is publicly available or embedded within the routines, cultures, and norms of a group. As with individual knowledge it can be categorised into three distinct groups: *objectified* (knowledge that is explicit and known amongst team members), *collective* (knowledge has been internalised by organisation members, such as the steps needed to complete a certain process) and *shared understanding* (knowledge that is explicitly known, such as the knowledge that there is a dominant emergent leader). By understanding social knowledge and combining it with individual knowledge team members become able to acquire organisational knowledge. This, according to Griffith *et al* (2003) provides not only the structure within which individual and social knowledge are developed and transferred within a team, but also the structure within which knowledge can be utilised by individuals so that it is of value both now and in the future (Griffith *et al,* 2003, Upham, 2004).

However, though it is vital that all three types of knowledge are present within a team in order to achieve overall effectiveness, teams and in particular the virtual team must realise their *"potential knowledge"*. Achieving their potential knowledge comes from pooling the team's individual, social, and organisational knowledge so that the team can convert this pool into unified team effectiveness and goal accomplishment (Griffith *et al,* 2003). Nonaka (1994) argues that any organisation that is going to deal with a dynamically changing environment (such as the virtual environment) must be able to process both information and knowledge efficiently. This in turn Nonaka argues will allow individual knowledge to be both objectified and made collective at a social level, which as discussed creates organisational knowledge, which in turn directly correlates with organisational success through the easy transference of skills.

Time and Spatial Dispersion

Time and spatial dispersion is primarily concerned with the degree to which the internal elements of an organisation (for instance its, members, processes or hardware/software) are separated by either time or space. Whilst traditionally this was not an issue as team members were generally co-located, recent developments and advancements in ICT have allowed organisations to employ workers across greater distances. As a result, organisations have been forced to develop technologies that allow them to connect geographically de-located teams, in turn allowing the team to operate as a single unit (Gibson and Cohen, 2003; Malhotra and Majchrzak, 2005).

One increasingly popular method by which to do this is via IOS. As discussed in section 2.5.1, IOS allow dispersed groups to be connected via the use of ICT-enabled networks that transcend both time and space (Burn *et al*, 2002; Axelsson, 2003). Wiesenfeld *et al* (1999) argue that enabling communication between members of geographically dispersed teams is essential as it provides the means by which group norms and relationships are developed. Understanding the norms and cultures of team members whether from the same or different geographical locations is vital as although members of virtual teams are often distributed across time and space they still form part of an integrated interdependent team where the actions of one team member will affect the actions of all others (Chinowsky and Rojas, 2003). For example, if a team member makes a seemingly independent decision based on their current market position, they must also assess the impact this will have on other team members who may be operating within a different marketplace. As what may be successful in one market may have a detrimental effect in another. This further emphasises the importance of understanding the logistics of time and spatial dispersion if virtual teams wish to succeed.

Interdependence

Interdependency is defined as being a situation within which two or more elements are dependant upon one another (Collins Dictionary, 2004). This is a key variable to the both the formation and maintained success of the virtual team as at the core of any team is unity. Paré and Dubé (1999) support this and argue that a virtual team is a group of people who are both mutually dependent and perform tasks that are channelled towards a common purpose. Similarly, Gibson and Cohen (2003) argue that one of the key characteristics of the virtual team is that its members remain interdependent thereby allowing them to gain a shared understanding of what operations are necessary in order for the team as a whole to succeed. However, it must be noted that in order for interdependency to succeed and the end goal to be accomplished members of the virtual team must equally trust each other and hold a certain level of shared understanding. Cramton's (2001) mutual knowledge model (Figure 2.3) shows that members of the virtual team who do not effectively communicate, share knowledge and take account of team members similarities and differences (thereby not acting as an inter-reliant team) are more likely to fail than succeed. In the same way, Paul and McDaniel Jr's (2004) research found that the level of interdependency and type of trust present within the virtual team directly affects the performance of the team and therefore the team's ability to accomplish pre-set goals. These views support the argument that in order to be successful virtual teams must remain interdependent.

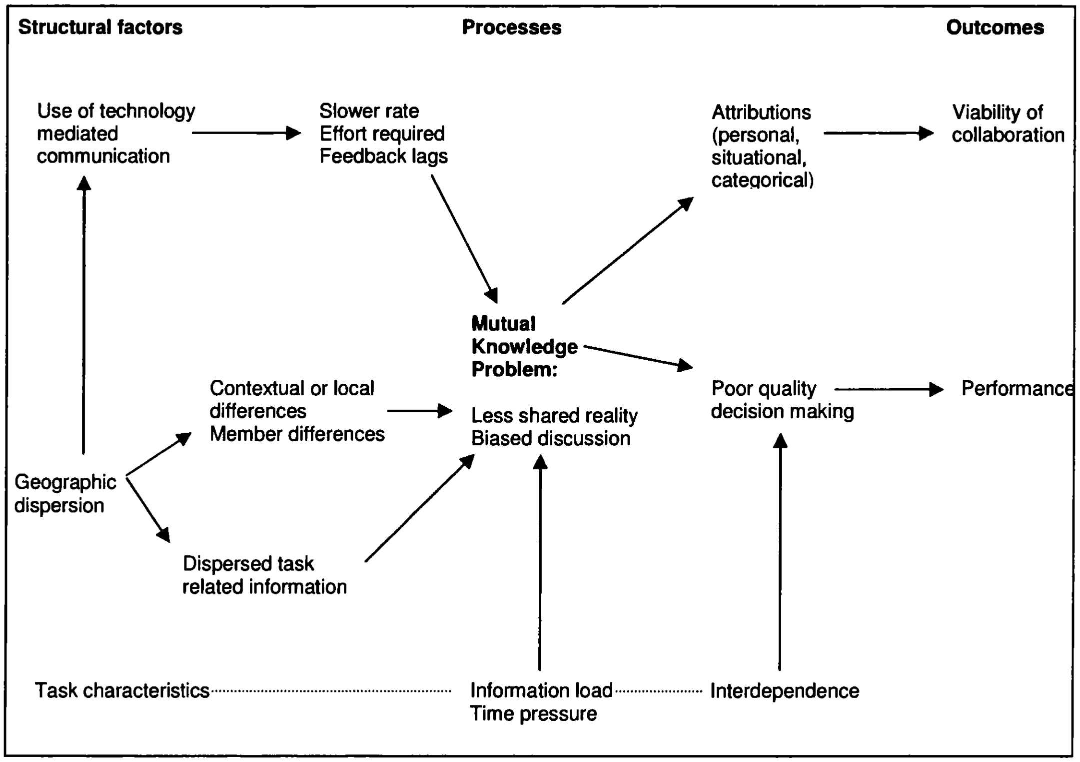


Figure 2.3: Likely Impact of Dispersion and Mediated Communication on Mutual Knowledge and on Collaborative Outcomes (source, Cramton, 2001, p. 351)

Complexity and Diversity

Complexity and diversity deals with the task and functional range that is present within the overall workforce and the extent to which different skill sets are present within individual teams. Furthermore, it examines the degree to which members of teams are multi-skilled and in turn how this attribute can be utilised so that the team can complete a variety of tasks at any one time (Haas *et al,* 2001; Gomar *et al,* 2002). According to Haas *et al* (2001), multi-skilled, multi-functional teams such as those created through the advent of the virtual team have a number of advantages over traditional teams, such as reduced labour costs, reduced turnover and improved productivity. However, in contrast to this Brusco and Johns (1998) argue that although having a multi-skilled team can help to improve productivity, if the workforce is poorly managed it can result in decreased levels of productivity as skills and resources are not being used to there maximum potential. It therefore becomes essential that virtual teams employ the second aspect of complexity and diversity, namely task allocation. The distribution of tasks amongst a team not only ensures that different members of the virtual team are allocated tasks that are relational to their skills; it also ensures that the tasks that are allocated are achievable and will result in the end goal being accomplished (Stough *et al,* 2000). Indeed, according to Seshadri and Shapira (2001) the ability to achieve and complete tasks is directly dependant upon factors such as time and task complexity. They suggest that the nature, time, and complexity of the task will directly affect the way in which the team is managed and ultimately determine the likelihood of failure or success. For example, managers who are in charge of teams that are dealing with long-term projects will manage differently to those that are managing short-term projects. Meaning that if a short-term manager is put in charge of a long-term team project and vice versa the task may inevitably become unachievable. This is significant for virtual teams as often they are created in order to fulfil both short and long-term objectives simultaneously and often within short spaces of time. Therefore, it is only through the proper management of multiple projects, the use of multidisciplinary teamwork and efficient task allocation that virtual teams can hope to succeed in adequately sustaining their competitive advantage in comparison to traditional forms of organising (Bal and Foster, 2000).

Formulisation and Modularity

Formulisation and modularity is concerned with the extent to which members of teams and in particular virtual teams are able to successfully create a series of both temporary and permanent relationships that allow them to effectively respond the changing needs of the marketplace (Rittenbruch *et al,* 1998). Furthermore, according to Brennan and Braswell (2005), formulisation and modularity can also be used to describe the extent to which members of virtual teams are able to successfully alternate their skills amongst members who are distributed across time and space. According to Gibson and Cohen (2003), members of virtual teams must learn to integrate their knowledge and resources and develop a set of established yet flexible rules and procedures regardless of time and space if they wish to succeed in the current global economy. Similarly, Jackson (1999) argues that in addition to ensuring the presence of flexible relationships members of virtual teams must also recognise the need for task allocation. This is because, it is only through the formulation of goals and the equal distribution of individual tasks that virtual teams can hope to achieve both their short and long-term objectives and ultimately make the most of the unique range of skills that come as part of having complexity and diversity within a team.

Trust

Trust is concerned with obtaining a degree of social cohesion amongst members of groups where there are loose interpersonal ties such as those found in the virtual team (Jarvenpaa and Shaw, 1998). According to Joni (2005), three types of trust develop as members of an organisation or team grow: *personal* (denotes the level of confidence one feels for their colleagues), *expertise* (the knowledge that all information that is shared is sound and accurate) and *structural* (the degree to which the current or future actions of others affects personal relationships). Joni (2005) and Brown *et al* (2004) argue that trust is essential to the development of successful business relationships as it helps to form the often-essential bond that holds members of teams together. Brown *et al* (2004) further argue that although the development of trust is vital within traditional organisations and teams it often becomes more of a necessity within virtual teams as the lack of face-to-face contact amongst members has the potential to create a hostile environment where ambiguity and uncertainty are prevalent (Rittenbruch *et al*, 1998). Therefore, in order to decrease the degree of ambiguity and uncertainty created by a lack of face-to-face communication, virtual team members must build and maintain trusting relationships so that they are able to operate effectively. For this reason trust is seen as being one of the pivotal elements to the successfulness of virtual teams and other intra-organisational forms whilst also being one of the hardest elements to achieve (Stough *et al,* 2000; Burn *et al,* 2002; Kirkman *et al,* 2002; Adler, 2003/2004; Paul and McDaniel Jr, 2004). One of the primary factors affecting the development of trust is that trust itself is not a constant amongst different cultures. Therefore, in order for global virtual teams to establish trust they must first overcome cultural differences. These differences can be explained using Hofstede's dimensions of culture, i*ndividualism vs. collectivism, power distance, uncertainty avoidance, and task relationship.* For example, Jarvenpaa and Leidner's (1999) suggest that those individuals that are part of individualistic cultures are better equipped at dealing with the versatile nature of virtual teams as they are more used to changing circumstances and versatility, so therefore their ability to trust is heightened. Considering this, it is therefore vital if virtual teams want to succeed that they take the correct steps in order to understand cultural differences so that they can achieve mutually beneficial trusting relationships that can be successfully maintained over time. If these actions are not taken it may mean that other components of the intra-organisational form such as heterogeneity may not flourish.

2.6.2 Stages of the Virtual Team

As previously discussed, organisations are increasingly utilising virtual teams as a means of addressing the changing demands of a global and ICT based environment (Joy-Matthews and Gladstone, 2000). According to Furst *et al* (2004), virtual teams not only allow organisations to meet the shifting demands of the 21st century they also provide a means by which organisations can pool their talents and resources. Considering this, it is therefore unsurprising that general interest in team development has been consistent throughout the years. Indeed, in 1965 and again in 1977, Tuckman and Jenson identified the five key stages in the process of group formation with the aim of better explaining how teams can be successfully developed and maintained. They identified the five stages of team formation as: f*orming, storming, norming, performing* and *adjourning.* According to Furst *et al* (2004), each of these stages can be adapted and applied to the successful development and maintenance of virtual teams as they help both team members and managers to understand the key actions that must be taken in order to achieve virtual team success. The following sections overview each of the stages of Tuckman's (1965) life cycle within the context of the virtual team.

Forming

The forming stage is the first step towards the development of a virtual team. It is at this stage that potential members of a team get to know each other, start to exchange information about themselves and the overall project, establish both group and individual goals, and most importantly establish trust (Furst *et al,* 2004). Both Joy-Matthews and Gladstone (2000) and Furst *et al* (2004) agree that there is likely to be a large degree of anxiety during formation as the development of relationships between team members which normally takes place via face-to-face meetings is not always possible in virtual teams. This in turn can result in the level of trust within the team being either lower or taking longer to develop. Indeed Cascio (2000) suggests that along with other aspects the lack of trust in the initial stages of virtual team formation can lead to possible failure of the virtual team and consequently the project as a whole. It is therefore vital that this stage in the virtual teams life cycle is properly handled as it forms the base upon which the overall structure of the team is created.

Storming

Storming is the second stage in the virtual team life cycle. It occurs once the team has been established and rules and guidelines have been set. During the storming stage group members begin to ascertain roles and responsibilities and any grievances between members are aired (Furst *et al,* 2004). In many cases, the storming stage can be lengthy due to the nature of communication utilised by virtual teams. For example resolving grievances in a face-to-face environment may take minutes or hours; however, when team members have to communicate virtually they may have to wait days or weeks for a colleague to respond to an e-mail or telephone call. Consequently, resolution of conflicts can take much longer than originally anticipated. Indeed, Rickards and Moger (2000) argue that in some cases the storming stage may never end if grievances are left unresolved. If this is the case, then as with the formation stage, the result will be both team and project failure.

Norming

It is at the norming stage that group cohesion starts to occur. According to Furst *et al* (2004), this is the transition or midpoint of the virtual team life cycle where team member's relationships are strengthened and group norms are established. According to Joy-Matthews and Gladstone (2000), the group norms established during norming can either enhance or limit performance. Performance can be enhanced by creating a consistent flow of activities with less conflict, or performance can be limited, if the norms created are not suitable for all members. In both cases, regardless of which and what norms are aiming to be established virtual team members must ensure that they develop (alongside these norms) trusting relationships with their colleagues. According to Furst *et al* (2004), the establishment of trust is vital if members of virtual teams wish to work through their differences and eventually establish solid relationships. Indeed, it is argued that building trust and developing relationships will form the base for eventual business success.

Performing and Adjourning

Performing according to Tuckman (1965) represents the final stage of team formation. By the time team members have reached this stage Tuckman believes that they should be aware of the various skills and knowledge that are present within the team and how these can be used most effectively to benefit the team. Furthermore, Tuckman (1965) argues that at the performing stage virtual team members should have a sufficient degree of unity to allow them to successfully work towards the completion of individual and an overall end goal(s).

Following the performing stage and once the end goal has been met virtual team members enter the adjournment period of the life cycle. Similar to the termination stage in the virtual organisation life cycle (see section 2.5.2) adjournment occurs once the original business need for the creation of the virtual team has been fulfilled. It is at this point that Tuckman and Jenson (1977) suggest that the virtual team disbands. However, according to Joy-Matthews and Gladstone (2000) it is also possible that team members maintain some type of informal contact. The primary reason behind this is because virtual teams are normally time and effort intensive to set up team members do not want to waste the contacts they have made. In line with this Joy-Matthews and Gladstone (2000) argue that after the end goal has been completed there are three possible routes that members of a virtual team can take. They can either expand the initial scope of the project to include further tasks, they can form a community of practice whereby group members make themselves available to each other for future use or the virtual team can disperse. Note that in many cases, in due to the reasoning highlighted earlier it is more likely that members will form a community rather than disperse completely.

2.7 External Impact of ICT

As has been discussed in the previous sections, a great deal of literature has focused on the internal impact of ICT within organisations such as its affect on structure, hierarchy and span of control. However, as the dominance and reliance upon ICT within organisations grows research has also come to focus on the external impact of ICT - such as its increasing affect on consumers and the nature of the products and services provided in today's marketplace. One of the key areas of research is that concerned with examining the factors that affect consumer acceptance of new technology. This area of research has received particular attention because in understanding the factors that affect consumer acceptance of new technologies, organisations are also able to increase the likelihood that their product and or service is adopted by consumers, thereby increasing the likely ROI (Davis *et* al, 1989; Venkatesh, 1999; Venkatesh *et al,* 2003).

The aim of the following section is to explore current research associated with the consumer adoption life cycle, and examine the phenomenon within the specific context of ICT so that sufficient background for the second theoretical viewpoint of this Thesis is provided.

2.8 Adoption of Innovations

The process that underlies the diffusion and subsequent use of new technology can be likened to the stages of a classical adoption life cycle. By understanding the dynamics of what is known as the consumer decision-making process, practitioners and researchers are able to predict the factors that will motivate an individual to act. According to the literature, the two most significant factors affecting consumer adoption of innovations and in particular new technology are behavioural intention and attitude (see for example, Fishbein and Ajzen, 1975; Davis, 1989; Sheppard *et al*, 1998; Albarracin *et al,* 2001; Ajzen, 2002). In view of this argument, the following sections discuss the different characteristics of adoption and their associated adopter categories as outlined by Rogers (1995). In addition to this, each stage of the consumer adoption life cycle (decision life cycle) is described with the aim of explaining how each phase contributes towards the formation of attitudes, intention and ultimately behaviour.

2.8.1 Characteristics of Adoption

The diffusion of an innovation into the marketplace is defined by Mahajan *et* al (1990) as being concerned with the cumulative increasing degree of influence on an individual to adopt or reject an innovation. In order to increase the likelihood of adoption and subsequent rapid diffusion of a new product Rogers and Shoemaker (1971) argue that five key competencies should be understood, namely: *relative advantage, compatibility, simplicity, observability,* and *trialability.* Akhavein *et al* (2005) support this view and argue that by understanding these key variables organisations can ensure the faster diffusion of an innovation into the marketplace. This they argue will in turn lead to a more immediate positive impact for the supplier and a higher overall social return on the initial investment for the individual.

The first competency proposed by Rogers and Shoemaker (1971) is relative advantage. Relative advantage can be defined as the degree to which a consumer perceives a new product as being superior to those already available in the marketplace (Triandis, 1977; Moore and Benbasat, 1991; Assael, 2004). Brancheau and Wetherbe (1990) support this; however, they argue that relative advantage is determined not only by the perceived benefits of a new product but also by the degree of fit between the product and the potential adopter's task environment; such that the more of a fit between the new product and the user's objectives and general behaviours, the more likely the individual is to adopt. Lin and Wu (2004) add to this and argue that individuals are more likely to adopt a new product if it provides them with an increased level of efficiency. The second factor affecting innovation adoption is compatibility. Compatibility, deals with the expectations the consumer has about a new product based on their existing needs and attitudes and their past experiences (Okada, 2005). According to Assael (2004), in order to be accepted consumers must be able to relate their perceptions about existing products to their expectations of a new product. This means that if there is a large degree of discrepancy between the two opinions then the consumer is unlikely to accept the innovation, and subsequently adoption will not occur. In addition to this, Venkatesh and Brown (2001) argue that compatibility also deals with the extent to which the new product is well matched to the products that consumers already use. They argue that the more a user has to adapt their existing behaviours in order to accommodate the innovation, the less likely it is that it will be accepted. The third determinant of adoption is simplicity. Simplicity deals with the ease of understanding associated with a new product or service (Rogers and Shoemaker, 1971; Moore and Benbasat, 1991). As will be discussed in section 2.9.1, the associated ease of use of a new product directly affects the individuals overall attitude towards the product and their associated perception of how useful the product will be (Davis *et al*, 1989). Overall, this means that the easier an innovation is to understand and use, the more likely it is to become adopted and vice versa (Assael, 2004). The fourth and final factors which affect adoption are obeservability and trialability. Whilst observability is concerned with the ease with which the new product can be observed and communicated amongst potential consumers, trialability deals with the degree to which a product can be tried before it is adopted (Assael, 2004). In both cases, as with the other characteristics that encourage adoption, the greater the extent to which each of these elements is present in new products or services the more likely it is that adoption and usage will occur. Indeed, according to Gatignon and Robertson (1989), the more information and incentives (such as trials) the individual is exposed to the more likely they are to adopt a new product. Furthermore, they argue like Geoghegan (1994) that characteristics such as observability and trialability are most significant at the early stages of adoption when individuals are more susceptible to external stimuli, as this is when they have yet to form an opinion regarding the new product.

Although understanding Rogers and Shoemaker's (1971) encouragers of adoption is often enough to predict the rate of acceptance and diffusion of new products or services into the marketplace; according to both Assael (2004) and Shih and Venkatesh (2004), there are a number of others variables that must be considered. In technology specific terms Shih and Venkatesh (2004) argue that factors such as experience (positive or negative), competition for use, satisfaction from use and sophistication of technology are influential in determining usage behaviours. Whilst in more general terms Assael (2004) propose that factors such as time and culture are highly significant. Assael (2004) argues that in terms of time there are two key aspects to consider: *time taken to adopt* (this will be looked at in greater detail in the following section) and *rate of diffusion* (concerned with the speed and extent to which adoption takes places across social groups).

Leading on from this, as will be discussed in section 2.8.2, Rogers (1995) has developed a classification of adopters based on individual's time taken to adopt (classifications were based on an examination of over 500 studies on diffusion). As a result of his research, Rogers proposes that adopters can be classified into five categories that fall along a bell shaped normal distribution curve (in the majority of cases). The five grouping of adopters are: *innovators, early adopters, early majority, late majority* and *laggards.* Each of these classifications represents a stage in the adoption process and can be used by organisations to hypothesise the likely time it will take consumers to develop attitudes and intentions and subsequently adopt a new product or service. The second variable associated with adoption rate is the rate of diffusion. According to the literature, there are a variety of factors which affect the rate at which a product is diffused into the marketplace, the most notable of which are as Rogers and Shoemaker's (1971) five competencies of innovation as outlined earlier. However, the literature also proposes that factors such as communication and culture play a vital role in determining the rate at which a new product or service is adopted. For example, according to Assael (2004), communication is the last key element in the definition of diffusion as it is the primary means through which information regarding the innovation is distributed amongst consumers. Assael (2004) argues that in terms of communication and propagation of information the most significant social groups are heterophilous groups. Heterophilous groups represent relationships formed outside of an individuals personal network and are often associated with limited or occasional contact (an example of which may be a running partner or work associate). Many authors argue that although the ties in heterophilous groups are weak they are strong enough to fuel the process of diffusion because although word of mouth is more common amongst peer groups, the communication that occurs in heterophilous groups is more likely to build bridges and consequently spread further. Indeed, according to Shih and Venkatesh (2004), when individuals are left to asses an innovation alone they are more likely to feel discouraged which in turn may lead to them rejecting the innovation (especially in the case of major innovations such as new technology). It is therefore vital that organisations ensure the individual is exposed to as much positive communication as possible from both peers and mass media if an innovation is to be accepted. The most common means by which to disseminate information amongst social groups is via the trickle down, trickle up and trickle across effects (Assael, 2004 citing Veblen (1912) and Simmel (1904)). Each of these processes deals with the transference of information within the social hierarchy, whereby opinions and information regarding innovations are communicated either from the higher levels down and vice versa, or, across groups regardless of socioeconomic status. However, the extent to which each of these methods is effective is often dependant on culture, the second determinant of diffusion. Both Takada and Jain (1991) and Rogers (1995) argue that cultural norms shape the extent to which an innovation will be accepted and consequently diffused into the marketplace, as culture affects attitudes and intentions. They argue that high context or homophilous cultures that have little difference in their norms, values, and socioeconomic status place more value on the group and interpersonal communication, consequently meaning that that the diffusion of innovations is likely to be accepted at a faster pace. This they argue is because not only are there fewer barriers to communication (due to the uniformity of the group); furthermore, in homophilous groups the information that is disseminated has greater credibility because it is based on the opinions of peers, friends and relatives rather than those portrayed by the mass media (such as in heterophilous groups).

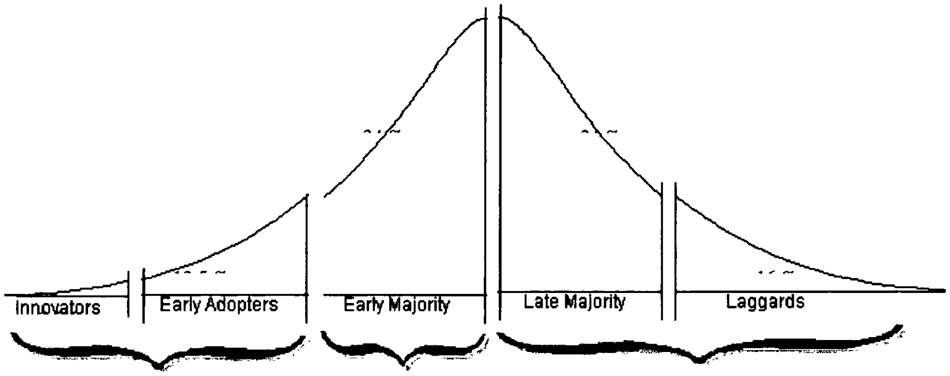
Taking all of the aforementioned factors into consideration, in practical terms if organisations want consumers to accept, adopt and consequently intend to use a new product or service they must ensure that: the product offers additional benefits above those products already available, the product meets consumers expectations, it must be easy to understand and openly observed and it must have a certain degree of trialability thereby reducing the associated risk. If all of these factors are implemented and considered, then the rate of diffusion and ultimately acceptance of new products and services is likely to significantly increase.

2.8.2 Adopter Categories

Adopters of new products and services are categorised according to the time taken to adopt an innovation. The five groups of adopter based on Rogers's (1983, 1995) diffusion research are: *innovators, early adopters, early majority, late majority,* and *laggards.* The average distribution of these adopters across the population is presented in line with Rogers arguments in Figure 2.4. In addition to this, the subsequent paragraphs briefly describe each of the genres of adopter and examine the most significant determinants of their behaviours. In turn, this allows for the key factors that affect product diffusion to be identified (factors affecting technology acceptance in particular will be discussed section 2.9).

The first category of adopters are referred to as innovators and represent on average the first 2.5 percent of all those who adopt. The literature suggests that innovators are characterised by high incomes, better education and are likely to be active outside of their initial community. In addition to this, they are less reliant on group norms and more self-confident in their general approach, which consequently results in them being more likely to accept innovations based on instinct alone (Parker, 1992; Mahajan *et al,* 1990). The second category of adopters is early adopters. Early adopters represent approximately 13.5 percent of the adoption life cycle and are characterised as being opinion leaders who are more orientated to their local community and because of this are more likely to affect word of mouth (Mahajan *et al,* 1990; Assael, 2004). The third and fourth categories of adopter represent the majority of the population and each account for 34 percent of the adoption life cycle. These individuals are known as the early and late majorities and are seen as the most sceptical of all adopters (Rogers, 1995). Assael

(2004) argues the early majority are likely to adopt after they have evaluated a variety of brands and have a significant amount of information; this is because they are primarily focused around risk avoidance. In addition to this, Assael (2004) suggests that the early majority are the most influential group as they represent a bridge between innovators and late adopters. In comparison to this, the late majority are the more sceptical of the two dominant groups and are more likely to adopt due to pressure to conform rather than individual choice thus making them more susceptible to mass media and more akin to the heterophilous groups discussed earlier. Finally, the last genre of adopters is laggards; laggards represent the final 16 percent of the population and are in some respects similar in characteristics to innovators in that they not do rely on group norms and instead make their decisions based on traditions and past experiences. Indeed, Parker's 1992 study of first time property purchases showed that the purchase decisions made by the late majority and laggards were not dissimilar (in terms of price sensitivity) to those made by innovators and early adopters.



Primary Drivers:	Hedonic outcomes Social outcomes	Utilitarian outcome Social influences	Fear of obsolescence
Secondary Drivers:		Difficulty of use	Lack of utilitarian outcomes

Figure 2.4: Mapping Adopter Determinants to Rogers' 1995 Adopter Categories (source: Venkatesh and Brown, p.21, Fig 2, 2001)

2.8.3 Consumer Adoption Life Cycle

The adoption of a new product or service requires an individual or group to make a decision regarding the action they are going to take in response to the presence of an innovation. According to Assael (2004), this process of decision-making and ultimately adoption can be characterised in six sequential steps. As shown in Figure 2.5, the six steps of the adoption process are: *need arousal/awareness, knowledge, evaluation of alternatives, trial, adoption* and *post purchase/usage evaluation.* The following paragraphs briefly define each of the aforementioned stages in order to provide the reader with a basic understanding of the consumer decision process, so that the context within which innovations (such as ICT) are diffused into the marketplace can be understood. Note, a comprehensive examination of consumer adoption and decision making is beyond the scope of this Thesis, and for further information regarding this subject, the reader should examine studies such as Rogers and Shoemaker, 1971; Engel *et al,* 1978; Bettman and Park, 1980; Häubl and Trifts, 2000; Lye *et al,* 2005.

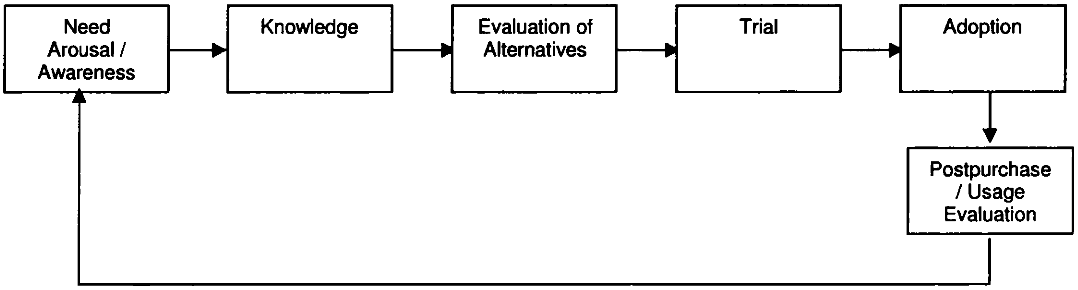


Figure 2.5: Steps in the Adoption Process (adapted from Assael, 2004)

Need arousal, represents the first stage of the adoption process and is concerned with the point at which an individual recognises a disparity between their current situation and some desired goal, this disparity then produces a motivation to act within the individual. For example, the need for a more efficient PC that can process greater amounts of information will motivate the individual to look for a new PC which can fulfil its needs (Sheath, 2000). According to Babin *et al* (1994) and Okada (2005) amongst others, there are a number of input variables that contribute towards need arousal, examples of which include, past experiences, personal characteristics, marketing stimuli and environmental influences. However, amongst the most common theories associated with need arousal is Maslow's (1954) motivational theory (Katz, 1960; Geoghegan, 1994; Ventegodt *et al,* 2003). According to the theory, individuals are motivated to act based on an exponential hierarchy of needs whereby the first level of need must be satisfied before the next higher level of needs is activated. The five levels from lowest to highest are:

1. Physiological – food and water
2. Safety – security and stability
3. Social – friendship and acceptance
4. Ego – success and self-esteem
5. Self Actualization – self-fulfilment

Despite the obvious explanatory power of Maslow's theory, in order to provide a more comprehensive understanding of the consumer decision process it is necessary to examine the different types of need. In their 2001 study, Venkatesh and Brown identified that each of Rogers's (1983, 1995) adopter groups were influenced by not only social outcomes such as ego but also by the effect of utilitarian and hedonic needs. Utilitarian needs represent the most common need and are generally satisfied when the individual achieves some sort of practical benefit from adopting a product or service (Okada, 2005). In contrast to this, hedonic needs are fulfilled when an individual has achieved some form of pleasure from a product, this can take the form of an emotional reaction to the product or an idealist view of what product usage will allow or facilitate (Assael, 2004). Understanding which needs the consumer is trying to fulfil is vital in achieving adoption of an innovation because through this understanding the organisation is able to tailor their marketing stimuli amongst other things directly to the consumer's desires (Okada, 2005). In turn, this means the correct need will be aroused and consequently the consumer is more likely to be motivated to act. A summary of Venkatesh and Brown's (2001) categorisation of the effect of different needs on Rogers (1983, 1995) adopter groups can be found in Figure 2.4.

The next two stages in the consumer adoption process are concerned with the gathering of information and the evaluation of alternatives. These stages of the life cycle deal with the way in which the consumer searches for, interprets, and ultimately retains information so that they can make an informed choice as to which product is most in line with their desired outcomes (Engel *et* al, 1978; Olshavsky and Granbois, 1979; Assael, 2004). According to Okada (2005), the evaluation of alternatives and the overall search for knowledge is different in the case of each consumer and can dramatically vary in length. This is because, the amount of knowledge collected is generally dependant upon whether the product has a high or low level of consumer involvement and whether there is a high or low risk to gain ratio (Sheath, 2000). For example, if a consumer is considering adopting what is perceived as a high risk innovation such as using the Internet for shopping then they are likely to gather more information, seek greater approval from peers and evaluate a larger number of alternatives methods. However, if the product is deemed low risk such as the purchase of food or clothing then less information is needed and fewer alternatives are assessed.

Once the individual has selected which product to adopt, the next stage in the adoption process is trial. As discussed in section 2.8.1, the trialability of an innovation is of particular significance as in many cases users are unfamiliar with the new product or service and are therefore more apprehensive about adoption. In view of this, Parker (1992) argues that users are more likely to accept an innovation if it can be consumed in smaller quantities or on a temporary basis. The primary reason for this is that being able to trial a product ultimately reduces the amount of risk associated with complete adoption and therefore represents a more appealing state to the consumer (Assael, 2004). At this stage in the life cycle, two of the most important factors affecting consumer adoption of innovations need to be considered, namely, attitudes and intention. Attitudes and intention play a significant role in the trial stage as it is at this point that organisations have the opportunity to encourage positive consumer attitudes. Consequently, if positive attitudes are formed, the consumer is more likely to convert their attitudes into actions, which ultimately lead to adoption (Sheath, 2000). However, in order to effectively influence attitudes organisations must ensure they are targeting the right attitude. Indeed, according to Assael (2004) quoting Katz (1960) and Snyder and DeBono (1989) there are four classifications of attitude function, each of which can help organisations to understand how and why consumers make the selections they do: *utilitarian* (fulfilment of needs and desires), *value-expressive* (how the innovation reflects on the consumers self-image), *ego-defensive* (reduction of consumer anxiety) and *knowledge* (attitudes help consumers to organise the mass or raw information, allowing for a reduction in confusion and uncertainty). Assael (2004) argues that by combining aspects of each of the listed attitudes and by understanding their functions, organisations are able to understand how they can best serve the individuals wants and needs and ultimately motivate them to act. The work of Fishbein (1963) supports this theory suggesting that attitudes act as the first step in a three-stage process that is made up of attitudes, intention, and ultimately behaviour. Similarly, Venkatesh and Brown (2001) argue that in understanding the relationship between salient determinants such as attitude or needs, we are also able to understand an individual's intentions and subsequent adoption behaviours. The final two stages of the adoption process are adoption itself and post purchase/usage evaluation. Whilst the adoption process is self-explanatory, the final stage, post purchase/usage evaluation is less so. This stage deals with the period after adoption and is concerned with the way in which consumers evaluate the performance of the product or service in terms of consumption. It is at this final stage that consumers evaluate whether their expectations have been confirmed and adoption of the innovation was a good idea (Sheath, 2000). From an organisational perspective the post evaluation stage represents the point at which suppliers must reinforce attitudes in order to either solidify a positive experience or reverse a negative experience (Assael, 2004). Both these actions are done with the overall objective of ensuring a positive attitude is retained by the consumer so that repeat usage of the product or service will occur in the future.

This section was designed to provide a general understanding of the consumer adoption process with the aim of explaining how each stage contributes towards to the formation of attitudes and ultimately behavioural intention. It is anticipated that by providing a general understanding of some of the theories associated with the adoption process, a greater understanding of innovation acceptance as a whole will be attained. Using the theories and concepts presented here as a base, the following section goes on to examine consumer adoption within a technology specific context.

2.9 Consumer Acceptance of New Technology

The increasing growth of ICT and electronic services (e-services) over the last few years has meant that technology now plays a pivotal role in the majority of today's organisations (Gefen and Straub, 2003; Sambamurthy *et al,* 2003; Venkatesh *et al,* 2003). Indeed, Venkatesh *et al* (2003) quoting Westland and Clark (2000) state that some estimates suggest that since the early 1980s approximately 50 percent of all new capital and company investments have centred around IS and ICT. Consequently, this has meant that consumer's exposure to ICT on an everyday basis is ever growing, and the technology powering systems is increasingly moving to the foreground (Koufaris, 2002). Indeed, the dominance of ICT-related products and services is visible throughout a wide variety of industries ranging from private sector corporations who increasingly rely on the Internet as a vehicle for the marketing and 24 hour supply of goods, to the education sector, where according to Leonard (1999), success is achieved not because of hiring more faculties, or attracting more students to the physical campus, but instead via the development of virtual academic environments which rely on digitisation (Hamill, 1997; Kanter, 2001; Tianfield and Unland 2002). However, before technologies can improve productivity and ultimately replace traditional systems and processes, they must first be understood, secondly accepted and ultimately, used (Davis *et al,* 1989; Venkatesh, 1999; Venkatesh *et al,* 2003). It is therefore critical that any type of organisation (if they wish to see a return on investment) understand as a whole what factors affect IS and ICT usage and acceptance. In light of this it is therefore unsurprising that the concept of user technology acceptance as a whole has received wide and intense interest among IS researchers (Chau, 1996; Mathieson *et al,*, 2001).

At present, there are a vast number of theoretical models (primarily based on the theory of reasoned action (TRA) and the theory of planned behaviour (TPB)) that aim to explain human behaviour in relation to innovation acceptance. However, perhaps the most widely cited and pre-eminent model in the field of ICT and IS is the TAM originally developed by Davis in 1986 (Veiga *et al,* 2001; Gefen *et al,* 2003; Wang and Butler, 2003; Chen *et al,* 2004). The following sections provide a brief overview of the existing literature associated with the TAM and examine the constructs and relationships present within the model. Note that, it is not the aim of the Thesis to examine TAM in depth but rather to acknowledge its presence and examine its role within the greater phenomenon of consumer acceptance of new technology.

2.9.1 Technology Acceptance Model

TAM (shown in Figure 2.6) focuses on explaining and predicting an individual's adoption of a given technology based on the assumption that the technology is completely new to the user (Szjna, 1996). Originally developed by Davis in 1986 it is an adaptation of the TRA tailored specifically for modelling user acceptance of technology. Its overall aim is to provide an explanation of the determinants of user acceptance of technology that are generalisable and capable of explaining the phenomenon across a broad range of products and services (Davis *et al*, 1989). TAM, like other theories before it hypothesises that there are two key factors that can be used to predict actual system usage, namely: *behavioural intention* (BI) (that is, a person's actual intention to use the system) and *attitude* (A) (namely, how a person feels about a particular IS). However, in addition to this, TAM suggests that voluntary use of a system is based upon both the PU, (the belief that ICT and the IS will improve the users performance) and PEOU (the belief that the new ICT or IS will be easy to use and operate)) of the system, and in turn, each of these constructs (BI, A, PU and PEOU) is either directly or indirectly affected by external variables such as cost and consumer ability amongst others (Davis, 1986, 1989; Szjna, 1996; Mathieson *et al,* 2001; Gefen and Straub, 2003). In order to fully understand TAM it first becomes necessary to understand the nature of the links between the constructs. The following sections therefore describe the key hypotheses associated with TAM (that is PU and PEOU) and examine how they are linked to predictors of technology acceptance (that is A and BI).

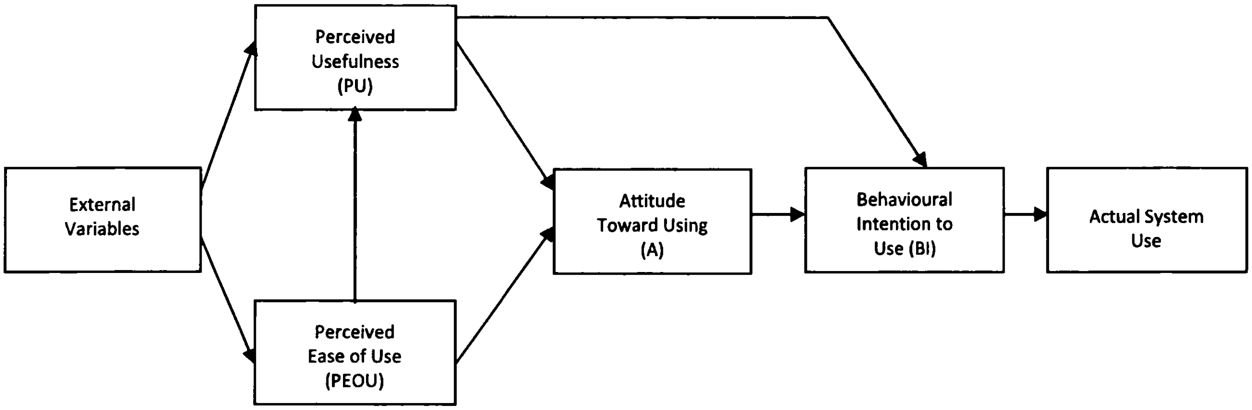


Figure 2.6: Technology Acceptance Model (Source: Davis et al, 1989)

Firstly, perceived usefulness, Davis (1986) defines PU as being the extent to which the user believes that in using a specific application or IS they will be able to increase their overall task performance. For example, if a tester believes that by using an application that allows him to automate tests he will be able to accomplish tasks more quickly, then he is more likely to want to use the application and vice versa. Within TAM, PU is hypothesised to have a positive effect on both A and BI, as the more positive intentions people form towards behaviours, the more likely they are to believe that conducting the behaviour will increase their task performance thereby encouraging use of the system. Similarly, an individual's attitude to the system will be positively affected by the degree to which they believe that use of the system will lead to positive outcomes (Davis *et al*, 1989). The second major determinant is PEOU. PEOU can be defined as the degree to which the perspective user expects the new system or application to be free from effort (Davis *et al*, 1989). In real terms, this means that the easier the new technology is to use, the more likely it is that the system will be accepted, and in turn the more likely it becomes that the user will develop a positive attitude towards the technology (A) (Davis *et al*, 1989).

However, it must be noted that although Davis *et al* (1989) argue there is an element of co-dependency between PU and PEOU, fundamentally they must still be viewed as distinct constructs. Davis *et al* (1989) argue that it is only by examining PU and PEOU individually that researchers are able to compare the relative influence of each belief in determining A and consequently BI. Furthermore, from a practical perspective, an individualistic approach allows practitioners to better identify the exact source of the problem in terms of what is affecting user acceptance. This then allows for the formulation of more responsive strategies in organisational terms, and the greater generalisability of theories in academic terms.

2.9.2 Extended Technology Acceptance Model

TAM was originally tested in an academic environment and predicted that three constructs affected A, BI and ultimately actual system usage. However, since its development, a number of further studies have attempted to increase the exploratory power of TAM by increasing the number of predictors. Amongst these extensions are: task familiarity, user involvement, user resources, gender, age, trust, and perceived risk amongst others (Davis *et al,* 1992; Hartwick and Barki, 1994; Gefen and Straub, 1997; Mathieson *et al*, 2001; Chau and Lai, 2003; Pavlou, 2003). These additions have consequently led to TAM becoming a more robust model in terms of technology acceptance, which in turn has led to its application in a wider variety of industries and cultures. A high level list of the various studies that have employed TAM and the various extensions made to the model is presented in Table 2.4.

Table 2.4: Applications of TAM in the Extant Literature

Study	**Sector**	**Constructs tested in addition to standard the TAM**
Davis (1989)	Education	Subjective Norm
Taylor and Todd (1995)	Education	Social Influences Behavioural Control
Igbaria *et al* (1995)	Education	System: Training Support Experience Quality
Gefen and Straub (1997)	World Wide Web	Gender
Venkatesh (2000)	Industry	Control Intrinsic Motivation Emotion
Mathieson and Chin (2001)		Perceived User Resources
Veiga *et al* (2001)		Culture (Hofstede's dimensions of culture)
Koufaris (2002)	Internet Shopping	Flow Theory
Chau and Lai (2003)	Internet Banking	Personalisation Alliance Services Task Familiarity Accessibility

Study	**Sector**	**Constructs tested in addition to standard the TAM**
Lu *et al* (2003)	Wireless Internet Mobile Devices	Technology Complexity Individual Differences Facilitating Conditions Social Influences Trust
Chen *et al* (2004)	Virtual Stores	Compatibility Trust Service Quality Product Offerings Information Richness

Although (as can be seen from Table 2.4), several studies have used TAM to predict acceptance of a variety of products and services, authors such as Lu *et al* (2003), Mathieson (1991) and Legris and Ingham (2003) argue that in order for the specificity and explanatory properties of TAM to be extended there is a need to incorporate further predictors of intention which will ultimately allow TAM to be integrated into a much broader model. They argue that this can be achieved via the addition of new predictors, the inclusion of further moderators or the exploration of supplementary theories. One such study that has successfully integrated TAM into a broader and more comprehensive model is Venkatesh *et al's* (2003) UTAUT. UTAUT (as will be discussed further in section 3.3 of Chapter 3) is a progressive model that combines well-established psychological theories such as innovation diffusion theory with more contemporary ICT specific models such as the Model of PC Utilization (MPCU) (Mallat, 2004). In fact UTAUT is based on as many as eight of the prominent theories and models currently associated with innovation acceptance: the *TRA, TAM, the Motivational Model (MM), TPB, Combined TAM and TPB (C-TAM-TPB), the Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT)* and *Social Cognitive Theory (SCT)* (See for instance, Fishbein and Ajzen, 1975; Ajzen, 1985; Bandura, 1986; Davis, 1986; Moore and Benbasat, 1991; Thompson *et* al, 1991; Taylor and Todd, 1995; Vallerand, 1997). In order to determine which elements of each theory would make up UTAUT, Venkatesh *et al* (2003) empirically examined each theory or model and the most informative constructs subsequently formed the base of UTAUT and are referred to as the as direct determinants of the model. The four constructs in question are: *performance expectancy, effort expectancy, social influence* and *facilitating conditions.* In addition to this, Venkatesh *et al* (2003) also identified three indirect determinants: *attitude toward using technology, self-efficacy* and *anxiety*, and four moderators: *gender, age, experience* and *voluntariness of use*. Each of these determinants in turn is hypothesised to have a positive effect on BI and ultimately actual system usage. The major benefit of UTAUT beyond other acceptance models is that according to Venkatesh *et al* (2003), because the model combines many theories into a single instance, its ability to predict the variance in intention to use is as much as 70 percent, whereas previously, all other models combined were only able to explain around 40 percent variance (Venkatesh *et al* (2003) cite Davis *et al,* 1989, Taylor and Todd, 1995 and Venkatesh and Davis, 2000 as examples of studies that have done this). For this reason, Venkatesh *et* al (2003) argue that UTAUT represents one of the strongest models that can essentially be used by organisations to assess the likelihood of success for new technologies and which can be used to help them understand the key drivers affecting consumer acceptance (Venkatesh *et al,* 2003). However, because UTAUT is a relatively new model in consumer acceptance terms (in comparison to some of the other more established theories such as the TRA and TPB), its use by researchers must be approached with caution (Pu-Li and Kishore, 2006).

2.10 Summary

This Chapter has provided a brief overview of the concept of organisational structures. It has identified traditional methods of structuring and noted that whilst the exact future of organisational structuring cannot be explicitly predicted, one certainty is that change is inherent and although there is *no one best fit* organisations must ensure that their structure accommodates both their own, and the needs of their external environment (Buhler, 2000). In addition to this, key changes in the marketplace that have affected organisational structure have been identified, the most notable of which include, the growing advancements in ICT and the increasing trend towards globalisation. These developments have consequently led to the formation of new more responsive organisational forms such as the matrix and team based structures, and most recently, the virtual organisation. In line with this growth towards flexibility and innovation amongst organisations the chapter has identified the characteristics of different levels of organisational virtualness through an examination of the virtual organisation and virtual team. Similarly, an investigation of the external impact of ICT was conducted with a focus on the increasing affect of ICT on consumers and the nature of the products and services produced. A review of the most common concepts and theories associated with innovation adoption was then presented followed by a specific examination of the dominant model associated with consumer acceptance of new technology, namely TAM.

A review of the extant literature concludes that although ICT and other such enabling technologies have been present in society for the past 50 years it is only in the past 10 years that organisations have utilised these technologies to their full advantage to enable them to become more flexible and respond swiftly to the changes in today's marketplace either through the development of new organisational forms, the creation of more innovative teams or the production of technologically enabled products. The Chapter therefore concludes with the claim that not only has ICT recently allowed organisations to produce more innovative products and services; it has also given rise to a series of new organisational structures (forms) which utilise ICT in order to facilitate flexibility, innovative working practices and maintain competitive advantage. It is important to note that because both the areas of new organisational forms and consumer acceptance of new technology are vast, it has not been the intention of this Chapter to provide coverage of the complete subject area, but instead to provide the reader with an insight into the background behind these phenomena so that the remainder of the Thesis can be viewed within its proper context.

Chapter 3

Theoretical Models

3.1 Introduction

The purpose of this Chapter is to define the constructs and structures of the models which have been used to investigate organisational virtualness and user acceptance of new technology within the context of this Thesis. The models in question are Travica's (2005) ISSAAC model and the UTAUT as developed by Venkatesh *et al* (2003). In addition to this, the Chapter provides the foundations upon which the empirical analysis of both models took place.

3.2 Organisational Virtualness – ISSAAC

At present, there is an abundance of literature that examines the individual characteristics, drivers and enablers of various virtual forms (Bryne, 1993; Franke, 2001; Ratcheva and Vyakarnam, 2001; Saabeel *et al,* 2002; Gibson and Cohen, 2003; Kirkman *et al,* 2004; Goodbody, 2005). However, as yet there is little to no literature supported by empirical evidence that explores the dynamic relationships between these characteristics / drivers or which examines whether different virtual forms can be explained using a common model (Travica, 2005). In light of this, one of the models examined in this study namely Travica's ISSAAC model (shown in Figure 3.1) examines the relationships between the characteristics of virtual forms with the aim of ascertaining interdependencies between the constructs and in order to provide a greater understanding of the phenomenon of organisational virtualness as a whole. Travica's (2005) ISSAAC model was originally created as a vehicle for assessing both virtual organisations and the degree of virtualness within organisations and teams. However, though Travica (2005) clearly defined what he believes to be the key characteristics of organisational virtualness he failed to specify the direct nature or direction of the relationships between these characteristics. In addition to this, because the model has to date only been examined qualitatively it lacks extensive empirical support. This study therefore uses the extant literature associated with inter and intra organisational virtualness (mainly via an examination of the virtual organisation and virtual team respectively) in order to expand Travica's definitions of the constructs of ISSAAC and more clearly define the nature and direction of the relationships within the model. Following this an empirical analysis of the model and its associated hypotheses took place in order to advance validation of ISSAAC beyond its current state.

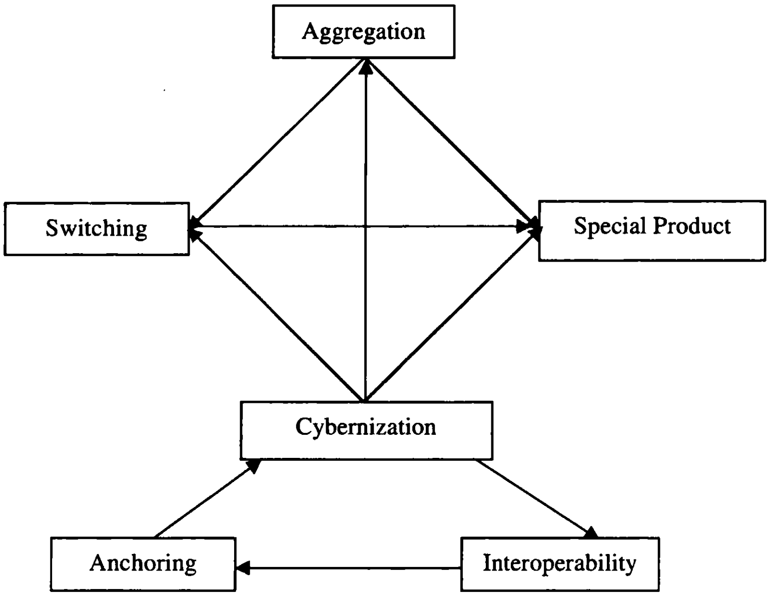


Figure 3.1: The ISSAAC Model (source: Travica, 2005)

The creation of an empirically tested model that is capable of explaining a variety of virtual forms is of particular significance because as argued by Travica (2005) examining virtual forms as separate entities conceals common characteristics and complicates the definition of the phenomena as a whole. Considering this, the model presented in this Thesis is derived from a variety of sources related to organisational virtualness in order to reflect both the current and likely future trends in the literature, and to help clarify what is meant by the virtual form. Travica's (2005) ISSAAC model was selected above other models and theories associated with organisational virtualness as it was felt that the characteristics shown within the model were the most generalisable and could therefore be used to represent a variety of virtual forms along a scale of virtualness. In addition to this, since Travica (2005) argues that the model lacks quantitative analysis it is anticipated that by examining the model in a 'real world' context and applying quantitative techniques, not only will the general understanding of organisational virtualness be greatly enhanced, but also that this Thesis will make a contribution to the existing literature.

Each of the constructs of ISSAAC are defined in section 3.2.1 accompanied by an examination of each constructs associated hypotheses. Note that, within the context of ISSAAC, although the presence of indirect relationships is not excluded, only direct causal relationships are hypothesised. This has been done in order to remain true to Travica's (2005) original suggestions.

3.2.1 Constructs of ISSAAC

The structure of Travica's (2005) ISSAAC model is made of up of six of the key characteristics associated with organisational virtualness. Using the extant literature as a base the following sections define each of the constructs of ISSAAC expanding upon the definitions originally proposed by Travica (2005). The root variables of each construct are shown below each definition in Table form and are derived from an examination of both virtual organisations and virtual teams (see Tables 3.1 to 3.6). In addition to this, accompanying each construct is a brief explanation of the associated hypotheses which suggest the interdependences that may be apparent within the model. Note that, since Travica (2005) failed to specify the direction of these relationships, the extant literature has been used as a guide in order to specify how each construct affects or is affected by the other constructs. The ISSAAC model showing the theorised directional paths is shown at the end of the section in Figure 3.2.

Interoperability

Interoperability is defined according to the level of interdependence that exists amongst members of virtual forms (Gibson and Cohen, 2003). However, according to Travica (2005), within the majority of virtual forms the role of interoperability is two fold and deals with not only the development of group dynamics (in the form of team objectives and assigned responsibilities), but also with the creation of a shared skill set and the development of group vocabulary. Creating this sense of unity according to Adler (2002/2004) is essential as it ensures that the discourse that may have previously existed amongst individual organisations is dissolved as soon as the members become part of a single group (represented by the concept of a virtual organisation).

In addition to the various dimensions of interoperability, Travica (2005) also argues that interoperability should be assessed on two levels: *technical* and *social*. Technical interoperability, as the name suggests deals with the technical or ICT specific aspects of the virtual organisation. Examples of technical interoperability include: the development of IOS, the creation of like ICT standards, hardware and software and the use of the same collaborative communication techniques (such as virtual rooms or WebEx, lotus notes, Microsoft Outlook or instant messaging platforms) (Travica, 2005). According to Igbaria *et al* (1999), the presence of technical interoperability helps to ensure that communications amongst members of the virtual form is as efficient as possible and is not constrained by factors such as geography amongst others. The second facet of interoperability is social interoperability. Within the majority of virtual organisations social interoperability deals with both the extent to which strategic goals, priorities and schedules are shared amongst partners and, the extent to which the creation of these shared goals leads to interdependence amongst the members of the virtual organisation (Barnes and Hunt, 2001; Travica, 2005). According to Gibson and Cohen (2003), ensuring the success of social interoperability will lead to the development of a trusting environment where members feel free to share skills and knowledge in order to achieve the overall common objective of the virtual organisation (Rittenbruch *et al*, 1998; Paré and Dubé, 1999; Cramton, 2001; Afsarmanesh and Camarinha-Matos, 2005). The presence of social interoperability is vital to any virtual form as according to both Seshadri and Shapira (2001) and Burn *et al* (2002), having clearly established and pre-determined goals and ensuring that each member of the organisation knows the actions they have to take in order to fulfil the goal is one of the key factors that contributes towards the overall success of an organisation. Indeed, both Stough *et al* (2000) and Gottfredson *et al* (2005) argue that establishing missions, visions and objectives is one of the key determinants in ensuring virtual working is not only successful but it is also a means by which performance benefits can be enhanced and competitive advantages gained.

Within the context of ISSACC Travica (2005) hypothesises that interoperability has a significant relationship with anchoring. Using the extant literature as a guide it is suggested that the greater the ability of organisations to share operational objectives and create like ICT standards, the easier it will be for the organisation to provide a support system for new ICT-focused activities such as cybernization. Gibson and Cohen (2003) support this view and argue that the greater the extent to which virtual forms can collectively manage integrated relationships, the greater their ability to formulise a structure that consistently supports the needs of the collaborative form, which in the case of the virtual organisation is the need to support ICT and the cybernized environment. Hence the hypothesis:

H_1* *Interoperability positively affects Anchoring ***(the increased ability of virtual organisations to create shared ICT standards and like strategic goals will help organisations to provide the necessary support for cybernization).***

Table 3.1: Interoperability: Root Constructs, Definitions and Scales

Root Construct	**Definition**	**Questionnaire Items**
Strategic Alliances	Strategic alliances are partnerships between two or more organisations, who come together in order to achieve a *"strategically significant objective"*, that benefits both parties. Such alliances are generally formed for either technological or marketing benefits (Elmuti and Kathawala, 2001; Das *et al,* 2003).	18, 25-27, 32 and 33
Interdependence	The extent to which the members of the organisation or team are interdependent, so that an individuals work, processes or actions will impact upon the overall state of the team (Gibson and Cohen, 2003).	
Goal-Specificity	All activities and job roles are specifically assigned so that precise portions of the end goal are achieved. Further to this the method my which to assign roles and activities is unambiguous and therefore transferable (Xue *et al,* 2004/2005; Brennan and Braswell, 2005).	

Switching

Travica (2005) defines switching as being the degree to which organisations and teams alternate their membership of the collective dependant upon their changing needs over time. It is characterised in the literature via the attributes of *core competencies, outsourcing, heterogeneity,* and *knowledge.* According to Anderson and Vincze (2000) amongst others, the use of switching to move from one virtual organisation to the next may be as a result of a need for different skill sets or knowledge requirements, or as Mowshowitz (2002) argues, it could be associated with a change in management in order to accommodate a different way of working (Stough *et* al, 2000; Introna, 2001; Souren *et al,* 2004/2005). Taken as a whole, it is therefore argued that the purpose of switching is to provide a cost effective means through which individual organisations can come together to share skills and fulfil a variety of different objectives without the need for physical co-location or large outlay of costs (Bryne, 1993; Ogilvie, 1994; Stough *et al* , 2000). One of the main reasons why switching is a key characteristic of virtual forms is because it provides a sense of flexibility whereby individuals who are geographically de-located can come together in order to share skills and knowledge in a unique way that facilitates both competitiveness and effectiveness (Wiesenfeld *et al,* 1999; Mowshowitz, 2002). Creating such an environment where members have a balanced set of both unique and complimentary skills that are easily interchangeable allows members of virtual forms to produce products or services that are differentiated in comparison to the products or services offered by stand-alone organisations (Jackson, 1999; Souren *et al,* 2004/2005; Brennan and Braswell, 2005). This in turn provides virtual forms with the competitive advantage necessary to thrive in the current dynamic and hyper-competitive market (Franke, 2001). Thus, according to the literature and Travica's (2005) diagrammatic representation of ISSAAC it is hypothesised that the greater the presence of switching the more likely it is that specialised products will be produced. Hence:

H_2* *Special Product is positively affected by Switching *(the ability by organisations to share their skills via alternating membership of virtual organisations enables them to produce a-typical products)*

Table 3.2: Switching: Root Constructs, Definitions and Scales

Root Construct	Definition	Questionnaire Items
Core Competencies	A core competency represents the core skills, knowledge, abilities and aptitudes of an organisation or individual. By combining core competencies organisations can increase their competitive advantage in any given marketplace (Afsarmanesh and Camarinha-Matos, 2005; Gottfredson *et al*, 2005; Shewchuk *et al*, 2005).	8-9 and 16-17
Outsourcing	Outsourcing is the manner in which organisations develop their skill and resource base by seeking external sources. This is done in order to meet both the short and long term needs of the organisation; without the need for great costs (Mowshowitz, 1997; Fielding, 2005).	
Heterogeneity	The degree to which members of teams or organisations have a set of diverse but complementary skills that are interchangeable amongst members (Jackson, 1999; Souren *et al*, 2004/2005; Brennan and Braswell, 2005).	
Knowledge	There are three main types of knowledge: individual, social and organisational. The more exchanges of knowledge that take place within virtual forms the more successful the virtual form becomes. This is because; each exchange of skills and knowledge represents an enhancement upon the core knowledge. This in turn allows members of virtual forms to more easily share skills and act as one unit (Griffith *et al*, 2003; Steinheider and Bayerl, 2004; Upham, 2004).	

Special Product

Special product is a unique construct within the ISSAAC model as unlike other constructs which are both cause and effect variables special product is an outcome variable only. A possible explanation for this is that in contrast to variables such as cybernization and anchoring which are prerequisites for successful organisational virtualness, special product is a physical construct that is produced as a result of a virtual organisation being formed (Travica, 2005). The variables within the literature that contribute to special product are, *strategic alliances, goal specificity, complexity and diversity, core competencies* and *IOS* (Anderson and Vincze, 2000, Haas *et al*, 2001; Gottfredson *et al*, 2005). By implementing all or some of these features organisations are able to share skills and resources and complete a series of dynamic tasks which ultimately result to the production of atypical goods and services (Cooper and Muench, 2000; Travica, 2005). This ability to produce niche products in a manner that is more effective than traditional organisations provides virtual organisations with the competitive advantage necessary to succeed in today's increasingly challenging marketplaces (which themselves are characterised by hyper competition) (Chidambaram and Bostrom, 1993; McPhee and Scott Poole, 2001). Similarly, the ability to pool resources and expertise allows virtual organisations to produce goods in shorter cycles which in turn can help organisations to reduce their overheads and increase their productivity (Furst *et al*, 2004). According to Stough *et al* (2000), the relationships created by boundaryless organisations such as the virtual organisation not only help to incite innovation in terms of product design and production, in addition to this, it means that virtual organisations are more likely to be the first to enter new markets and therefore become market leaders. According to Hale and Whitman (1997) it this combination of being able to create a unique competitive advantage and stay at the forefront of market trends that makes virtual organisations such a threat to the traditional organisational structures of the past.

Table 3.3: Special Product: Root Constructs, Definitions and Scales

Root Construct	**Definition**	**Questionnaire Items**
Strategic Alliances	As defined in Table 3.1	29-31
Core Competencies	As defined in Table 3.2	
Complexity and Diversity	The use of collaborative work processes in order to complete a wide range of tasks and functions simultaneously (Jackson, 1999; Chinowsky and Rojas, 2003).	
Goal-specificity	As defined above.	
IOS	ICT-enabled relationships that geographically co-locate individuals or organisations that would otherwise be separated by vast differences in time and space (Axelsson, 2003; Burn et al, 2002).	

Aggregation

The literature defines aggregation as being concerned both with the extent to which IOS and other technologies are used by organisations to create virtual alliances, and the extent to which an organisation forms relationships based on norms, rules and procedures that all members regardless of time and space can follow (Burn, 2002; Axelsson, 2003; Gibson and Cohen, 2003; Travica, 2005). However, it is important to note that although Travica (2005) defines aggregation as being the extent to which organisations "*network electronically with other organizations and individuals to form a VO*" (2005, p.20), he explains that in more widespread use, the term *network* should be avoided as the relationships between members of virtual forms such as the virtual organisation are traditionally less permanent and less formal than those found in conventional networked organisations and therefore a clearer distinction needs to be made. Travica (2005) argues that the greater the presence of aggregation within virtual forms the easier it is for members to leverage these cybernized networks in order to alternate their participation of various virtual organisations dependant upon the skills needed at any given time. This in turn facilitates the ability by virtual forms to accomplish the complex tasks needed over time to produce niche products without the worry often associated with de-location. The literature supports these arguments and suggests that without the presence of ICT-enabled networks and flexible rules and procedures, the transference of knowledge and resources would be near impossible across geographical boundaries, thereby hindering the ability to produce specialised products (Souren *et al,* 2004/2005; Furst *et al,* 2004). Hence the hypotheses:

H_3* *Switching is positively affected by Aggregation *(The success of switching is dependant upon the presence of aggregation within the virtual organisation, as the ICT-enabled networks embodied within aggregation allow members of virtual organisations to alternate their membership of virtual groups at any given time (switching)).*

H_4* *Special Product is positively affected by Aggregation *(the ability of individual organisations to come together regardless of time and space to form a virtual organisation facilitates the production of a-typical products and services).*

Table 3.4: Aggregation: Root Constructs, Definitions and Scales

Root Construct	**Definition**	**Questionnaire Items**
IOS	As defined in Table 3.3	10-13 and 15
Time and Spatial Dispersion	The extent to which the members of the organisation or team are separated by distance and time (Bal and Foster, 2000).	
Formulisation and Modularity	The extent, to which intra-organisational forms collectively manage their own integrated relationships and formulise a structure that can be built, destroyed and re-built in order to consistently support the needs of the organisation or team (Gibson and Cohen, 2003).	

Anchoring

Anchoring deals with the degree of support provided by the management, structure and strategy of the organisation in order to create a better fit to the increased use of ICT and e-communications (Lucas and Baroudi, 1994; Bowman *et al,* 1999; Wildstrom, 2000; Chu and Smithson, 2003; Griffith *et al,* 2003; Travica, 2005). According to Travica (2005), anchoring is crucial as it provides the necessary foundation upon which ICT and an organisation's potential for virtualising is realised. Stough *et al's* (2000) arguments are in accordance with this and propose that one of the key strategic recommendations for improving virtual working is ensuring that the entire internal management structure supports and sustains the virtual concept. Indeed, Stough *et al* (2000) argue that a lack of anchoring can give way to a number of problems such as an out of sight out of mind culture (due to the resistance of the unstructured nature of virtual working), miscommunication (because workers do not have a great deal of experience communicating with rich media forms such as video conferencing and e-mail) and lower productivity levels (because workers may not be able to manage the increased freedom associated with virtual environments). It is for these reasons that anchoring plays such a crucial role within the majority of virtual forms; because essentially without it, organisations and team members would not be able to operate in an efficient and effective manner and as a result they would not be able to realise the possibilities that operating virtually creates. In addition to this, Mowshowitz (1997) and Gibson and Cohen (2003) argue that anchoring must be implemented as in many cases it is anchoring that acts as the catalyst that facilitates an organisations successful move along the continuum from being traditional to virtual. Within the extant literature the characteristics that contribute to anchoring are, *organisational restructuring, formulisation and modularity* and *outsourcing*, each of which are defined in Table 3.5.

H_5 Cybernization is positively affected by Anchoring *(If an organisation wishes to achieve their potential through virtualisation they must implement a support system for ICT).*

Table 3.5: Anchoring: Root Constructs, Definitions and Scales

Root Construct	**Definition**	**Questionnaire Items**
Organisational Restructuring	Organisational restructuring is concerned with the ability and need for organisations to redesign their operations so that their structure reflects both current market and organisational demands (Bowman *et al,* 1999).	19, 20, 22, 24 and 28
Formulisation and Modularity	As defined in Table 3.4	
Outsourcing	As defined in Table 3.2	

Cybernization

Cybernization is hypothesised by Travica (2005) as being a hub variable within the ISSAAC model (due to its influence on no less than four of the other constructs). In the case of many virtual forms it is the central construct around which the concept of virtuality is built (Kasper-Fuehrer and Ashkanasy, 2003; Shekhar, 2006). It is defined in the literature as being concerned with the extent to which an organisation exists in a time and space that is enabled by electronic information flows and ICT (Travica, 2005). In addition this, researchers including Grosse (2002), Tianfield and Unland (2002), Bock (2003), and Malhotra and Majchrzak (2005) argue that cybernization is concerned with the proportion of core operations within an organisation that predominantly rest on ICT, and the extent to which these and other elements of ICT are used to co-locate individuals who are separated by time and space. According to Stough *et al* (2000) the increased developments in and use of new communication and computing technologies allows organisations to do away with fixed jobs and in their wake they are able to focus on the completion of goals and activities via the use of evolving teams, who are not necessarily co-located. The increased presence of ICT within the business market has meant that it is no longer sufficient for organisations to operate within traditional business boundaries. Instead, they are almost forced to transcend legal and organisational boundaries and operate within an electronic space. This ability to utilise ICT to collocate geographically dispersed individuals is one of the reasons why virtual forms of working have taken a prominent place in businesses of today.

In addition to its central role within the virtual organisation as a whole, cybernization also plays a defining role within ISSAAC. In total, it affects four of the other constructs of the model, namely: aggregation, special product, interoperability and switching, and in each case acts as the motivation for their existence. For example, within the context of aggregation, switching and special product, cybernization facilitates the creation of ICT-enabled networks which in turn creates a time and space for organisations whereby multiple partners can come together to share varying core competencies which then allows the group as a whole to create niche products that stand-alone organisation are not be able to provide (Travica, 2005). Similarly, in the case of interoperability, cybernization helps to create a common open space unbiased by distance that allows organisations to share their goals, become synchronised and create a set of shared ICT standards and objectives (Barnes and Hunt, 2001; Travica, 2005).

H_6 Aggregation is positively affected by Cybernization *(Cybernization provides the means by which ICT-enabled networks and relationships are created and maintained).*

H_7 Special Product is positively affected by Cybernization *(Cybernization provides the environment within which the special product is created and is often the enabling factor that allows the product or service to be differentiated).*

H_8 Interoperability is positively affected by Cybernization *(Cybernization allows organisations to share ICT standards and goals regardless of time and space).*

H_9 Switching is positively affected Cybernization *(Cybernization facilitates the exchange of skills and the creation of virtual organisations by providing a time and space where organisations can come and go regardless of co-location).*

Table 3.6: Cybernization: Root Constructs, Definitions and Scales

Root Construct	**Definition**	**Questionnaire Items**
IOS	As defined in Table 3.3	1-7, 14, 21 and 23
Technology	The technological aspect is concerned with the enabling technologies that have made the breakthrough of virtual forms possible. Such as the developments in e-communications, e-networking and rich media forms etcetera (Shao *et al*, 1998).	

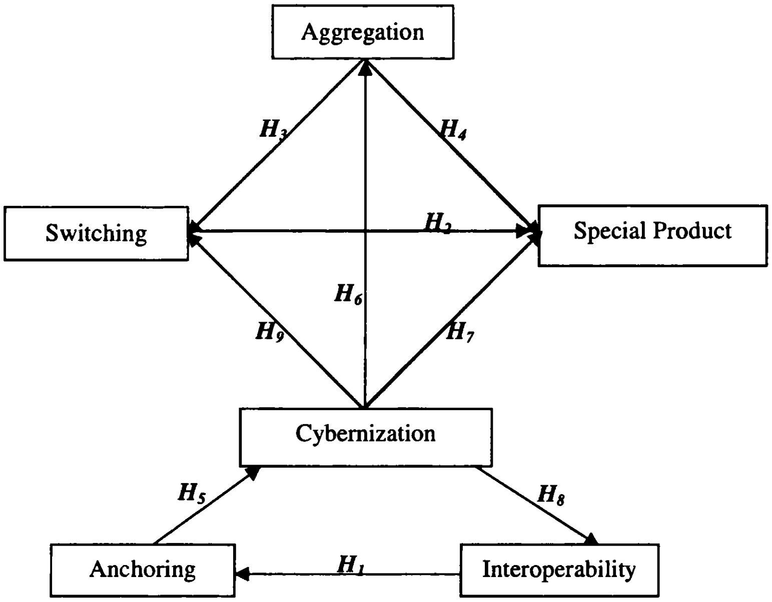


Figure 3.2: Travica's (2005) ISSAAC Model with Hypotheses

3.3 Consumer Acceptance of New Technology – UTAUT

As discussed in Chapter two, the increasing virtualness of organisations has led to a rise in the number of e-services and ICT-focused products being made available to consumers (Hamill, 1997; Avgerou, 1998; Leonard, 1999; Kanter, 2001; Koufrais, 2003; Tianfield and Unland 2002). Consequently, this has also meant that as a whole, consumer's exposure to ICT on an everyday basis is growing exponentially, and more often than not the technology powering these systems (which was once hidden from the consumer) is moving to the foreground (Koufaris, 2002; Gefen and Straub, 2003; Venkatesh *et al*, 2003). As a result, there is increasing pressure on organisations to understand the factors that affect consumer acceptance and usage of today's new ICT based technologies (Venkatesh, 1999; Venkatesh *et al,* 2003). Considering this, it is therefore unsurprising that there is currently a vast amount of research which focuses on investigating the factors that predict ICT and IS acceptance and usage from a consumer perspective (Chau, 1996; Mathieson *et al,*, 2001). However, according to Venkatesh *et al* (2003) the immense amount of literature relating to ICT acceptance, although significant in its explanatory capabilities has also led to a certain amount of confusion amongst researchers as they are often forced to *pick and choose* characteristics across a wide variety of often competing models and theories. In response to this confusion, and in order to harmonise the current literature associated with consumer acceptance of new technology, Venkatesh *et al* (2003) developed a unified model that not only brings together alternative views on user and innovation acceptance, but which has also been proven to explain as much as 70 percent of the variance in intention to use. The model in question is known as the Unified Theory of Acceptance and Use of Technology – UTAUT.

UTAUT is sourced from a variety of research backgrounds including IS, psychology and sociology. In total UTAUT is based on eight other theories and models associated with user acceptance of innovation. The eight theories in question are: *the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model (MM), Theory of Planned Behaviour (TPB), Combined TAM and TPB (C-TAM-TPB), the Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT)* and *Social Cognitive Theory (SCT).* Although any one of these theories and or models could have been used to investigate user acceptance of technology in the context of this Thesis, it was felt that UTAUT was more suitable as its combined nature allowed for a comprehensive exploration of the phenomenon under investigation. In addition to this, although UTAUT has been employed in other studies (see for example Mallat, 2004; Carlsson *et al*, 2005; Wright, 2005; Pu-Li and Kishore, 2006), there are currently no examples of UTAUT being used to examine self-service capabilities in the airline industry. Furthermore, according to Venkatesh *et al* (2003), additional research is required in order to provide further validation of the measures of the model. Therefore, using UTAUT opposed to other more tested theories will help as Venkatesh *et al* (2003) argue not only to enhance the overall generalisability and reliability of the model and its associated measures, but also to determine whether UTAUT can indeed be used to measure technology acceptance in a varied cross section of contexts outside its original application.

UTAUT is a comprehensive model that builds upon the existing theories and models currently associated with innovation acceptance, adoption, and use. The model is made up of four direct determinants, *performance expectancy, effort expectancy, social influence* and *facilitating conditions;* each of which are influenced by the four moderators of *age, voluntariness, gender and experience* (Venkatesh *et al,* 2003). By examining the relationships between the moderators and the direct determinants and subsequently the effect of the direct determinants on BI it becomes possible to evaluate which determinants are most significant in predicting consumer acceptance of a new technology. The relationships within UTAUT are shown in Figure 3.3 (note that within the context of this study the effect of age has not been investigated as the airline used as a source of data did not want age related questions asked of their customers). The paragraphs following Figure 3.2 briefly examine each of the theories and models associated with user acceptance and identify how the individual components of each theory contribute towards the primary constructs of UTAUT.

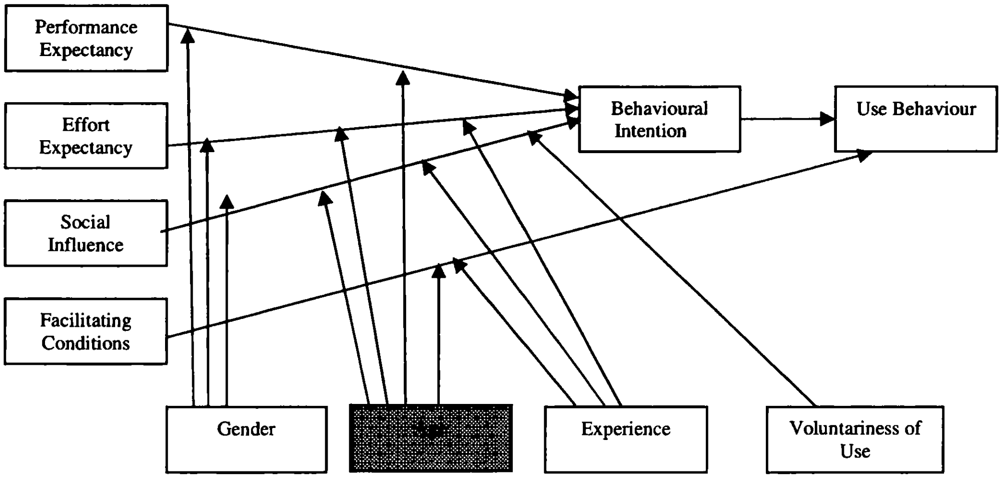


Figure 3.3: Unified Theory of Acceptance and Use of Technology (source: Venkatesh *et al,* 2003, p. 447 Fig 3.).

3.3.1 Extant User Acceptance Models

Prior to UTAUT, existing models and theories associated with technology and innovation acceptance were able to explain up to 40 percent of the variance in individual intention to use (Venkatesh *et al* (2003) cite Davis *et al,* 1989, Taylor and Todd, 1995 and Venkatesh and Davis, 2000 as examples of studies that have done this). However, the merging of multiple theories and models to create UTAUT has meant that now as much as 70 percent of the variance in intention to use can be predicted (Venkatesh *et al,* 2003). The following sections describe in brief each of the eight theories and models that contribute to UTAUT with the aim of determining the model's roots in the extant literature and making the reader aware of the individual components associated with each theory that contribute to the direct determinants of UTAUT as a whole.

Theory of Reasoned Action (TRA)

The TRA, originally developed by Fishbein and Ajzen (1975) proposes that people's intentions are manifested in their behaviours and by assessing individuals attitudes towards a behaviour, researchers are able to predict the individual's likely intention to act. According to Albarracin *et al's* (2001) interpretation of the theory a person is more likely to have a positive attitude toward a behaviour if: important others believe they should and, they expect an overall positive outcome from participating in the behaviour. According to Venkatesh *et al* (2003), the two most significant constructs of the TRA that contribute towards UTAUT are:

- Attitude toward behaviour: *"An individual's positive or negative feelings (evaluative affect) about performing the target behavior" (Fishbein and Ajzen 1975, p. 216).*
- Subjective norm*: "The person's perception that most people who are important to him think he should or should not perform the behavior in question" (Fishbein and Ajzen 1975, p. 302).*

Since its original conception the TRA has been used in a variety of contexts outside of the model's original bounds and has been extended to include additional predictors of intention. For example, an investigation by Sheppard *et al* (1998) showed that although in its original form TRA focuses on the determinants and performance of a single behaviour the predictive capabilities of TRA are equalled in contexts involving choice. Sheppard *et al* (1998) found that when making a decision amongst alternatives the individual does not go through a process of choice, but instead considers their attitudes and subjective norms towards the alternatives. Ultimately, this means that the decision is made not based on the alternatives available, but instead on what the individual perceives as being the best outcome.

In addition to Sheppard *et al*'s (1998) extension of TRA, other studies have extended TRA by adding further predictive constructs (such as facilitating conditions) or, by testing TRA in contexts outside of that of the original model. For example, whilst the TRA was originally tested in an organisational context. Davis *et al* (1989) applied the theory to an investigation of a word processing program (WriteOne) in an educational environment. The resulting analysis showed that the variance explained by the theory was consistent with studies that had employed TRA in other contexts. This therefore demonstrates the explanatory power of the TRA across both products and industries.

Technology Acceptance Model (TAM)

The TAM is an adaptation of the TRA which focuses on explaining and predicting an individual's adoption of a given technology based on the assumption that the technology is completely new to the user (Szjna, 1996). Developed by Davis in 1986, TAM suggests that voluntary use of a system is based upon the user's rational assessment of its expected outcomes (namely perceived usefulness and perceived ease of use) (Davis, 1989). Davis (1989) argues that the overall aim of TAM is to provide an explanation of the determinants of user acceptance of technology that are generalisable and capable of explaining the phenomenon across a broad range of end user technologies. TAM hypothesises that there are two key factors that can be used to predict actual system usage, namely, behavioural intention (BI) (that is a person's actual intention to use the system) and attitude (A) (namely, how a person feels about a particular IS). By assessing an individual's perception of these constructs and understanding the nature of the linkages between the constructs and the expected outcomes of perceived usefulness (PU) and perceived ease of use (PEOU), researchers are able to predict behavioural intention and actual system use (see section 2.9.1 for an explanation of PU and PEOU). However, in order to extend the predictive capabilities of TAM, many researchers have adapted and extended the TAM model to include additional predictors such as trust and subjective norm. Subsequently, not only has this increased the overall predictive power of the model but it has also shown that the theories associated with TAM are applicable in a wide variety of different contexts and industries (see for example, Davis *et al,* 1992; Hartwick and Barki, 1994; Gefen and Straub, 1997; Mathieson *et al*, 2001; Chau and Lai, 2003; Pavlou, 2003).

For the purpose of UTAUT the most significant indicators of intention taken from TAM (and its associated studies) are:

- Perceived usefulness: *"a measure of the individuals subjective assessment of the utility offered by the new IT in a specific task related context" (Gefen et al, 2003, p. 54)*
- Perceived ease of use: *"an indicator of the cognitive effort needed to learn and utilise the new IT" (Gefen et al, 2003, p. 54)*
- Subjective norm: Adapted from TRA/TPB.

Motivational Model

Within the field of psychology a vast amount of research has focused on the theory that behaviour can be explained by the same factors that govern motivation (Venkatesh *et al*, 2003). According to Vallerand (2000), there are two key types of motivation (extrinsic and intrinsic), each of which can be assessed at three levels (global, contextual and situational). Vallerand (2000) argues that by assessing the dynamics of the relationships that exist between each level of motivation, it becomes possible to understand the incentives behind individual actions and therefore behaviours themselves. However, Vallerand (2000) also argues that motivation alone (whether extrinsic or intrinsic) is not enough to derive positive outcomes from our behaviours; it is instead proposed that as individuals, we also need self-determination in order to achieve our desired goals. Steel and König (2006) add to this by arguing that when assessing an individual's behaviour and intentions, we must also assess the individual's perception of the attractiveness or aversiveness of a particular outcome, such that, the more attractive the resulting outcome is, the more motivated the individual is to act.

Such motivational theory has been applied to a variety of environments and industries including IS and ICT. For example in 1992 Davis *et al* applied motivational theory within the IS domain in order to understand the acceptance and use of new technology within the workplace. The study showed that the extent to which new technology is accepted in the workplace is directly affected by motivational factors such as personality, image, or general positive or negative outcomes. Thus confirming that intention and behaviour in ICT and IS organisations is governed by the same motivators as those in sociological contexts. Hence, the inclusion of these determinants in UTAUT:

- Extrinsic Motivation: The belief that users will want to perform an activity because it will aid in the achievement of additional benefits that are detached from the activity itself, for example: improved pay, promotion or increased job performance. Extrinsic motivation is often seen as a process of negative reinforcement, whereby the non-performance of the behaviour will lead to negative outcomes (Davis *et al,* 1992; Vallerand, 2000)
- Intrinsic Motivation: The belief that users will want to perform an activity *"for no apparent reinforcement other than the process of performing the activity per se"* (Davis *et al,* 1992, p. 1112).

Theory of Planned Behaviour (TPB)

The TPB is an extension of the TRA. In general terms it proposes that in addition to people's intentions being determined by their attitudes, they are also affected by the concept of perceived behavioural control (Ajzen, 1985). Perceived behavioural control measures the level of confidence in ones ability and the extent to which an individual believes that they are personally able to control the outcome of their behaviour. For example, an individual will believe they have a greater degree of perceived behavioural control if they have a greater number of available resources to complete the task, and they have few if any obstacles affecting their behaviour and vice versa (Hartwick and Barki, 1994; Armitage and Christian, 2003).

Since its emergence, the TPB has become one of the most influential and popular conceptual frameworks for the study of human action (Ajzen, 2001). According to the theory, human behaviour is guided by three kinds of considerations: *behavioural beliefs, normative beliefs* and *control beliefs.* Each of these beliefs in turn help the individual to develop an attitude toward the behaviour, perceived social norms and perceived behavioural control. Subsequently, by combining each of these dimensions of belief the individual is able to form an opinion that leads to behavioural intention (Ajzen, 2002). According to Lee and Kozar (2005), the TPB has been so widely adopted within the technology industry because is encompasses such a wide variety of individual, social and behavioural factors (such as image, trialability, ease of use and relative advantage amongst others) which other theories and models omit. However, despite its widespread acceptance and significant empirical support, according to Armitage and Christian (2003) amongst others, in order to become a truly generalisable model further research needs to be conducted (see for instance Harrison *et al*, 1997; Mathieson 1991; Taylor and Todd 1995). For example, Armitage and Christian (2003) suggest that a thorough investigation of the affect of moderators on the theory will advance the TPB and make its overall predictive power more applicable to a wider variety of contexts. However, despite a need for expansion, Venkatesh *et al* (2003) still maintain that the TPB is one of the most informative perspectives on innovation acceptance and thus its associated constructs contribute significantly to UTAUT. The three constructs in question are:

- Perceived behavioural control: *"The perceived ease or difficulty of performing the behaviour" (Ajzen, 2002, p.2) and in the context of IS research, "perceptions of internal and external constraints on behavior*" (Taylor and Todd 1995b, p. 149).
- Attitude toward behaviour: adapted from TRA
- Subjective norm: adapted from TRA

Combined TAM and TPB (C-TAM-TPB)

Developed in a response to a lack of empirical investigations that examine whether ICT usage and acceptance is the same in inexperienced as well as experienced settings, the C-TAM-TPB, is as implied by the name a combined model that uses the predictive qualities of the TPB (such as subjective norm and perceived behavioural control etcetera) alongside the explanatory power of TAM (for example perceived usefulness) to create a hybrid model that provides a complete test of the key determinants of ICT usage (Taylor and Todd, 1995). C-TAM-TPB is of particular importance in investigating consumer acceptance of new technology as it is able to predict usage prior to users having any experience with an innovation. For researchers this is of particular significance as the rapid nature of the ICT sector often means that respondents who have had prolonged experience with a system or application are not always available for questioning. Similarly, because C-TAM-TPB can examine intention and behaviour at any stage of the adoption life cycle it is also able to show how the components of TAM and TPB (such as attitude, perceived behavioural control, perceived usefulness etcetera) change over time as users exposure to the system grows. This in turn provides researchers with a greater understanding of the motivators, intentions and overall actions that govern behavioural intention. The constructs of the C-TAM-TPB that contribute towards UTAUT are:

$$\left.\begin{array}{l}\text{Ease of Use}\\ \text{Attitude toward Behaviour}\\ \text{Subjective Norm}\\ \text{Perceived Behavioural Control}\\ \text{Perceived Usefulness}\end{array}\right\} \text{Adapted from TAM, TPB and TRA}$$

Model of PC Utilization (MPCU)

The model of PC utilization is based largely on Triandis' (1977) theory of human behaviour. The theory was developed in 1991 by Thompson *et al* in order to establish a balance between innovation theories in general and those targeted specifically at technology. Overall, MPCU presents a competing perspective to that proposed by TRA and TPB arguing that behaviour is determined not only by the expected consequences of our actions, but more significantly by a combination of three different factors based on an individual's attitudes, social norms and habits (Venkatesh *et al,* 2003). In addition to this, Thompson *et al* (1991) argue that behavioural intentions are also influenced by factors such as culture, facilitating conditions (such as PC capabilities) and social situation, such that even if an individual's intentions to perform a behaviour is high, if the environmental context in which the behaviour occurs is not right then the behaviour will not transpire. However, it is important to note that because originally Thompson *et al* (1991) sought to predict usage behaviour rather than intention, in order to ensure a fair comparison across the models and theories used to create UTAUT, the determinants of MPCU should be viewed within the context of intention and not usage behaviour. Considering this, the components taken from the MPCU are:

- Job Fit: The belief by an individual that using a technology such as a PC will lead to the enhancement of their job performance (Thompson *et al*, 1991).

- Complexity: Based on Rogers and Shoemaker (1971), *"the degree to which an innovation is perceived as relatively difficult to understand and use"* (Thompson *et al,* 1991, p. 128).
- Long-term consequences: *"Outcomes that have a pay-off in the future"* (Thompson et al, 1991, p. 129).
- Affect toward use: Based on Triandis, affect toward use is *"feelings of joy, elation, or pleasure, or depression, disgust, displeasure, or hate associated by an individual with a particular act"* (Thompson et al, 1991, p. 127).
- Social factors: Derived from Triandis, social factors are *"the individual's internalization of the reference group's subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations"* (Thompson et al, 1991, p. 126).
- Facilitating conditions: According to Tiriandis (1997), objective factors are circumstances or items in the environment that observers agree make an act easy to accomplish. Within an ICT/IS context a facilitating condition may be the provision of system assistance, support or training (Thompson *et al,* 1991).

Innovation Diffusion Theory (IDT)

Grounded in sociology, IDT provides a general explanation for the way new ideas and objects are spread through society over time (Brancheau and Wetherbe, 1990). According to Rogers (1995), innovations present individuals with a means by which to solve problems and or explore new opportunities. In addition to this, Rogers (1995) argues that when making a decision regarding an innovation the individual is participating in a systematic process whereby the main aim is to avoid and or reduce uncertainty. Over the past 40 years, IDT has received widespread recognition in a variety of industries and has been used to study an assortment of innovations ranging from consumer durables such as cars to end-user computing (Moore and Benbasat, 1991; Rogers 1995). According to Norton and Bass (1987), the application of IDT to the technology industry is of particular interest as in many cases the gap between technological developments is getting shorter. Consequently, this means being able to understand the dynamics of how and why innovations are spread through society becomes of greater importance as the time frame for making a product the norm and subsequently having it accepted into the marketplace is smaller. Similarly, in other cases the process of adoption of technological products is often cut short as the individual swaps midway through adoption to a newer product with greater perceived benefits. Again, this means that organisations have less time to understand the dissemination of the innovation into the marketplace and therefore less time to adapt amongst other factors their marketing strategies in order to ensure the innovation is accepted. According to Venkatesh *et al* (2003), the most significant features of IDT in the case of UTAUT are:

- Relative advantage: *"The degree to which an innovation is perceived as being better than its precursor"* (Moore and Benbasat 1991, p.195)
- Ease of use: *"The degree to which an innovation is perceived as being difficult to use"* (Moore and Benbasat 1991, p. 195)
- Image: *"The degree to which use of an innovation is perceived to enhance one's image or status in one's social system"* (Moore and Benbasat 1991, p. 195)
- Visibility: The degree to which one can see others using the system in the organisation (adapted from Moore and Benbasat 1991; Venkatesh et al, 2003)
- Compatibility: *"The degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters"* (Moore and Benbasat 1991, p. 195)
- Results demonstrability: *"the tangibility of the results of using the innovation, including their observability and communicability"* (Moore and Benbasat 1991, p. 203)
- *Voluntariness of use*: *"The degree to which use of the innovation is perceived as being voluntary, or of free will"* (Moore and Benbasat 1991, p. 195)

Social Cognitive Theory (SCT)

Originally theorised by Bandura (1986), SCT is hailed as one of the most powerful theories of human behaviour and hinges on the belief that motivation comes from a combination of salient unmet needs, self-efficacy, outcome expectations and self-evaluated satisfaction and dissatisfaction (Pincus, 2004; Netz, 2004). According to

Pincus (2004), SCT stems from a range of other theories associated with the examination of human behaviour, examples of which include balance theory, cognitive dissonance theory and humanistic theory. Each of these theories in turn either focuses on an individuals overall need to validate their actions, a need to satisfy fundamental desires such as hunger or belonging or, the need to create a balance between personal wants and the pressures of society as a whole. Bandura and Locke (2003) suggest that because unlike other theories SCT is based on a feed-forward loop (as appose to a negative feedback loop), and because individuals are proactive and not just reactive beings it is important to examine the self-motivating incentives that lead to the attainment of future goals. As a result of its stature as a foremost theory of human behaviour SCT has been applied in a wide variety of contexts, ranging from understanding the motivators behind differing physical activity levels to the influencers of computer usage. For example, in their 1999 study Compeau *et al* applied an extended version of SCT to test for the influence of self-efficacy, outcome expectations and anxiety on computer usage and overall technology acceptance. The resulting analysis showed that whilst self-efficacy was shown to exert a significant positive influence on performance-related, personal outcome expectations, use, and affect amongst others. Personal outcome expectations in turn had a negative effect on use, and similarly the path between anxiety and use was found to be insignificant.

However, it is important to note that although the power of SCT has been proven. As with MPCU Venkatesh *et al* (2003) argue that in order to be in keeping with the aims of UTAUT and to ensure a fair comparison across the models and theories that contribute to UTAUT. The predictive validity of SCT should be examined in the context of intention and not actual usage. With this in mind, the constructs taken from SCT are:

- Outcome expectations – performance: *"Performance-related outcomes are those associated with improvements in job performance (efficiency and effectiveness) associated with using computers"* (Compeau *et al,* 1999, p. 147)
- Outcome expectations – personal: *"Personal outcome expectations relate to expectations of change in image or status or to expectations of rewards, such as promotions, raises, or praise"* (Compeau *et al,* 1999, p. 148)

- Self-efficacy: *"An individual's beliefs about his or her capabilities to use computers"* (Compeau *et al,* 1999, p. 147)
- Affect: The positive aspects of a behaviour, such the enjoyment a person derives from using computers (Compeau *et al,* 1999)
- Anxiety: The negative aspects of a behaviour, such as the feelings of apprehension a person experiences when using computers (Compeau *et al,* 1999)

3.3.2 Constructs of UTAUT

Following the examination of the models and theories that have contributed to UTAUT the next stage is to identify and explain the four primary constructs of the model and their associated hypotheses: *performance expectancy, effort expectancy, social influence* and *facilitating conditions* (note that a definition of behavioural intention is also provided). Accompanying each definition, is a table (Tables 3.4 to 3.7) identifying not only the components that contribute towards the construct from the literature; but also the items (from the questionnaire) which according to Venkatesh *et al* (2003) are used to test for the presence of the construct in the sample population. (Please note that the validity of these items at predicting the constructs will be tested later during factor analysis. Please refer to section 5.4.1 of Chapter 5). In addition to this, it is important to note that although the presence of indirect relationships is not excluded, as with ISSAAC only causal direct relationships are explicitly hypothesised so as to remain true to Venkatesh *et al*'s (2004) original propositions.

Performance Expectancy (PE)

Performance expectancy is defined as being "the degree to which an individual believes that using the system will help him or her to attain gains in performance" (Venkatesh *et al,* 2003, p.447). According to Triandis (1977) and Brancheau and Wetherbe (1990) amongst others, individuals are more likely to adopt a behaviour or accept an innovation if they believe that doing so will lead to either the creation of a positive opportunity or, an increased level of efficiency. This attainment of positive outcomes is summarised by Rogers and Shoemaker (1983) via the concept of relative advantage. Rogers (1983) defines relative advantage as being the degree to which an innovation provides benefits that outweigh those of its forerunners. Such benefits can range from economic gains such as lower costs through to social gains such as image enhancement. The more a user feels that in using the technology they are increasing their yield to output ratio then the more willing they will be to use, accept, and adopt the new technology into general practice.

The importance of relative advantage and indeed performance expectancy as a whole was confirmed by Venkatesh *et al* (2003) with the discovery that within each of the eight previously defined models or theories associated with user acceptance both constructs were repeatedly highlighted as the strongest predictors of intention in both voluntary and mandatory contexts (Venkatesh *et al*, 2003). Venkatesh *et al* (2003) argue that the relationship between performance expectancy and intention can be defined as a three-way interaction whereby, the direct link between the two constructs is moderated by the external variables gender and age, such that the effect is greater for males and in particular younger males. The primary reason for this according to Minton and Schneider (1980) is that males (specifically younger males) are highly task orientated and therefore attach greater importance to the attainment of extrinsic rewards which more often than not are related to increased levels of performance.

Overall, performance expectancy can be summarised as being concerned with the additional gains in job performance an individual attains by using the new technology, and it is derived from the constructs of: *perceived usefulness* (TAM and C-TAM-TPB), *extrinsic motivation* (MM), *job-fit* (MPCU), *relative advantage* (IDT), and *outcome expectations* (SCT) (see Table 3.7). In order to make performance expectancy relevant for a customer context it was used in this study to test whether customers believe that by using online and self-service products when booking or checking-in on a flight they are gaining additional benefits such as quicker purchasing and checking-in times and or reduce costs. Hence:

***H_1 Behavioural intention will be positively affected by Performance Expectancy** (users will be more willing to use new technology if they believe they will receive additional benefits).*

Table 3.7: Performance Expectancy: Root Constructs, Definitions, and Scales (source: Venkatesh *et al*, 2003)

Construct	**Definition**	**Questionnaire Items**
Perceived Usefulness (Davis 1989)	"The degree to which a person believes that using a particular system would enhance his or her job performance" (p. 320).	1 - 4
Extrinsic Motivation (Davis et al. 1992)	The belief that users will want to perform an activity because it will aid in the achievement of additional benefits that are detached from the activity itself, for example: improved pay, promotion or increased job performance.	
Job-fit (Thompson et al. 1991)	The belief by an individual that using a technology such as a PC will lead to the enhancement of their job performance.	
Relative Advantage (Moore and Benbasat 1991)	"The degree to which an innovation is perceived as being better than its precursor" (p.195).	
Outcome Expectations (Compeau *et al*, 1999)	Outcome expectations relate to the consequences of the behaviour. Based on empirical evidence, they are separated into performance expectations (job-related) and personal expectations (individual goals) (Venkatesh *et al*, 2003).	

Effort Expectancy (EE)

Effort expectancy can be defined as the degree of ease associated with using a system (Venkatesh *et al* (2003). According to Armitage and Christian (2003) and Lin (2006), the easier the behaviour is to perform and the more user friendly a system is the more likely the individual is to perform the behaviour and use the system. For example in Thompson *et al*'s (1991) MPCU study it is argued that the there will be a negative correlation between the perceived complexity of a PC and subsequent adoption of PCs. In the same respect, Davis (1989) argues that all else being equal an application perceived as being easier to use will be more likely to be accepted than those perceived as complex.

A notable feature of EE according to Venkatesh *et al* (2003) is that like PE it is significant in both voluntary and mandatory usage contexts. However, unlike PE, EE is only significant during the post training period of adoption. This means that as an individual's exposure to the innovation grows whether usage of the system is voluntary or mandatory no longer plays a significant role in affecting BI. In addition to the effect of usage context, effort expectancy's role within UTAUT is also moderated by the variables of age and gender. Venkatesh *et al* (2003) argue in gender terms EE is most salient for women especially those who have limited experience with using the new technology. Similarly, in terms of age, Straub (1997) argues that the user-friendliness of a system and therefore the amount of effort required to adopt an innovation is of particular importance to younger females; such that the easier a system is to use and therefore the less effort required, the more likely intention, adoption and usage are. In light of these arguments, it is therefore unsurprising that Venkatesh *et al* (2003) found that the most significant constructs from the existing literature that are associated with effort expectancy are *perceived ease of use* (TAM), *complexity* (MPCU), and *ease of use* (IDT).

Taking the derivatives of EE into consideration, it has been used within this study to examine not only how easy customers found online and self-service check-in to use, but also to what degree did this affect their overall intention to use the system again in the future. Table 3.9 defines the significant constructs associated with effort expectancy.

***H_2 Behavioural intention will be positively affected by Effort Expectancy** (the easier a system is perceived to be, the more likely it is that intention and usage will occur).*

Table 3.8: Effort Expectancy: Root Constructs, Definitions, and Scales (source: Venkatesh *et al*, 2003)

Construct	**Definition**	**Questionnaire Items**
Perceived Ease of Use (Davis 1989)	"The degree to which a person believes that using a particular system would be free of effort" (p. 320).	5 - 8
Complexity (Thompson et al. 1991)	"The degree to which an innovation is perceived as relatively difficult to understand and use" (p. 128).	
Ease of Use (Moore and Benbasat 1991)	"The degree to which an innovation is perceived as being difficult to use" (p. 195).	

Social Influence (SI)

"Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al, 2003, p.451). SI is also concerned with the degree to which the opinions of others are disseminated through the social system and consequently result in an innovation or behaviour becoming accepted as the norm (Brancheau and Wetherbe, 1990). The groundings of SI are found in human behaviour theories such as cognitive dissonance theory and humanistic theory. Both of these perspectives propose that individuals not only seek validation of their actions by important others but that they are driven to an action as a result of an inherent need to satisfy psychological needs such as belonging and image (see section 2.8.3 in Chapter 2 for an explanation of these needs in line with Maslow's (1954) motivational theory) (Pincus, 2004). For example, if an individual receives positive reinforcement from their peers and those who are perceived to be knowledgeable they are more likely to adopt the new product as it becomes seen as socially acceptable to do so. However, if individuals believe that using a new product will reduce their social standing, usage will not occur. Pavlou and Ferguson (2006) confirmed this belief in their study on e-commerce adoption where they found empirical evidence that supported the proposition that behaviour is instigated by a person's desire to act as important others think they should act. Similarly, Thompson *et al* (1991) quoting Triandis (1971) argue that an individuals behaviour directly reflects the messages they receive from others and what they consequently think they should do to become accepted. Overall, this means that if important others promote the message that the new product is acceptable this is likely to result in users further down the social hierarchy being more likely to adopt an innovation.

According to Venkatesh *et al* (2003), SI within the context of UTAUT, is characterised by the constructs of: *subjective norm* (TRA, TPB and C-TAM-TPB), *social factors* (MPCU) and *image* (IDT) (see Table .310 for an overview of each characteristic). In addition to this, they argue that unlike performance and effort expectancy, SI is only significant when use is mandated and its effect is only important during the early stages of individual experience with the technology, subsequently eroding over time as exposure to the new technology increases. Furthermore, Venkatesh *et al* (2003) also found that as the age of users increased the effect of SI became more significant. A possible reason for this is that because the effect of SI is not necessarily immediate and because younger users often have rapid rates of adoption (quickly moving on to the latest innovation) there is not a significant enough period of time between exposure to the innovation and adoption for SI to take effect (Norton and Bass, 1987).

With all of the aforementioned considerations in mind, SI has been used in this study to examine the affect of both peers and staff members on customers' actions, thereby allowing for an examination as to whether staff and organisational attitude towards the technology affects customer acceptance and usage of online and self-service purchase and check-in facilities.

***H_3 Behavioural intention will be positively affected by Social Influence** (positive reinforcement from peers will act as a stimulant to behavioural intention, such that the greater the degree of positive peer opinion the more likely intention and usage becomes).*

Table 3.9: Social Influence: Root Constructs, Definitions, and Scales (source: Venkatesh *et al*, 2003)

Social Influence: Root Constructs and Definitions		
Construct	**Definition**	**Questionnaire Items**
Subjective Norm (Fishbein and Azjen 1975; Davis *et al* 1989; Mathieson 1991; Taylor and Todd 1995a, 1995b)	"The person's perception that their piers think he or she should or should not perform the behaviour in question" (Venkatesh *et al*, 2003).	9-12
Social Factors (Thompson *et al* 1991)	"The individual's internalization of the reference group's subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations" (p.126).	
Image (Moore and Benbasat 1991)	"The degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (p.195).	

Facilitating Conditions (FC)

Facilitating conditions is a two fold construct dealing with both the degree to which an individual believes that there is an organisational and technical infrastructure available to them that supports system use and, the extent to which the individual themselves has the necessary resources available to facilitate use (Venkatesh *et al*, 2003). A unique feature of facilitating conditions is that unlike the other direct determinants of UTAUT its effect is not seen on BI but instead Venkatesh *et al* (2003) argue that it has a direct effect on use. Indeed, studies conducted by both Lee and Kozar (2005) and Fichman (1992) amongst others found that the degree to which the individual has readily available resources and the necessary knowledge to use a system has a direct positive effect on actual system use. Such that, if the system requires specialist resources or knowledge which the user does not have, then the likelihood of the individual actually using and consequently adopting the new product or service is minimal and vice versa.

Facilitating conditions is characterised in the literature via the constructs of: *perceived behavioural control* (TPB and C-TAM-TPB), *facilitating conditions* (MPCU), and *compatibility* (IDT). Within the context of technology acceptance facilitating conditions have a particularly unique attribute in that they are only significant when the constructs associated with performance and effort expectancy are absent (Venkatesh *et al,* 2003). Note that, although the effect of facilitating conditions is significant in both voluntary and mandatory settings its influence on intention following an individual's prolonged exposure to the system deteriorates. This is because, in principal, user participation is likely to improve factors such as product knowledge meaning that it is no longer seen as an obstacle to use or adoption (Hartwick and Barki, 1994); hence, Venkatesh *et al's* (2003) argument that facilitating conditions are moderated by the level of user experience.

Facilitating conditions have been used within this study to test whether customers are affected by not only organisational support for the system, but also self-support of the system. In other words, did customers own resource restrictions (in terms of hardware (for example computers and knowledge) affect the acceptability and eventual usage of the system; and similarly, did the level that existed for users in terms of an organisational and technical infrastructure make it more likely that the customer adopted and used the new technology. Table 3.8 defines and describes the root constructs associated with facilitating conditions.

***H_4* Use behaviour will be positively affected by Facilitating Conditions** *(the more support and the greater the available resources an individual has, the more likely it is that an individual will use an innovation).*

Table 3.10: Facilitating Conditions: Root Constructs, Definitions, and Scales (source: Venkatesh *et al*, 2003)

Construct	**Definition**	**Questionnaire Items**
Perceived Behavioural Control (Taylor and Todd 1995a, 1995b)	"Perceptions of internal and external constraints on behavior" (p. 149).	13-16
Facilitating Conditions (Thompson et al. 1991)	"Objective factors in the environment that observers agree make an act easy to do, including the provision of computer support" (Venkatesh *et al*, 2003).	
Compatibility (Moore and Benbasat 1991)	"The degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters" (195).	

Behavioural Intention (BI)

Intention, originally bought to light by Ajzen and Fishbein (1975) when proposing the TRA has long been significant as a predictor of behaviour (usage) in a variety of disciplines including IS (Gefen *et al,* 2003; Venkatesh *et al,* 2003). Essentially, intention acts as the catalyst that turns attitudes and perceptions into actual usage (Ahuja and Thatcher, 2005). It theorises that before a consumer begins to use a new system they must first intend to use it (Venkatesh *et al*, 2003). According to Ajzen (2002), there are three factors that contribute towards an individual's BI: *attitude toward the behaviour, subjective norm* and *perception of behavioural control.* Ajzen argues that given a certain degree of control over behaviour individuals will act upon their intentions as and when opportunities arise consequently resulting in usage. This in turn means that an individual's decision to use a particular product or service can be predicted by their intentions. Therefore, if the user does not intend to adopt an innovation first then ultimately they will not use it. Within the context of technology acceptance, intention can be used to measure a variety of different aspects ranging from the individuals intention to actually use the technology, to an individuals willingness to explore the system and find out how it works (Ahuja and Thatcher, 2005). According to the much-cited Bratman (1984), it is important when assessing intention that a clear distinction be made between an individual's intention to do something and their doing something intentionally. In this study, the focus is on the former, whereby Bratman (1984) argues that by examining the coordination of an individuals plan we can achieve some understanding of their intention to act.

However, despite its popularity, certain theorists (see for instance Davis *et al*, 1989 and Nambisan *et al*, 2000) still argue that the usefulness of intention as a predictor of behaviour can be significantly reduced when external factors such as attitude and resource availability amongst others play a role. This is because, external factors such as these essentially act as barriers to behaviour and ultimately prevent the behaviour from occurring. In light of this, it therefore becomes imperative when using BI as a predictor of usage that the context within which the behaviour is due to occur is also examined. Within the context of this study, BI was measured via the constructs of PE, EE and SI, and it was subsequently used itself to measure usage. (BI is measured via items 17 to 19 in the consumer questionnaire).

H_5 Behavioural intention will have a positive influence of Usage (the greater the intention to use a system, the more likely usage is to occur).

3.4 Summary

This Chapter has examined and defined the foundations for each of the models under investigation in this study. Through the definition of hypotheses the proposed structures of both ISSAAC and UTAUT has been established. The first model that was discussed was Travica's (2005) ISSAAC model. The models constructs were reviewed and verified via a review of the existing literature associated with two key examples of organisational virtualness, namely the virtual organisation and the virtual team. The corresponding constructs of ISSAAC are: *Interoperability, Switching, Special Product, Aggregation, Anchoring* and *Cybernization.*

The second model examined in this Chapter has been the Unified Theory of Acceptance and Use of Technology (UTAUT) as characterised by Venkatesh *et al* (2003). UTAUT is based on the eight dominant theories and models currently associated with consumer acceptance of innovation and has four direct determinants (*performance expectancy, effort expectancy, social influence* and *facilitating conditions*) each of which are influenced by a series key moderators, namely: *age, voluntariness, gender* and *experience*. Since the model has already been defined in the literature as appose to by the literature, the aim of this Chapter was to examine the root constructs and hypotheses associated with UTAUT, and define them within the context of this studies sample population (i.e. the airline industry and self-service booking and check-in) where applicable.

In addition to examining the constructs of each model, the Chapter has also outlined the hypotheses associated with both ISSAAC and UTAUT. In the case of ISSAAC this stage was especially significant as no previous study has quantitatively defined the structure of the model. In total nine hypotheses have been proposed within the context of ISSAAC and five have been defined in relation to UTAUT. These hypotheses were then taken forward and quantitatively validated thus providing empirical evidence for or against the theories proposed. Quantitatively testing the hypotheses is necessary in order to prove or disprove whether each model is equipped at examining their relevant phenomena. In the case of ISSAAC again this stage is especially vital as Travica (2005) in his original paper only theorised the presence of relationships between constructs and did not quantitatively validate them. Similarly, although UTAUT has already received empirical validation (see for example, Pu Li and Kishore, 2006), its application to the airline industry has never been tested and indeed its application in a customer-focused environment is minimal (Mallat, 2004). Therefore, in order to confirm UTAUT's theories and propositions are indeed generalisable additional verification is needed via a different sample population. The methods and techniques which have been used to collect and analyse the data for each model will be explained in detail in Chapter four, whilst the results of the factor analyses for both models are presented in sections 5.3 and 5.4 of Chapter 5 respectively.

Chapter 4

Research Strategy, Design and Methods

4.1 Introduction

In order to guarantee the validity of their findings researchers must ensure they select a research strategy that is not only deemed acceptable in their field of research (in this case IS), but also one which adequately addresses the aims and objectives of their study (Avison *et al,* 1999). In line with this, this Chapter aims to provide an overview of the most widely accepted research methods and data collection/analysis techniques currently associated with both quantitative and qualitative investigations in the field of IS. Overall, the Chapter is divided into five sections: *epistemology and taxonomy, data collection, data analysis, validation and assumptions and limitations.* Each section provides an overview of the technique or methodology and states which approach has been adopted for use in this study and why. The Chapter then concludes with a summary of the overriding philosophy of the Thesis.

4.2 Epistemological Approach and Taxonomy

The epistemology and taxonomy of a study help to define the nature and scope of the knowledge that will be explored by the research (Encyclopedia of Philosophy, 1967). If the epistemology is selected by the researcher before they start their investigation it will act as a guide to which techniques and research methods are used throughout the study. However, if the researcher already knows which approach they wish to use then it is more likely the nature of the data collected (either qualitative or quantitative) will serve as the focus for the study and the epistemology will be selected in line with this in order to provide support for the techniques used (Myers, 1997; Straub *et al*, 2004). The following sections examine the most common epistemologies (concerned with overriding philosophies) and taxonomies (concerned with the nature of the data) currently associated with IS research.

4.2.1 Epistemologies

An epistemology is concerned with the theory and assumptions made about knowledge and how it can be obtained (Collins Dictionary, 2004; Myers, 1997). At present there is no agreed means amongst researchers by which to classify research paradigms, however, the consensus among social scientists is that the majority of epistemologies that guide IS research can be categorised under the principle headings of: *positivism, interpretivism, critical, post-positivism* and *constructivism* (Boland, 1985; Benbasat *et al,* 1987; Orlikowski and Baroudi, 1991; Galliers, 1992; Guba and Lincoln, 1994; Mingers, 2001; Sarker and Lee, 2002). Although there are five epistemologies currently available to researchers only two have significantly dominated IS investigations over the past 20 years: namely *positivist* and *interpretivist,* therefore only these perspectives will be examined in greater detail (Orlikowski and Baroudi, 1991; Chen and Hirschheim, 2004).

Firstly, positivism. Positivist research is a generalisable approach which assumes that reality is objective and can therefore be described by quantifiable properties that are independent of the researcher and their tools (Myers, 1997; Allan, 1998). In most cases the general aim of positivist studies is to increase the analytical understanding of a phenomenon by developing and testing theories with the objective of identifying and discovering causal relationships which can then be tested through statistical analysis (Myers, 1997; Chen and Hirschheim, 2004). According to Straub *et al* (2004) at the heart of the positivist paradigm is Karl Popper's (1980) *Falsification Principle.* Popper's (1980) principle argues that not only is scientific knowledge an evolutionary process which can be characterised by a specific formula, but also that "*experience can show theories to be wrong, but can never prove them right*" (Straub *et al,* 2004, p.6). Indeed, according to the principle, the falsification of a theory can be obtained if as few as one observation in the field contradicts it. However, according to Straub *et al* (2004) in reality because measurement is never perfect and observations tend to be based on theories and methodologies that in themselves are flawed a researcher must obtain more than one observation in order to falsify a theory.

An alternative to positivism is interpretivism. According to Myers (1997), the interpretivist approach looks at reality from a subjective viewpoint presupposing that access to reality is only attainable through the development of social constructs such as language and perceptions. In addition to this, Lee (1991) and Klein and Myers (1999) argue that because interpretive research is based upon the philosophies of hermeneutics, phenomenology and ethnography, in order to obtain a realistic view of an entire subject we need to first understand the sum of its parts and the relationships that exist between the parts. From a social or organisational perspective we would therefore need to understand how reality is socially constructed and how it changes in line with human and organisational development (structuration theory is a good example of this) (Lee, 1991; Kaplan and Maxwell, 1994). Thus, in the context of this study, before a greater understanding of organisational virtualness and consumer acceptance of new technology could be attained we would need to first understand which and how environmental factors have contributed to the rise of the respective phenomena.

Taking into account both these perspectives the decision was made to adopt a positivist approach. The primary reason for this was because the main aim of the research presented in this Thesis was to validate the theories and concepts associated with two models in order to provide a greater understanding of the wider concepts of organisational virtualness and consumer acceptance of new technology. In addition to this, further motivation for using a positivist approach came from the work conducted by Chen and Hirschheim (2004) whose study of 1893 articles (dated 1991-2001) in the top five IS journals showed that over 81 percent of IS studies used a positivist approach compared to only 19 percent adopting the interpretative perspective; showing therefore that positivism is the more widely accepted approach in the IS community (Dwivedi *et al* (2008) in more recent research also found that positivist research is still favoured in the IS community and in particular in studies examining technology acceptance). The final reason why positivism was favoured is that typically the results produced by positivist studies tend to be more generalisable and numerical in nature, therefore using a positivist approach has meant that the theories and principles explored in this Thesis can be applied in a variety of contexts and industries without bias (Allan, 1998). Furthermore, producing generalisable results is of particular significance as being able to easily transfer theories across industries leads to advancements in IS and ICT research as a whole and also means that organisations become better equipped at understanding the factors that affect their overall success in the marketplace.

Overall, by following the positivist perspective and applying Popper's Falsification principle (1980) it has allowed for the collection of numerical data which has consequently been open to statistical analysis leading to the verification or falsification of the corresponding hypotheses associated with both ISSAAC and UTAUT. This in turn has helped to increase the understanding of the phenomena in a 'real world' context.

4.2.2 Taxonomies

IS research taxonomies are traditionally grouped into three categories: *confirmatory vs. exploratory, empirical vs. non-empirical* and *qualitative vs. quantitative* of which one is normally selected by the researcher (Hair *et al*, 1994). However, following the work of Miles and Huberman (1994) this study has chosen to take a holistic approach using confirmatory and exploratory, empirical and non-empirical and qualitative and quantitative taxonomies in conjunction with one another. According to Carr (1994) by using a combined approach researchers are not only ensuring their own success in the development of rich and meaningful findings but the likelihood of advancing the research area in general will also be more probable. Indeed, Carr (1994) goes argues that quantitative and qualitative approaches are ideally used in conjunction with one another oppose to being used separately. As advocates of the mixed method approach Miles and Huberman (1994) outline a three-stage process that suggests: Firstly, the researcher should use qualitative techniques such as observation and fieldwork to explore the 'real world' environment. Secondly, the collected information should then used to construct quantitative questionnaires to confirm possible relationships, and thirdly the qualitative facts should be built upon using qualitative techniques such as interviews. For further details of which exploratory/confirmatory techniques have been used see sections 4.4.1 and 4.4.2.

4.3 Data Collection and Analysis

Before the researcher is able to determine the appropriate means of data collection and analysis for their study, they must first select a general research approach/method. According to Myers (1997) and Straub *et al* (2004) a research method (or approach) acts as a strategic guide allowing the researcher to move from their initial philosophical assumptions to instrument design, data collection and finally data analysis. Within IS the most common research methods (from a quantitative perspective) according to Straub *et al* (2004) are: *field experiments, laboratory, experiments, free simulation, adaptive experiments, field studies, opinion research,* and *archival research.* Table 4.1 gives a brief overview of each of these methods (and those associated with qualitative research) alongside their associated advantages/disadvantages. Following this, the method selected for use in this study is discussed.

Table 4.1: Quantitative and Qualitative Research Approaches

	Quantitative Approaches
Approach	**Definition**
Field Experiments	Concerned with the experimental manipulation of one or more variables within a naturally occurring environment and subsequent measurement of the impact of the manipulation on one or more dependent variables (Boudreau *et al,* 2001)
Laboratory Experiments	"Laboratory experiments take place in a setting especially created by the researcher for the investigation of the phenomenon. With this research method, the researcher has control over the independent variable(s) and the random assignment of research participants to various treatment and non-treatment conditions" (Boudreau *et al,* 2001, p.6)
Free Simulation Experiments	The researcher creates a simulation that replicates the 'real world' but in a closed environment. The researcher then measures how humans interact and respond to the simulation (Straub *et al,* 2004).
Adaptive Experiment	This is a "quasi-experimental" research methodology that involves before and after measurements taken from a controlled and randomly assigned group. Data is collected at the outset and again after independent variables have been introduced. The resulting analysis reveals the final structure of the group (Straub *et al,* 2004).
Field Study	This approach should not be confused with field experiments. Field studies are non-experimental and involve the examination of 'real world' situations and natural settings, where variables are not able to be manipulated (Boudreau *et al,* 2001; Easterby-Smith *et al,* 2002; Straub *et al,* 2004).
Opinion Research	Opinion research aims to gather data on the attitudes, opinions, impressions and beliefs of human subjects. Data is obtained by asking subjects directly by means of interview or questionnaires. The approach commences with pre-established hypotheses and allows for an iterative approach to further hypotheses generation (Jenkins, 1985).
Archival Research	Primarily concerned with the examination of secondary and historical documents and data (Jenkins, 1985).
	Qualitative Approaches
Approach	**Definition**
Action Research	Action is the most widely accepted and practised form of participative research in IS investigations. Also referred to as participatory action research, it primarily involves

	the researcher becoming part of the study, which in turn means that they are able to affect and are themselves affected by the study topic (Myers, 1997; Straub *et al,* 2004).
Case Study	Case studies investigate phenomena within a 'real world' context, where the boundaries between phenomenon and environment tend to be blurred. The focus of case studies is primarily on organisational issues as oppose to technical issues.
Ethnography	Derived from social and cultural anthropology, ethnographic research involves the researcher spending a significant amount of time in the field. Thus allowing them to, understand humans and organisations and gain a greater appreciation of the context within which actions occur (Myers, 1999). Ethnography uses relatively few predetermined instruments and relies more on structured observations and emersion into an environment (Miles and Hubermann, 1994).
Grounded Theory	Grounded theory is based on the principle that theory is ascertained from data that has been systematically gathered and analysed (Glaser and Strauss, 1967; Myers, 1997). Grounded theory is a continual process that uses much iteration in order to develop theory. It is becoming increasingly popular within IS research literature as it provides a useful tool in the creation of context-based and process-oriented descriptions and explanations of the phenomenon (Myers, 1997).
Phenomenology	Phenomenology along with hermeneutics provides the base upon which interpretive research is conducted (Boland, 1985). It is a contextual approach which concerns itself with the pragmatic underpinnings of knowledge (Holstein and Gubrium, 1994). The researcher attempts to understand what and why a particular phenomenon is occurring, and looks at the meanings that subjects attach to social phenomena in general (Saunders *et al,* 1997).
Math Modelling	This approach models the 'real world' and presents the results as mathematical equations. In this approach, all variables (both dependant and independent) are known and therefore included in the model. Math modelling requires no human subjects (Jenkins, 1985).

In order to select a suitable research approach the work conducted by Orlikowski and Baroudi, 1991, Boudreau *et al* (2001) and Chen and Hirschheim (2004) was again taken into consideration. Each of these studies examined articles published in the top IS journals and found that the overriding research approach used was that of a *field study* (for example in Boudreau *et al* (2001), field studies accounted for 64 percent of articles, whilst in Chen and Hirschheim's (2004) investigation, they accounted for approximately 57 percent). The field study approach was therefore selected not only because of its prominence in the field of IS but also because as a general research method it represents an ideal means of overcoming some of the problems traditionally associated with quantitative studies (such as this one). For example, because quantitative studies often use controlled methods such as laboratory experiments it becomes harder to ensure that the research adequately reflects the 'real world' as the variables influencing the phenomenon under investigation can be manipulated. Therefore, using a field study approach whereby naturally occurring environments are examined without the manipulation of variables allows for a more open investigation which ultimately results in a more pragmatic understanding of how and why actions take place in the 'real world' (Carr, 1994; Boudreau *et al,* 2001; Easterby-Smith *et al,* 2002; Straub *et al,* 2004).

4.3.1 Data Collection Approach

In order to ensure that the current work uses methods that are in line with both the selected research approach (namely a field study) and best practice in the field of IS, the work of Chen and Hirschheim (2004), Straub *et al* (2004) and Dwivedi *et al* (2008) have all been considered. According to Straub *et al* (2004), if the researcher has opted to use a field study (as is the case here) the optimal means by which to collect data is either via a survey, interviews or a combination of both. The rationale behind this selection is that methods such as these lend well to the openness of field studies as they allow researchers to collect quantifiable data on abstract theories and concepts without the need to manipulate the natural environment (of the phenomenon under investigation). In turn, the data collected can be subjected to various forms of multivariate analysis which ultimately provides the researcher with the evidence upon which to argue the accuracy or inaccuracy of their associated hypotheses. In light of this, surveys and interviews appeared to be the logical choice for the collection of data, as not only did surveys allow for the collection of ordinal quantitative data which was suitable for multivariate analysis thereby helping to provide statistical evidence for or against the theoretical hypotheses associated with both ISSAAC and UTAUT (outlined in Chapter three). Furthermore, through the use of interviews additional qualitative data was obtained which helped to enhance the overall findings of the study by highlighting areas not covered by the questions in the survey. Further support for using surveys and interviews came from the work of Chen and Hirschheim (2004), who found that of 1893 articles examined across six of the top IS journals, in four out of the six cases surveys were consistently ranked as the most common method of data collection, a statistic supported by Dwivedi *et al* (2008) who found that surveys accounted for approximately 58% of the methods used in their analysis of IS journals. Therefore, in line with both these arguments, the decision was made to employ both surveys and interviews as the primary and secondary means of data collection respectively. The following paragraphs therefore explain some of the advantages and disadvantages of both techniques and further iterate why they have been used within the context of this study.

Firstly, surveys. Surveys (also referred to as questionnaires or research instruments) are a well-accepted and popular data collection method in both business and IS research (Saunders *et al,* 1997; Benbasat and Zmud, 1999; Dwivedi *et al,* 2008). The primary objective of a survey is to gather formal responses to questions or statements which relate to the latent concepts of a particular phenomenon. These responses then provide the numerical base upon which analysis is conducted and potential relationships between variables are identified (Straub *et al,* 2004). According to Newsted *et al's* (1998) review of the 1996 International Conference on Information Systems (ICIS) panel meeting on survey-based research, by using surveys as a means of data collection researchers can hope to gain a broad overview of the phenomenon under investigation in the 'real world' which is comparable across different groups, times, and places. Furthermore, Newsted *et al* (1998) argue that due to their ease of administration, overall simplicity, and the associated generalisability of results, surveys represent the ideal means by which to collect data that can later be used to objectively test hypothetical propositions associated with a theory or model. However, despite the significant advantages of surveys, as with any data collection technique there are also a number of disadvantages. The most notable of these in the context of this study is the fact that that the information gained from the administered surveys will be purely one-dimensional and will potentially lack the depth necessary to provide a full understanding of the phenomena under investigation. In light of this, the decision was made to administer each questionnaire within the context of a semi-structured interview where possible. This thereby allowed for the collection of qualitative as well as quantitative data thereby providing an even greater understanding of the subject areas of organisational virtualness and consumer acceptance of new technology. Copies of the research instruments for both ISSAAC and UTAUT can be found in Tables 1 to 3 in Appendix B.

The second means of data collection is semi-structured interviews. Semi-structured interviews represent an informal alternative to structured interviews and can take the form of either in-depth meetings or personally administered questionnaires. This technique is a favoured approach in exploratory research studies such as this one as they allow both pre-determined and open ended questions to be asked (Suanders *et al,* 1997). This in turn not only provides the researcher with the opportunity to cover a wider span of issues, but also allows the researcher greater flexibility when analysing and interpreting the results of their study (Fontana and Frey, 1994). Indeed, by administering the research instrument via semi-structured interviews the aim was to attain a more detailed understanding of virtual organisations and consumer acceptance of new technology. Furthermore, it was expected that this method would help to contribute to the internal validity of the overall study, an issue that will be examined later in section 4.4.3.

4.3.2 Data Analysis Technique

Data analysis is concerned with the mining and examination of data so that relevant relationships can be identified and the raw data can be viewed within its appropriate context (Collins Dictionary, 2004). According to Straub *et al* (2004), the means by which data is analysed is pre-determined by the taxonomy, the general research approach, and the overall aim of the study. For example, if the aim is to determine the latent variables of a data set or establish interaction effects amongst the constructs of a model, then quantitative analysis techniques based on univariate, bivariate or multivariate analysis should be used. However, if the aim is to establish patterns in the data or gain an in depth understanding of the language, communication, symbolism and meaning embodied within an organisation or system then qualitative techniques based on observation and emersion should be used (Hirschheim and Newman, 1991; Myers, 1997; Straub *et al*, 2004). Table 4.2 identifies and briefly explains the most common data analysis techniques currently associated with both quantitative and qualitative IS research analysis. This is then followed with a brief discussion of the techniques employed in this study.

Table 4.2: Qualitative and Quantitative Data Analysis Techniques

Technique	**Description**	**Data Type**
Multidimensional Scaling (MDS)	Traditionally a non-metric means of analysis (now metric output can be produced as well) MDS is a set of mathematical techniques that use algorithms in order to dimensionally reduce data so that proximities between data points can be "mapped" in a multidimensional space; theory can then be derived from the spatial representation of the data points (Kruskal and Wish, 1978; Hair *et al*, 1998; Chung *et al*, 2005),	Quantitative
Factor Analysis	Concerned with reducing the number of variables required to represent a set of observations and determining the inter-	

Technique	Description	Data Type
	relationships amongst a set of constructs. Latent variables are created in order to test the variation and validity of a primary construct and help with the derivation of meaning from results (Blackwell Encyclopedic Dictionary of Marketing, 1997).	
Structured Equation Modelling (SEM)	A multivariate technique that uses aspects of both factor analysis and multiple regression to estimate dependence relationships between constructs or variables (Hair *et al*, 1998).	
Regression	Regression summarises the process of creating a mathematical model or function that can then be used to predict or determine one variable by any other variable. It can also involve the fitting of a curve or straight line to a set of data points in order to find goodness of fit criterion (Black, 2001).	
Hermeneutics	Concerned with the "meaning" of a text or text analogue (Myers, 1997).	Qualitative
Semiotics	Separated into content and conversation analysis. The former involves the researcher searching patterns and regularise and the latter requires the researcher to immerse themselves in an environment in order to reveal background practices (Myers, 1997)	
Narrative and Metaphor	Deals with the understanding of language, communication, symbolism and meaning embodied within an organisation or system (Hirschheim and Newman, 1991; Myers, 1997).	

Although researchers tend to use analysis techniques that are typically associated with their selected research approach (that is qualitative vs. quantitative or exploratory vs. confirmatory etcetera). The use of a mixed method or pluralist approach whereby data analysis methods are used in conjunction with one other in order to gain a richer and more comprehensive perspective is also acceptable (Sandelowski, 2000; Mingers, 2001). Indeed, since this study aimed to test both new and pre-defined models (namely, ISSAAC and UTAUT respectively), establish new and test existing relationships between constructs and gain a greater understanding of organisational virtualness and user acceptance of new technology as a whole; the means by which data was analysed needed to be both exploratory and confirmatory. With this in mind, the following sections discuss each form of analysis and detail which of the associated techniques have been applied in this study.

Exploratory Analysis

Exploratory analysis is concerned with examining data in order to establish possible correlations between the items of a data set (Tukey and Wilder, 1977). Within the realm of social sciences the primary means by which this is achieved is via the use of exploratory factor analysis (EFA) (Field, 2005) (the diagram outlined in Figure 4.1

shows the sequential steps of EFA which will be applied in this study, note, these stages will be discussed in greater detail in Chapter 5 sections 5.3 and 5.4 where applicable). EFA is a data reduction technique which allows researchers to mine raw data so that the underlying constructs (factors) and relationships associated with a particular data set can be identified. In turn this allows the researcher to obtain a greater understanding of their particular research subject in action (Field, 2005). Within the context of this study EFA was undertaken using a statistics package known as Statistical Package for the Social Sciences (SPSS). SPSS was selected above other packages such as Statistical Analysis System (SAS) for its simplicity, availability and the ability to produce detailed graphs and charts.

Within the context of this study the establishment of item groupings was only necessary within the context of ISSAAC as the constructs and associated items within the context of UTAUT had already been determined and validated via Venkatesh *et al's* (2004) original study. Conversely, previous analysis of ISSAAC has been purely qualitative meaning that the 'real world' variables associated with the characteristics of organisational virtualness is based purely on theory and hypotheses and has yet to be validated via statistical analysis.

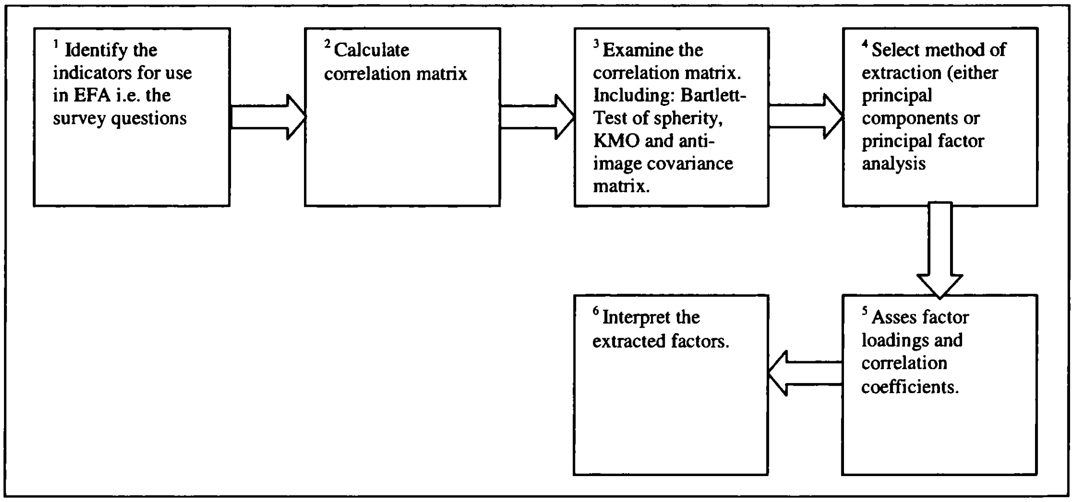


Figure 4.1: Sequential Steps in EFA (source: Diamantopoulos and Siguaw, 2000)

Confirmatory Analysis

Confirmatory factor analysis (CFA) helps the researcher to achieve complete results through the testing of relationships and the subsequent validation of the theories and concepts under investigation (Mulaik, 1987). Within the context of this study, CFA was conducted on the data sets relating to both ISSAAC and UTAUT, and was done so using a multivariate technique known as structured equation modelling (SEM). SEM is a mathematical modelling method that combines aspects of both multiple regression and factor analysis to approximate a series of interrelated dependant and independent relationships concurrently (Hair *et al*, 1998; Kelloway, 1998). SEM is a second generation regression tool (ANOVA is a prime example of a first generation tool) that allows for the assessment of complex construct relationships that are expressed through hierarchical or non-hierarchical and recursive or non-recursive structural equations (Chin, 1998; Gefen *et al*, 2000). Gefen *et al* (2000) argue that unlike simple correlation based techniques the intricate casual networks enabled by SEM help to more appropriately characterise 'real world' processes thereby allowing for a greater understating of a particular phenomenon. Furthermore, it is suggested that SEM contributes to the rigour of a study by providing richer information about the extent to which the research model is supported by the data. SEM was deemed appropriate for this study as a principle aim of the study was to identify the extent to which each of the constructs in both ISSAAC and UTAUT (as described in Chapter three) were dependant upon one another and the degree to which casual relationships were apparent. An additional factor in choosing SEM has been the argument by a number of prominent researchers that the use of second generation and multivariate analysis techniques (such as SEM) are fast becoming the basic standard upon which the validation of instruments and models in IS and ICT research are based (see for instance Anderson and Gerbig, 1988; Chin, 1998; Gefen *et al,* 2000). Indeed, Gefen *et al* (2000) found that in ISR and MISQ alone (two of the top IS research journals) approximately 45 percent and 25 percent of positivist empirically based articles used SEM as the primary form of analysis respectively.

In choosing to use SEM it also became necessary to select a suitable statistical package to conduct the analysis. In the context of this study the chosen package was

LISREL. LISREL was selected above other techniques such as PLS and regression analysis as not only is it suitable for use with skewed data, but also it has stronger statistical precision (when estimating loadings and structural path estimates) and allows for the comparison of alternative confirmatory factor analyses models via comparative statistics (a feature not available via linear regression or PLS) (Fornell and Bookstein, 1982; Gefen *et al*, 2000). In order to ensure a thorough examination of the data was conducted the workflow suggested by the much cited Diamantopoulos and Siguaw (2000) and Hair *et al* (1998) was followed. The three stages of CFA are shown in Figure 4.2. Each of the stages shown in Figure 4.2 will be examined in greater detail and more specifically within the context of ISSAAC and UTAUT in section 5.4 of Chapter 5.

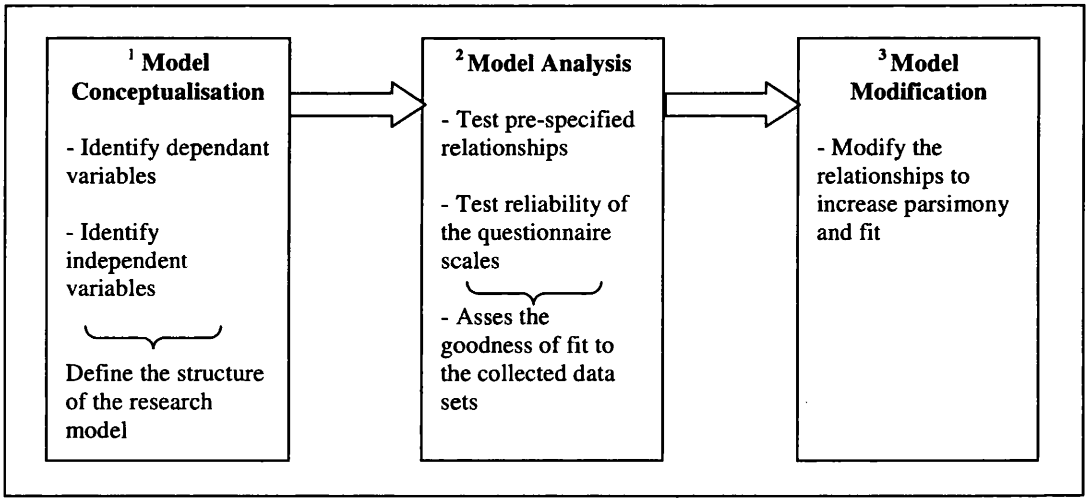


Figure 4.2: Stages of CFA (adapted from: Hair *et* al, 1998; Diamantopoulos and Siguaw, 2000)

4.3.3 Sample Population (Background InterAirlines)

Interairlines (a pseudonym used to ensure anonymity) was selected as a source of data for this Thesis as it was recognised as a primary example of a responsive organisation who use ICT to increase their competitiveness in terms of both their internal and external processes. Although the airline is not entirely virtual (they have a bricks and mortar presence) a growing percentage of their core operations are reliant on ICT and the use of information management networks. In organisational terms the airline has been able to remove overheads by giving employees the necessary ICT tools that allow them to manage their own working life and enhance the position of the company in the marketplace. Indeed, Interairlines actively encourage a multi skilled workforce and support the pooling of knowledge and resources amongst team members both in the UK and abroad so that individuals can work together to become more cost effective. Initiatives that have been introduced include: the use of remote learning, employee self-service, hot desking, electronic messaging, and the introduction of virtual teams made up of both internal staff members and individuals from other airlines. Furthermore, by utilising the current advancements in ICT Interairlines has been able to work with competitors in order to create global alliances which allow them to share core competencies and increase the variety of products and services available to their customers. From a consumer perspective, Interairlines has been able to actively reduce costs, increase profit and improve customer control, value and satisfaction by developing a long-term ICT strategy whereby the majority of if not all interaction with the consumer is based on ICT. Examples of this include, the use of the internet to book and check into flights, electronic ticketing and marketing, online helpdesks and self-service kiosks (SSK).

Overall, ICT is rapidly becoming one of the key characteristics at the centre of the majority of Interairline's core operations, and the majority of their future plans are critically dependant on technology and the effective investment in and application of ICT. The airline is continually focused on using ICT to maintain and develop the infrastructure needed for the successful deployment and maintenance of new staff and customer services. This combined with the good cross section of both employees (total sample size of 250 employees made up of check-in agents, mid and senior management)l and customers available at Interairlines and the ability to collect both quantitative and qualitative data made them an ideal data source for use in this Thesis.

4.4 Validation of Study

Study validation is concerned with implementing techniques and checks that will help to ensure the reliability of the research findings. According to Straub *et al* (1989), although IS research has changed dramatically over the past 20 years the need for methodological rigour has remained constant. Indeed, Boudreau (2001) argues that it is only through the appropriate validation of instruments that researchers can hope to refine concepts, remove flawed measures and create a sense of cohesion amongst research topics. With these considerations in mind the following sections outline the measures that have been put in place throughout this study in order to establish and maintain methodological rigour. The methods in question are: *pilot tests, focus groups, reliability* and *instrument age.* The section then concludes with a brief examination of the ethical underpinnings of the study.

4.4.1 Pilot Test

A pilot test or study is defined as a small-scale trial that is undertaken in order to determine whether or not and how a full-scale study should take place (Collins Dictionary, 2004). The purpose of the pilot test is to refine the research instrument so that in the final full-scale study the interviewees have no difficulties answering the questions and there are no problems related to the recording of data (Straub *et* al, 1989; Saunders *et al,* 1997). Grover (1997) argues that pilot tests are essential as they help to ensure the validity and reliability of questions thus making certain that the data collected via the research instrument is examining the constructs and relationships as originally intended. Furthermore, Janesick (1994) argues that a pilot study will allow the researcher to develop and solidify a rapport with interviewees, develop effective communication skills, and gain insight into the shape of the study that previously may not have been evident. The popularity of pilot tests amongst IS research is shown via Boudreau *et al's* (2001) instrumentation validation study which found that of the top five IS journals over 53 percent of quantitative positivist research studies used a pre or pilot test.

However, despite the apparent benefits of pilot tests, according to Saunders *et al* (1997) in quoting Bell (1993) there is great temptation amongst researchers to omit pilot tests as they can often be time and resource intensive. Saunders *et al* (1997) argue that in doing this the researcher runs the risk that their questionnaire will not succeed in answering the research questions it was designed to thereby having a negative impact on the entire study. With these factors in mind, a pilot study was conducted in order to: improve the content and format of the questionnaires, develop a balanced and unbiased interview technique, ensure that the study is effective in obtaining optimal data for later analysis, and increase the reliability of the study as a whole. Similarly, the pilot test also helped to: determine the time taken to complete questionnaires, to identify ambiguity in the questions, to develop a rapport between interviewer and interviewee.

The sample sizes for the pilot studies relating to both ISSAAC and UTAUT were originally predicted to be between 25 and 30. However, it became evident mid point during the pilot study that the responses of 15 and 20 staff and customers respectively were sufficient to identify common patterns regarding questionnaire content and layout. In light of this, the pilot studies were completed, amendments made and the final questionnaires administered. For the results of both pilot studies please refer to section 5.2 in Chapter 5 and Appendix C.

4.4.2 Focus Groups

Focus groups, (also referred to as *focussed interviews),* are among one of the most widely used and popular research tools in the social sciences (Stewart and Shamdasani, 1990; Morgan, 1996). They are typified by the bringing together of 12-15 participants who have common characteristics which relate to the topic under discussion (Krueger and Casey, 2000). According to both Babbie (1992) and Krueger and Casey (2000), the aim of focus groups is to provide an arena for a guided discussion which in turn will provide a better understanding of how individuals feel or think about a particular issue, product and or service. Overall, focus groups can be used as both a self-contained method to pilot a research instrument or in conjunction with other research methods such as surveys or interviews in order to enrich findings (Morgan, 1996). Though focus groups are not traditionally associated with rigour due to factors such as moderator bias and lack of researcher control, it its important to note that they offer significant advantages in that because they are open-ended discussions the information gathered from them is more likely to reflect the 'real world' (Stewart and Shamdasani, 1990).

Focus groups can be used at a variety of stages throughout the research investigation. However, possibly the most common times at which focus groups are used is either at the beginning of the study, where they are used as an exploratory tool to develop the research instrument or, at the very end of the study where they are used to enrich the existing findings (Krueger and Casey, 2000). In this case, focus groups were used on three occasions. Firstly, at the start of the data collection period in order to ensure the correct design, format and content of the research instrument; and to ensure the questions did indeed measure organisational virtualness (in the case of staff) and technology acceptance (in the case of customers). Secondly, mid-point during data collection where they were used to test the reliability of the items associated with the research instrument and participants who had previously been asked to answer questionnaires were asked to answer them again to test if they responded in the same or in a similar manner (note that, the ability to answer in an exact or similar manner gives an indication as to the reliability of the research instrument (Cronbach, 1951)). Finally, focus groups were used at the end of both staff and customer data collection periods to gain feedback on the research instruments and to obtain additional qualitative support for the quantitative data already collected.

Overall, focus groups were used within this study with to ensure the use of correct terminology and content (upon feedback from participants) so that respondents gave less ambiguous and more revealing answers (because they are able to easily understand the questions asked). Furthermore, focus groups allowed for the enrichment of the proposed theories through the collection of supplementary qualitative materials and most significantly they facilitated the creation of a more reliable research instrument which in turn resulted in the collection of what is hoped to be better-quality data. See Appendix C for the results of the focus groups.

4.4.3 Validity and Reliability Testing

In order to ensure the overall validity of a research instrument, five key areas need to be assessed: *content validity, construct validity, reliability, internal validity* and *statistical conclusion validity.* The following section details how each of these measures have been addressed within the context of the current research.

Content Validity

Content validity, as may be presumed is concerned with the content of the research instrument. According to Straub *et al* (1989), if a researcher's data collection tool is a questionnaire in order to ensure content validity the questionnaire items must be drawn from a wide variety of sources related to the topic under investigation. If questions are not representative of a universal pool then Straub *et al* (1989) argue that the instrument may be subject to bias which can then lead to untrue responses, unrealistic data and ultimately flawed findings. However, despite its importance ensuring content validity is often problematic as each researcher has his or her own perception of what is considered a satisfactory review of the field (Cronbach, 1971). According to Boudreau *et al* (2001), one of the only true means of establishing content validity is via a constant system of review whereby professionals in the field evaluate a different version of the instrument until a consensus is reached. Within the context of this study it was only necessary to construct and validate one questionnaire as Venkatesh *et al* (2003) had already validated a questionnaire for use with UTAUT. In contrast to this, Travica (2005) had only suggested possible "operationalisations" of the constructs of ISSAAC in his 2005 study (thereby only alluding to possible questionnaire items). In light of this, whilst the questionnaire used to examine UTAUT was taken directly from the literature, the questionnaire used to test ISSAAC was constructed via an evaluation of the extant literature associated with organisational virtualness, reviews by academics in the associated field of research and submission to focus groups (focus groups were used to ensure the use of correct terminology).

Construct Validity

Construct validity is concerned with assessing whether or not the measures of the research instrument accurately reflect relationships between constructs. It highlights whether the data collected is a manifestation of the true scores or if it is a result of the instrument used (Straub *et al*, 1989). By measuring construct validity researchers are able to determine amongst other factors, the amount of random error and method variance in their data set. In turn, by measuring the extent to which each of these errors occurs and taking the appropriate action researchers are able to reduce the level of ambiguity in their findings (Bagozzi *et* al, 1991; Straub *et al,* 1989; Gefen *et al,* 2000).

Construct validity can be achieved by using amongst other techniques multi-trait/multi-method, component analysis, factor analysis or SEM. Furthermore, according to Boudreau *et al* (2001), the use of new instrumentation will also help to ensure construct validity as new instrumentation is often subjected to more rigorous testing than pre-established instruments. In the case of this study construct validity was tested via techniques such as factor analysis (exploratory and confirmatory) and SEM as recommended by Bagozzi *et al* (1991). For example, factor analysis was used to generate factor loadings and factor matrices, whereby if the loadings were seen to load 'cleanly' onto one factor only with a relatively equal distribution of loadings, then it was concluded that construct validity had been achieved (and vice versa). Similarly, SEM helped to ensure construct validity as according to Straub *et al* (2004), the methods used to conduct SEM holistically test the data set for errors such as measurement error. Whilst both of these methods were applied in the case of ISSAAC (because neither pre-existing questionnaires nor quantitatively verified scales were available), only SEM was applied in the case of UTAUT, as the questionnaire associated with the model had already undergone statistical analysis by Venkatesh *et al* (2003) in their original study (and more recently in studies such as Oshlyansky, 2007) and therefore a certain level of construct validity was presumed to have already been achieved. The outcomes of these tests are presented in section 5.4.1.

Reliability

Reliability looks at the degree of measurement accuracy and assesses the extent to which a respondent is able to answer in the same way each time they are asked a particular question (Cronbach, 1951; Straub *et al,* 1989). The most widely used measure of reliability is Cronbach's alpha (*a*) (the value of which changes in accordance with sample size and question scale) (Peterson, 1994). According to Hair *et al* (1998) values of *a* range from zero to 1.0, where higher values indicate higher reliability. Nunally (1978) expands this and states that for basic research a value of between .7 and .8 is acceptable and will show significant enough measurement reliability. A second means by which to test for reliability is through the use of second generation analysis tools such as SEM. According to Boudreau *et al* (2001) *(*quoting Segars (1997)) techniques such as SEM are more commonly being used to supplement traditional reliability tests (such as split test or test re-test), as they allow for the testing of "unidimensionality". Overall, within the context of this study, reliability has been tested via the selection of an appropriate alpha value and the use of both focus groups and SEM.

Focus groups were used to ask the same group of participants' identical questions at different intervals in time to ensure they responded in the same way, such that if participants answer in an exact or similar manner this shows a degree of reliability, however if responses are vastly different the research instrument may have to be re-examined and deemed unreliable. Secondly, scale reliability was tested using a suitable value of *a* (SPSS was used to test each item against the specified value of *a*). Whilst many researchers argue that a value of .8 is the minimum acceptable gauge of reliability (Nunnally, 1978), others such as Peterson (1994) argue that if the sample size is between 100 and 199, a Likert scale is used, the size of the scale is six and questions are administered by an interviewee (as has been done in this study), acceptable values of *a* can start at .72 and go up to .8 and beyond. Similarly Cortina (1993) argues that in preliminary studies, values of *a* can be as low as .65. The final test of reliability was via SEM. This was used in conjunction with EFA to ensure the correct selection and investigation of any apparent casual links between items and constructs. See section 5.4.1 in Chapter 5 for outcome of the reliability analysis for both ISSAAC and UTAUT.

Internal Validity

Internal validity is mainly concerned with ensuring that there is an alternative explanation for the findings of the research. It asks the question: could the observed effects have been caused by a set of unmeasured variables or un-hypothesized scenarios? (Straub *et al*, 1989). According to Yin (1994), a key means of testing internal validity is pattern matching. Pattern matching is concerned with comparing empirical and theoretically based patterns against one another. Yin (1993) argues the most common and most useful means of doing this is the creation of null hypotheses. Traditionally a hypothesis would propose a significant relationship between two variables, in contrast to this, null hypotheses state that no relationship exists and any correlation between variables occurs by chance alone. Therefore, in order to ensure internal validity this study has included null and alternative hypotheses alike (see sections 3.2 and 3.3 of Chapter 3). In addition to this as suggested by Atman *et al* (2000) internal validity will be tested via the administration of questionnaires through interviews. Atman *et al* (2000) suggest that interviews help to achieve internal validity as they allow alternative themes to emerge from the data that are not guided by the research as a whole. These alternatives (if any) are presented in Appendix C.

Statistical Conclusion Validity

Statistical conclusion validity is used to test whether or not the variables demonstrate relationships that are not explainable by chance (Straub *et al*, 1989). In short, this type of validity is testing statistical power. Power according to Straub *et al* (1989), Baroudi, and Orlikowski (1989) is the probability that the null hypothesis has been properly rejected. Both parties argue that sample size is the most common factor to affect statistical conclusion validity, in that the larger the sample size, the less likely improper rejection is. Although at present, there is no exact figure as to the optimal sample size, in order to create a benchmark studies with similar characteristics to this study were examined and an average sample size attained (see for instance Wisenfeld *et al,* 1999; Volery and Lord, 2000; Powell *et* al, 2004; Hertel *et al*, 2005). For example, Venkatesh *et al*'s (2003) examination of UTAUT used a range of sample sizes between 107 and 786. Using this and other studies as a guide, the sample sizes for this investigation have been set at 200 and 400 (minimum) for the investigation of ISSAAC and UTAUT respectively (note that in the case of ISSAAC the maximum number of staff available for participation was 250 as this was the total number of staff employed at the airline site used in this study – this number is inclusive of participants available for the pilot study as well). Considering these sample sizes, it is more than likely that statistical conclusion validity has been achieved than not, although no exact test is possible.

4.4.4 Maturity of Instrument

Although Straub *et al* (1989) suggest the use of pre-established instruments is preferential in IS research. Boudreau *et al* (2001) argue that this is not always possible. The primary reason for this is because the field of IS is continually changing and what were once considered suitable instruments fast become dated and incapable of measuring the current trends. Furthermore, Boudreau *et al* (2001) argue that if researchers have the time to develop new instruments it should be done as this helps to develop new constructs, ensure validity and reliability of findings and advance the research area as whole. Considering these arguments, this study has used the current literature related to organisational virtualness and consumer acceptance of new technology to determine existing, and develop new questions, and the well established Likert scale will be used to measure interviewee responses. Developing new questions is especially important within the context of ISSAAC as a quantitatively tested instrument related to organisational virtualness is currently not available.

4.4.5 Ethics

Ethics represent those morals or principles that govern an individuals or a group's behaviour (McDaniel and Gates, 2002). Ethical issues apply to both researcher and respondent and can be seen to affect all stages of research from the initial design stage through to data analysis and conclusions. In adhering to ethical guidelines the researcher is able to ensure the results derived from their research have a certain level of accuracy (Punch, 1994). According to Zikmund (1999), there are three areas that should be considered if the researcher is to conduct an ethical study: *informed consent, deception, and accuracy.*

Informed consent in concerned with the interviewees having the right to be informed about all aspects of the research task, time, methods and outcomes thus allowing the individual to make an informed and intelligent choice as to whether or not they participate (Mc Daniel and Gates, 1999). In line with this, before each semi-structured interview participants were given a brief overview of the subject area and aim of the study, assured anonymity and were told that there was no obligation to participate and if they did not feel comfortable. The second aspect to consider is deception. In most cases, deception is concerned with determining whether the researcher has deliberately misled the individual in order to gain information. In qualitative research it is the responsibility of the researcher to periodically remind participants why they are taking part in, and what role they play in the study as a whole. If this is not done then it can be argued that the researcher is using their relationship to deceive the participant into disclosing information that they may not feel comfortable with and may not believe is going to published (De Laine, 2000). In order to ensure deception did not incur interviewees were constantly reminded of the role their responses played in the greater study and told if at any time they felt uncomfortable in answering a question they could refrain from doing so. The final point to consider concerning ethical practice is accuracy. Accuracy deals with ensuring that the data collected is a true reflection of the phenomenon under investigation. According to Christians (2000) falsehoods, fraudulent materials, oversights and contrivances are both *"non-scientific and unethical"* (p.140). Similarly, Saunders *et al* (1997) argue that researchers must ensure that they avoid being selective in their data acquisition so that the data collected is valid and reliable. If on the other hand, the research data is skewed or unrealistic then the data will become worthless and the subsequent findings and conclusions of the study will be impractical. The accuracy of the data collected in this study was ensured by carrying out a series of reliability and validity checks as discussed previously in section 4.5.3.

4.5 Summary

This Chapter has provided a brief overview of the most generally accepted philosophical approaches, taxonomies, general research methods, data collection and data analysis techniques currently used in IS research, providing examples of the most common approaches and techniques were necessary. Furthermore, it has detailed which strategies were applied to this study and the reasons why other approaches or techniques were rejected. It has also provided a brief explanation as to why Interairlines was selected as the source of data for this Thesis.

In short, this study has taken a positivist philosophical perspective assuming that reality is objective and can therefore be measured using pre-defined hypotheses and theories. The underlying aims of the research have been both exploratory and confirmatory in orientation and have attempted to both define and either prove or disprove possible relationships between the constructs of ISSAAC and UTAUT respectively. The nature of the data collected has been primarily empirical and quantitative and therefore open to statistical analysis. Data analysis has been conducted using: simple descriptive statistics, exploratory techniques such as EFA and multivariate methods such as SEM. In addition to this, some qualitative data was collected via focus groups in order to gain a richer understanding of the topics under investigation and to provide further support for the arguments presented in Chapter three.

Overall, this study has aspired to examine the phenomena of organisational virtualness and consumer acceptance of new technology whilst also providing both researchers and practitioners with a useful tool which allows them to advance current research in the areas discussed, and examine which factors will allow organisations to improve their potential through virtualisation and ICT adoption as a whole. The subsequent Chapters show how each of the methodologies examined throughout this Chapter have been employed for use in this study and outline the results of these actions accordingly.

Chapter 5

Results

5.1 Introduction

Data analysis is concerned with the mining and examination of data so that significant relationships can be identified (Collins Dictionary, 2004). As previously discussed in Chapter four the method of data analysis used in this Thesis is both exploratory (in order to refine the data set and check for the outliers) and confirmatory (in order to obtain meaning from the data by either proving or disproving the associated hypotheses outlined in Chapter three). By using a combination of analysis techniques it is believed that a richer and more enlightened perspective of the data and or environment under investigation has been attained (Sandelowski, 2000; Mingers, 2001). Whilst a brief overview of each section of the Chapter is given below, the overall aims of the Chapter are as follows:

1. Verify the key characteristics underlying the phenomena of organisational virtualness and user acceptance of new technology; and subsequently assess whether these findings are in line with the hypothesised model(s) and the extant literature.
2. Test the relationships of both hypothesised models thereby either proving or disproving the hypotheses outlined in Chapter 3, sections 3.2 and 3.3 (and identify which relationships are most/least significant).
3. Advance validation of UTAUT within a consumer context and work towards quantitative validation of the ISSAAC model.

Overall, the Chapter is divided into four sections: *instrument development, data screening and descriptive statistics, confirmatory factor analysis* and *model modification.* The first section is entitled instrument development. This section outlines how the instruments used to collect data were developed and tested in order to ensure the suitability of the items associated with each of the constructs of the model(s). The section also describes the setting for data collection outlining in brief both the environment within which data was collected and the basic demographics of the study (including number of male/female participants). Note that in the case of UTAUT although data was collected at four stages of the booking and checking in process (namely: online searches, online booking, online check-in and self service check-in) for reasons associated with sample size only the data for online searching, online booking and self-service check-in has been analysed (once the data set was split the sample size relating to online check-in was insufficient to yield meaningful results (91)). From this point forward, the data sets associated with UTAUT are referred to as online *searching for tickets (OLS), online booking of tickets (OBT)* and the use of *self-service ticket machines (SSK).*

Section two, details the results of the data screening and presents the descriptive statistics associated with both ISSAAC and UTAUT. Data screening was conducted with the aim of assessing the suitability of factor analysis, determining the overall distribution of the data set, identifying any outliers, observing whether intercorrelations between the variables of the data set were present and ultimately (if applicable) reducing the data set to a more manageable size.

Using the screened data as a base the third section details the results of the confirmatory factor analysis which was conducted on both models in order to: test the relationships between the constructs as defined via the hypotheses in Chapter three and, in order to test the validity, reliability and fit of the models to the data collected. The overall aim of the section is to establish whether the data and results presented within this study are representative not only of the current sample but can also be used to examine organisational virtualness and user acceptance of new technology as a whole in a variety of different contexts.

The fourth section presents the results of the model modification within the context of both ISSAAC and UTAUT. Modifications are based on both the preceding confirmatory factor analysis (whereby parameters with insignificant *t*-values are considered for modification) and via the use of modification indices (which details the change in chi-square as a result of alterations made). The concept of nested models is also discussed in this section.

The Chapter concludes by summarising the results of the analysis and briefly detailing how the results affect the current body of work related to organisational virtualness and user acceptance of new technology and therefore what contribution the present research has made.

However, it is important to note that before any type of analysis can commence, it is necessary to determine whether the data sets pertaining to ISSAAC and UTAUT are suitable for use with factor analysis (whether exploratory or confirmatory). In order to analyse the appropriateness of the data sets it is therefore necessary to examine both the *measures of sampling adequacy (MSA)* (showing how well each variables fits in with the overall structure of the data) and the *anti-image correlation matrix* (which gives an indication of correlations, which are not due to the common factors) (Hair *et al,* 1998; Field, 2005). If factor analysis is appropriate then, the MSA values of the majority of items (observed variables) should be greater than .50 and the partial correlations between items should be close to or at .0. In this case, 98% of the partial correlations in both the ISSAAC and UTAUT data sets were in fact close to .0. Furthermore, within the context of ISSAAC there were no MSA less than .50 (the lowest within the context of ISSAAC is that associated with question 15 (.59)). However, in contrast to this, within the context of UTAUT three items had insignificant MSA values (PBC2 and PBC5 in data sets OLS, OBT and SSK and additionally FC3 in data sets OLS and OBT). These items therefore became candidates for deletion and the effect of their removal on the respective data sets is examined in section 5.4.1. See Tables 1 and 2 and 4-8 in Appendix D for the anti-image matrices (showing the MSA) for ISSAAC and UTAUT.

A further test that can be used to asses the suitability of the data is a comparative examination of the R and the reproduced correlations matrices (See Tables 3, 10-12 in Appendix D). If the solution provided by factor analysis is satisfactory then the values in the reproduced matrix should be close to those given in the original r-matrix (Hair *et al*, 1998; Field, 2005). For example, within the context of ISSAAC, the value of the co-efficient showing the correlation between questions 1 and 3 is given in the r-matrix as .62 and the corresponding value in the reproduced matrix .61 (a difference of only .001), this thereby shows that the solution provided by factor analysis should be assumed correct. However, in order to test the overall acceptability of the solution the values in the lower half of the matrix (entitled: residuals) should be examined as they show the actual differences between the predicted and observed values. For a good factor analysis most of these values should be small and ideally less than .05 (note that the number of residuals with values greater than .5 is summarised by SPSS at the bottom of this matrix, and should not exceed 50%). Within the context of this study, the number of residuals exceeding the acceptable limit of .05 was 11% for ISSAAC and 30%, 31% and 36% for data sets OLS, OBT, and SSK respectively. Overall, this indicates that there are meaningful relationships between the items of the data set and overall the data set is suitable for use with one or many types of factor analysis.

5.2 Instrument Development and Pre-Test

In order to test the concepts and theories associated with virtual organisations and customer acceptance of new technology, empirically based questionnaires were administered via semi-structured interviews. Note that, whilst the items used to test the constructs of UTAUT were taken directly from Venkatesh *et al*'s (2003) questionnaire (whereby the items had been validated) and modified to fit the context of self-service products in the airline industry. The items used to test for the presence of the constructs of ISSAAC were adapted from prior literature, including both Travica's (2005) original paper and the extant literature relating to inter and intra organisational virtualness (see Appendix B for the final questionnaires). In both cases apart from generic questions (such as gender and sex), all items were measured using either a five (ISSAAC) or seven (UTAUT) point Likert scale with responses ranging from strongly disagree to strongly agree. This consequently allowed for the use of both positive and negative related questions (as the results can be easily reversed without losing information).

The second step in the instrument development process was concerned with ensuring the content validity of both questionnaires. In order to achieve this, preliminary versions of the instruments were reviewed by both faculty members and doctoral students and in addition to this both questionnaires were submitted as part of complete papers to conferences and journals so that they were reviewed by peers in the field of IS and ICT. Both instruments were then pre-tested by administering each questionnaire to 15 members of staff and 30 customers respectively. Furthermore, focus groups were conducted in order to improve the overall readability and quality of the questions in the instrument and to ensure that the terminology used was inline with both the extant literature and that of the airline and their customers. (note the summary reports for the focus groups can be found in Appendix C, whilst the validity and reliability of the questionnaires is discussed in section 5.4.1). Although none of these phases revealed any major problems with either research instrument. Both questionnaires were progressively refined, simplified and in the case of ISSAAC shortened in order to improve their overall applicability and as stated their content validity. (Note, the original and refined research instruments for both ISSAAC and UTAUT can be found in Appendix B).

The final questionnaires were administered over a period of approximately two months (for each model), to the members of staff and customers of a leading international airline. The airline in question was considered appropriate as it displayed key characteristics of operating along a continuum of virtuality. Such that, while the foundations of the airline are similar to those typically associated with a bricks and mortar entity, virtual characteristics such as strategic alliances, hot-desking, online sales and self-service check-ins are also present (see section 4.3.3 of Chapter four for a more detailed overview of the study setting). In total 202 (of a total potential population of 250) questionnaires were completed for ISSAAC and 305 questionnaires were completed for UTAUT (the figure for UTAUT is an average result, as the data set is split into three according to different stages of the e-booking and checking in process). In the case of ISSAAC questionnaires were administered to a wide variety of staff members ranging from check-in agents who acted as support agents for the self-service kiosks to management who were responsible for designing and administering the online training sessions. This was done with the aim of decreasing the amount of respondent bias and so that a broad cross section of opinions were accounted for in the data. Furthermore, in the case of both models all questionnaires were paper based and administered in person. Administering the questionnaires in person allowed for more accurate and complete responses as explanations of questions could be given to respondents helping them to respond more easily. Finally analysis of the raw data shows that in the case of both models 100% of respondents had regular interaction with the virtual components of the organisation; the respective gender splits for the data sets were 41/59% male/female and 70/30% male/female respectively, and of the 305 customers interviewed 66% were business passengers, 33% leisure passengers and 1% first time flyers. Furthermore, 65% were deemed regular flyers (travelling more than once a month) with the remaining 35% flying no more than 2/3 times a year.

Once all data had been collected, the responses were fed into SPSS and subjected to EFA (using SPSS) in order to determine the distribution of items and eliminate outliers. Following this, the refined data set formed the base for the CFA (using LISREL), which was conducted in order to test the reliability and validity of both the measurement and structural models.

5.3 Data Screening

The aim of data screening is to evaluate the overall distribution of the data set and asses the probability that there are intercorrelations amongst the variables. Essentially, there are three stages to data screening: *descriptive statistics (including normality testing), correlation testing* and *data reduction* (Hair *et* al, 1998; Field, 2005). The following sections describe each of these stages and present the results for the data sets relating to both ISSAAC and UTAUT.

5.3.1 Descriptive Statistics and Normality Testing

The first stage in the data screening process is to examine the descriptive statistics produced by the SPSS program. As a rule, descriptive statistics are broken down into three categories. *Measures of central tendency* (mean, mode and median), *measures of dispersion* (range, standard deviation and variance) and *measures of distribution* (histogram, kurtosis and skewness) (note the output for these statistics are presented in Tables 1 to 4 in Appendix E). According to Field (2005), no one of these tests is the most significant and instead they are most meaningful when examined in unison. For example, by examining the difference in size between the mean and the median the likely presence of outliers in the data set (shown by a large degree of difference between the two values) can be determined. Similarly, by examining the value of the standard deviation in relation to the mean of the data set, the extent to which the data as a whole is normally distributed can be ascertained. In the case of this study for the data set relating to ISSAAC there was never more than .68 degrees difference between variable mean and variable median (the largest difference was between the mean and median of question 14, whilst the smallest difference was between the values associated with questions 15 to 42, where there was zero degrees difference). This is therefore indicative of a lack of outliers in the data set. The same was also true for each of the data sets relating to UTAUT. In that, across the sets the maximum difference between median and mean was never greater than .79. Furthermore, in terms of the standard deviations in the context of both ISSAAC and UTAUT there is a reasonably large degree of difference between the average mean and average standard deviation. 3.67 for ISSAAC and 1.26, 4.34 and 4.50 for data sets OLS, OBT and SSK within the context of UTAUT respectively. This therefore indicates that the range of responses across the scales with relation to both models is for the most part reasonably large. In line with this it can therefore be argued that the data sets are not normally distributed. This conclusion is further supported via the results of the kurtosis and skewness tests for both models. According to Joanes and Gill (1998) kurtosis and skewness measure the "peakedness" and asymmetry of the probability distributions of real-valued random variables respectively. Ideally, an informative data set will have kurtosis and skewness values close to zero, equal symmetry and should be neither too flat nor too "*pointy*". If these conditions are met the data set can be said to be mesokurtic and resemble normal distribution. However, within the context of this study for both ISSAAC and UTAUT the kurtosis and skewness statistics indicated that the data is not normally distributed (as shown in Table 5.1 and Tables 1 to 4 Appendix E). This is evident via the majority of items having negative skewness (distribution is said to *left-skewed* and the mass of the distribution falls to the right of the curve) and positive kurtosis values (leptokurtic distribution with a more acute "peak" around the mean). Non-normality is further supported by the significant result of the Kolmogorov-Smirnov and Shapiro-Wilks tests, which for both models is significant at p <.05 (.00 respectively) (see Table 5.1 and Tables 5 and 6 in Appendix E). This means that any statistical tests conducted using the data collected needed to be either non-parametric, or capable of accommodating non-normally distributed data.

Table 5.1: Normality Analysis – ISSAAC and UTAUT

Model	**Statistics**					
	Average Skewness	Average Standard Error	Average Kurtosis	Average Standard Error	Average Kolmogorov Smirnov	Average Shapiro Wilk
ISSAAC	-1.82	0.17	6.20	0.34	0.44	0.55
UTAUT (OLS)	-3.26	0.13	21.34	0.25	0.41	0.48
UTAUT (OBT)	-3.24	0.13	21.11	0.25	0.41	0.48
UTAUT (SSK)	-3.26	0.14	17.20	0.28	0.41	0.50
Significance					0.00	0.00

5.3.2 Correlation Testing

The second stage of data screening is to examine the structure of the data. This is done in order to determine whether there are correlations present amongst items and therefore if factor analysis is suitable for use. Generally, the structure of the data is attained through the examination of either correlations between items or correlations between respondents (Hair *et al*, 1998). Since this study has aimed to examine the underlying characteristics associated with the phenomena of organisational virtualness and consumer acceptance of new technology, R factor analysis was chosen as the most appropriate means of analysis. However, if the aim had been to identify common traits amongst the respondents themselves Q-factor analysis would have been more applicable (Hair *et al*, 1998).

According to both Hair *et al* (1998) and Field (2005), in order to determine whether there are significant relationships between items both the correlation figures (shown in the upper half of the matrix) and the significance values (shown in the lower half of the matrix) should be examined. If there are meaningful relationships between items then the majority of the correlation co-efficients and significance values should be less than .90 and less than .50 respectively. However, if this is not the case then Field (2005) argues that there may be a certain degree of singularity within the data set, which can cause the estimation of the unique contributions of items to be problematic. In order to check the degree of singularity, Field (2005) therefore recommends examining the determinant of the R-matrix, which is significant when greater than .00001. If the value of the determinant is less than the threshold of .00001 then it can be argued that the data set will benefit from the removal of insignificant variables. Within the context of both ISSAAC and UTAUT although all co-efficients and significance values are less than .90 and .50 respectively, the determinants of all the R-matrices were also less than .00001 (1.95E-0.008 for ISSAAC and 5.82E-011, 1.61E-010 and 1.87E-010 for data sets OLS, OBT and SSK within the context of UTAUT respectively). This therefore suggests that whilst there are meaningful relationships between variables, the strength of these relationships may be questionable and may therefore benefit from the removal of items (this will be examined later in section 5.33) (See Tables 2 and 7-9 in Appendix D for the r-matrices).

A further test of correlation amongst items is Bartlett's test of sphericity. If there are correlations and factor analysis (either exploratory of confirmatory) is appropriate, then Bartlett's test of sphericity should have a significance value less than .50. In this case, the value of Bartlett's test of sphericity for all data sets across both models is considerably below .50, it is in fact .000 (See Table 5.2 and Table 1 in Appendix F). Furthermore, the associated Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) statistic for both models is greater than the recommended value of .7, .8 for ISSAAC and .74 on average across the data sets pertaining to UTAUT. This shows that there are significant correlatory patterns amongst the items which could represent the underlying characteristics of organisational virtualness and consumer acceptance of new technology. Further correlatory tests are discussed in section 5.3.3.

Table 5.2: KMO and Bartletts Test of Sphericity – ISSAAC and UTAUT

Model	**Statistics**			
	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
		Approx. Chi-Square	df	Sig.
ISSAAC	.793	3358.370	528	.000
UTAUT (OLS)	.754	8786.31	171	.000
UTAUT (OBT)	.761	8294.50	171	.000
UTAUT (SSK)	.751	6670.76	171	.000

5.3.3 Data Reduction

Data reduction is concerned with examining the data set and identifying potential candidates for deletion based on their lack of correlatory power with other items. This stage of the analysis helps to ensure that not only is the data set reduced to a more manageable size but also that the items taken forward for analysis are in some way correlated with one another (often referred to as the level of fit) (Field, 2005). One of the key outputs used to identify unsuitable items is the communalities table (shown as Tables 2 and 3 in Appendix F). This table shows the distribution of variance for each of the items in the data set. By examining the extraction value it is possible to determine the amount of variance in a variable that is common and therefore accounted for by an underlying factor (appose to error). For example the value after extraction of question 1 (ISSAAC) ("External factors cause changes to the day-to-day operation and running of the organisation") is .73. This means that the proportion of common variance accounted for by latent factors in question 1 is 73%, and the amount of variance attributed to error is 27%. Conversely, the extraction value of question SF2 in UTAUT (OLS data set), ("The airline promotes use of the system") is .23 meaning that the amount of common variance in the variable accounted for by error is greater than that accounted for by latent factors, with a ratio of approximately 3:1 (77% to 23%). According to Field (2005) if a variable has an extraction value less than .5 it should be considered for deletion as the amount of error variance exceeds the amount of common variance. However, Field (2005) goes on to argue that before the variable is removed, the associated Measure of Sampling Adequacy (MSA) for the item should be examined. If the item has a low MSA (that is less than .50) this is an indication that the item does not fit the overall structure of the data and in some cases may even be having an adverse affect on the overall robustness of the data. If this is the case and both the extraction and MSA values of an item are insignificant the item should be considered for deletion from the data set. Tables 5.1 and 5.2 illustrate which items based on this criterion, should be considered for deletion from both the ISSAAC and UTAUT data sets.

Table 5.3: Insignificant Extraction and MSA Values - ISSAAC

Question (Variable)		**Extraction Value**	**MSA**
12	'RICH MED'	.43	.66
13	'ICT INTD'	.46	.79
15	'ICT CONN'	.57	.60
17	'SOCIAL K'	.32	.68
18	'ALT TASK'	.77	.70
21	'OUTSOURC'	.50	.88
23	'SHAR SYS'	.46	.84
24	'SHAR S A'	.59	.62
25	'MUTUAL A'	.68	.60

Table 5.4: Insignificant Extraction and MSA Values - UTAUT

		Insignificant Indicators					
Question / Variable		**OLS**		**OBT**		**SSK**	
		Extraction	MSA	Extraction	MSA	Extraction	MSA
11	SF2	.23	.79	.25	.81	.27	.71
12	SF4	.19	.56	.20	.71	.20	.62
13	PBC2	.31	.23	.32	.33	.13	.39
14	PBC3			.32	.54		
15	PBC5	.47	.26	.43	.35	.41	.39
16	FC3	.13	.65	.12	.24	.18	.80

Although Table 5.3 identifies nine items within the context of ISSAAC that had extraction values less than .50. All of these items had acceptable MSA greater than the minimum threshold of .50 (the lowest is q25 which has a MSA of .60). This therefore means that based on the statistical evidence none of the items should have been removed from the data set at this stage. In contrast to this, the output relating to

UTAUT (presented in Table 5.4) shows that of the six items with insignificant extraction values, three of these items had insignificant MSA (PBC2, PBC5 and FC3). However, before these items were deleted the theoretical view associated with their removal was examined. For example, in the case of PBC2 (which relates to consumers having the necessary resources available to use the product or service), its appropriateness in data sets OLS and OBT should look at the applicability of the question in the various contexts. Such that, if the consumers do not already have the resources available to them (such as a PC, phone line and internet connection), they would then not be able to use online services in the first place and therefore they would not have been asked the question, making the question inapplicable. Similarly, the question may not be appropriate to data set SSK (which relates to the use of SSK machines) because the consumer does not have to provide any resources themselves. Instead, the only resource needed is the SSK, which is supplied by the airline, meaning again the question is not applicable in this context. However, despite these arguments the insignificant items cannot be removed from their respective data sets until their affect on the reliability and validity of the corresponding construct scales is analysed. Therefore, when the strength of the measurement models is assessed, if the removal of the items does not negatively affect the overall reliability of their associated scales they will be removed and vice versa (see section 5.4.1 for measurement model analysis).

5.4 Confirmatory Factor Analysis

CFA represents the second and final stage of the overall analysis process. It aims to establish not only to what extent the hypothesised models fit the data collected; but also whether there is statistical support for or against the hypotheses proposed within the contexts of organisational virtualness and consumer acceptance of new technology. The primary vehicle for CFA within the context of this study has been via SEM. SEM, as discussed in Chapter four is a multivariate technique that can be used to simultaneously test a series of interdependent relationships amongst seemingly independent variables (Hair *et al*, 1998). SEM was selected as the primary means of confirmatory analysis as it most represented the needs of the study and it allowed for multiple relationships to be analysesd simultaneously.

At present, there are a number of software packages available for SEM (such as PLS and SAS). However, as discussed in section 4.3.2, of Chapter 4, the statistical package LISREL was selected for use above other packages as not only was it more readily available, but also because it is suitable for use with non-normally distributed data and allows for the comparison of alternative CFA models (a feature which is not available via PLS).

Overall, according to the much cited work of Diamantopoulos and Siguaw (2000), there are three main stages involved in the development and testing of a LISREL model: *model conceptualisation, measurement and structural model analysis,* and *model modification.* The following paragraphs outline each of these stages within the context of both ISSAAC and UTAUT, starting with model conceptualisation.

Model conceptualisation is concerned with the defining of the conceptual model under investigation via the identification of latent (unobservable constructs) and manifest (observable indicators) variables, the classification of exogenous (independent) and endogenous (dependant) variables (accounting for measurement error where required), and the specification of relationships between latent variables. Within the context of this Thesis the conceptualisation of the latent variables and their associated indicators in the context of ISSAAC was derived from the theoretical perspectives associated with organisational virtualness as discussed previously in Chapter three. Whilst in the case of UTAUT, the latent and observable variables were taken directly from Venkatesh *et al*'s (2003) original conceptualisation of UTAUT.

Before the researcher is able to define the interrelationships that define their end model, they first need to make the distinction between latent and manifest variables. According to Hair *et al* (1998) latent variables (also referred to as latent constructs, unobservable or construct variables), represent abstract concepts or theories that are present in the literature but alone are not measurable. Typically, latent variables are used in conjunction with one another to characterise or explain a greater idea or concept (in the case of this study the latent concepts under investigation were organisational virtualness and consumer acceptance of new technology). However, because latent variables are abstract in order to measure them a researcher must first identity a set of manifest variables or indicators (also referred to as items) (Kelloway, 1998). For example, personality is a latent concept that is immeasurable; however, indicators of personality are cheerfulness and friendliness, therefore, by measuring a person's level of cheerfulness and friendliness the researcher is also able to attain some indication as to the person's personality (Diamantopoulos and Siguaw, 2000). According to Diamantopoulos and Siguaw (2000), although it is hard to define the ideal number of latent and associated manifest variables it is recommended that in order to avoid problems associated with the models fit the number of latent constructs should not exceed six. However, it is important to note that this is merely a suggested parameter and the selection of appropriate constructs should be guided by the literature. Using the literature as a guide will help to avoid specification error and ensure that as much as is possible the model is a true representation of the population and the variables under investigation.

Within the context of this study, there are six latent constructs associated with ISSAAC all of which are endogenous (that is to say they are an outcome variable in at least one causal relationship, and can be either dependent or independent) and five latent constructs in the context of UTAUT, of which four are exogenous (performance expectancy, effort expectancy, social influence and facilitating conditions, and one is endogenous). Furthermore, each construct in both ISSAAC and UTAUT is measured via a series of reflective indicators that mirror the 'real world' environment under investigation (Hair *et al,* 1998; Kelloway, 1998). Tables 1 and 2 in Appendix G detail each latent variable and their associated indicators within the context of both ISSAAC and UTAUT, as defined by the extant literature, existing empirical evidence, and 'real-world' observations.

The next stage in the conceptualisation process deals with specifying the nature of the hypothesised relationships between the constructs. Within the context of this study all relationships were hypothesised to be positive. This means that a unit change in the measurable item or variable will lead to a positive change in the associated latent construct. Tables 5.5 and 5.6 show in brief the relationships that were theorised to exist among the latent constructs of this study, note that within the context of both ISSAAC and UTAUT there are no zero relationships amongst constructs and both models are therefore hypothesised as being recursive.

Table 5.5: Relationships amongst Latent Variables of ISSAAC

Latent Construct	**Dependant Constructs**	**Nature of Relationship(s)**
Interoperability (Inter)	Cybernization	(+)
Switching (Switch)	Aggregation and Cybernization	(+)
Special Product (Spl P)	Switching, Aggregation and Cybernization	(+)
Anchoring (Anch)	Interoperability	(+)
Aggregation (Aggre)	Cybernization	(+)
Cybernization (Cyber)	Anchoring	(+)

Table 5.6: Relationships amongst Latent Variables of UTAUT

Latent Construct	**Dependant Constructs**	**Nature of Relationship(s)**
Behavioural Intention	Performance Expectancy, Effort Expectancy and Social Influence	(+)
Use	Facilitating Conditions	(+)

Following the development of the theoretical framework for the model the next step is to graphically portray the structure of the model in what is referred to as a path diagram (Hair *et al*, 1998; Kelloway, 1998; Diamantopoulos and Siguaw, 2000). In general, path diagrams are made up of one or more measurement models (showing how each latent variable is operationalised by its corresponding manifest variables), joined together by a structural model (showing the theory-based relationships between latent variables). Whilst the construction of a path diagram is not a necessity to LISREL modelling according to Diamantopoulos and Siguaw, (2000) it is a vital step that provides a better understanding of the interrelations between constructs, and is therefore a useful tool. The structural models for both ISSAAC and UTAUT are illustrated in Figures 5.1 and 5.2. However, due to size constraints the measurement models are shown in Figures 1 to 4 in Appendix H.

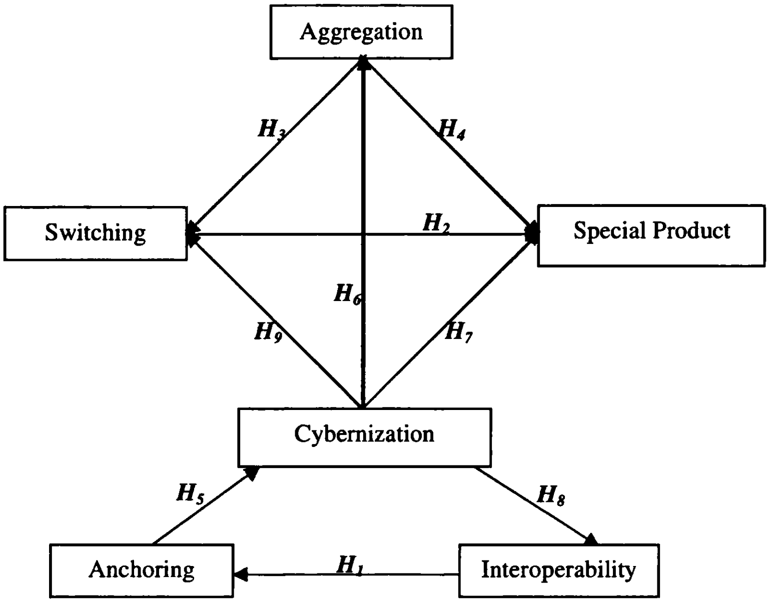


Figure 5.1: Travica's (2005) ISSAAC Model with Hypothesised Paths

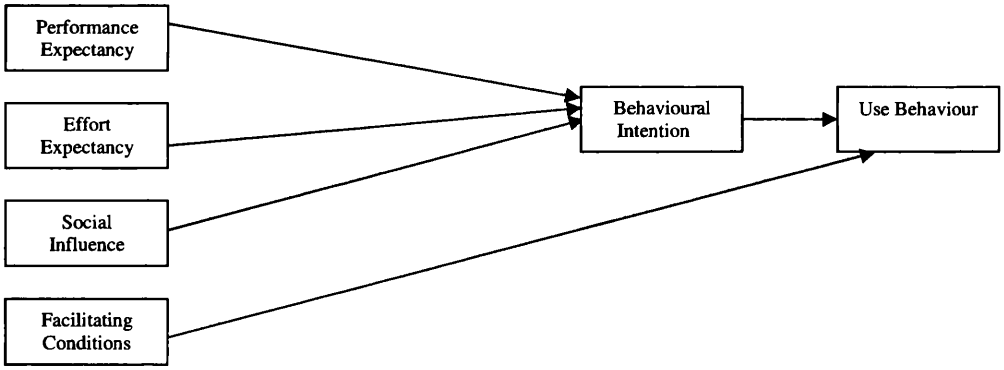


Figure 5.2: Adopted from the Unified Theory of Acceptance and Use of Technology (source: Venkatesh *et al*, 2003, p. 447 Fig 3.).

In order to analyse ISSAAC and UTAUT via SEM the hypothetical relationships depicted in Figures 5.1 and 5.2 needed to be converted into a set of linear equations. This in turn allowed for the creation of syntax which in turn allowed for the development of a factually based path diagram (Diamantopoulos and Siguaw, 2000). Overall, there are three sets of equations that contribute towards the formal specification of a LISREL model: *structural equations* and *measurement equations* *for both the exogenous and endogenous variables* (Kelloway, 1998; Diamantopoulos and Siguaw, 2000). Whilst it is possible to specify each set of equations in mathematical terms it is far more practical to use the LISREL notation as outlined in Table 1 in Appendix I. Using LISREL notation not only helps to ensure the model created clearly and concisely expresses the postulated links between constructs. Furthermore, it guarantees that the model itself is universal and can be easily interpreted by other researchers. The LISREL equations for ISSAAC and UTAUT are presented in Tables 5.7 and 5.8 respectively.

Table 5.7: Formal Specification of ISSAAC

Structural Equations	**Measurement Equations for Endogenous Variables**	
$\eta_1 = \beta_{11}\,\eta_1 + \zeta_1$	$y_1 = \lambda_{11}\,\eta_1 + \varepsilon_1$	$y_{21} = \lambda_{214}\,\eta_4 + \varepsilon_{21}$
$\eta_2 = \beta_{21}\,\eta_1 + \zeta_2$	$y_2 = \lambda_{21}\,\eta_1 + \varepsilon_2$	$y_{22} = \lambda_{224}\,\eta_4 + \varepsilon_{22}$
$\eta_3 = \beta_{31}\,\eta_1 + \zeta_3$	$y_3 = \lambda_{31}\,\eta_1 + \varepsilon_3$	$y_{23} = \lambda_{234}\,\eta_4 + \varepsilon_{23}$
$\eta_4 = \beta_{41}\,\eta_1 + \beta_{42}\,\eta_2 + \zeta_4$	$y_4 = \lambda_{41}\,\eta_1 + \varepsilon_4$	$y_{24} = \lambda_{244}\,\eta_4 + \varepsilon_{24}$
$\eta_5 = \beta_{51}\,\eta_1 + \beta_{52}\eta_2 + \beta_{54}\,\eta_4 + \zeta_5$	$y_5 = \lambda_{51}\,\eta_1 + \varepsilon_5$	$y_{25} = \lambda_{254}\,\eta_4 + \varepsilon_{25}$
$\eta_6 = \beta_{63}\,\eta_3 + \zeta_6$	$y_6 = \lambda_{61}\,\eta_1 + \varepsilon_6$	$y_{26} = \lambda_{265}\,\eta_5 + \varepsilon_{26}$
	$y_7 = \lambda_{71}\,\eta_1 + \varepsilon_7$	$y_{27} = \lambda_{275}\,\eta_5 + \varepsilon_{27}$
	$y_8 = \lambda_{81}\,\eta_1 + \varepsilon_8$	$y_{28} = \lambda_{285}\,\eta_5 + \varepsilon_{28}$
	$y_9 = \lambda_{91}\,\eta_1 + \varepsilon_9$	$y_{29} = \lambda_{295}\,\eta_5 + \delta_1$
	$y_{10} = \lambda_{101}\,\eta_1 + \varepsilon_{10}$	$y_{30} = \lambda_{305}\,\eta_6 + \delta_2$
	$y_{11} = \lambda_{111}\,\eta_1 + \varepsilon_{11}$	$y_{31} = \lambda_{315}\,\eta_6 + \delta_3$
	$y_{12} = \lambda_{122}\,\eta_2 + \varepsilon_{12}$	$y_{32} = \lambda_{325}\,\eta_6 + \delta_4$
	$y_{13} = \lambda_{132}\,\eta_2 + \varepsilon_{13}$	$y_{33} = \lambda_{335}\,\eta_6 + \delta_5$
	$y_{14} = \lambda_{142}\,\eta_2 + \varepsilon_{14}$	
	$y_{15} = \lambda_{152}\,\eta_2 + \varepsilon_{15}$	
	$y_{16} = \lambda_{162}\,\eta_2 + \varepsilon_{16}$	
	$y_{17} = \lambda_{173}\,\eta_3 + \varepsilon_{17}$	
	$y_{18} = \lambda_{183}\,\eta_3 + \varepsilon_{18}$	
	$y_{19} = \lambda_{193}\,\eta_3 + \varepsilon_{19}$	
	$y_{20} = \lambda_{203}\,\eta_3 + \varepsilon_{20}$	

Table 5.8: Formal Specification of UTAUT

Structural Equations	**Measurement Equations for Endogenous Variables**	**Measurement Equations for Exogenous Variables**
$\eta_1 = \gamma_{11}\,\xi_1 + \gamma_{12}\,\xi_2 + \gamma_{13}\,\xi_3 + \gamma_{14}\,\xi_4 + \zeta_1$	$y_1 = \lambda_{11}\,\eta_1 + \delta_1$	$x_1 = \lambda_{11}\,\xi_1 + \varepsilon_1$
	$y_2 = \lambda_{21}\,\eta_1 + \delta_2$	$x_2 = \lambda_{21}\,\xi_1 + \varepsilon_2$
	$y_3 = \lambda_{31}\,\eta_1 + \delta_3$	$x_3 = \lambda_{31}\,\xi_1 + \varepsilon_3$
		$x_4 = \lambda_{41}\,\xi_1 + \varepsilon_4$
		$x_5 = \lambda_{52}\,\xi_2 + \varepsilon_5$
		$x_6 = \lambda_{62}\,\xi_2 + \varepsilon_6$
		$x_7 = \lambda_{72}\,\xi_2 + \varepsilon_7$
		$x_8 = \lambda_{82}\,\xi_2 + \varepsilon_8$
		$x_9 = \lambda_{93}\,\xi_3 + \varepsilon_9$
		$x_{10} = \lambda_{103}\,\xi_3 + \varepsilon_{10}$
		$x_{11} = \lambda_{113}\,\xi_3 + \varepsilon_{11}$

Structural Equations	**Measurement Equations for Endogenous Variables**	**Measurement Equations for Exogenous Variables**
		$x_{12} = \lambda_{123} \xi_3 + \varepsilon_{12}$
		$x_{13} = \lambda_{134} \xi_4 + \varepsilon_{13}$
		$x_{14} = \lambda_{144} \xi_4 + \varepsilon_{14}$
		$x_{15} = \lambda_{154} \xi_4 + \varepsilon_{15}$
		$x_{16} = \lambda_{164} \xi_4 + \varepsilon_{16}$

The penultimate step in model conceptualisation is to convert the equations into syntax that can be processed by the LISREL software (see Appendix J for the syntax used to generate the path diagram and output for both models). This can be done either via SIMPLIS or LISREL code languages. Which language is selected is dependant upon both the level of input the researcher wants to contribute (in terms of complexity) and the level of statistical output the researcher hopes to gain (in terms of the visual display). In the case of this study the SIMPLIS language was favoured due to its simplicity and the ability to request output relating to both covariances (SIMPLIS equations) and correlations (LISREL matrices) (this can not be done using LISREL alone) (Jöreskog and Sorbom, 1996; Diamantopoulos and Siguaw, 2000). The ability to examine correlations and covariances in conjunction with one another has allowed for a fuller examination and easier interpretation of the data produced. (The SIMPLIS syntax used in this study can be found in Appendix J).

However, before analysis could commence it was first necessary to determine whether there was sufficient information within the data set to obtain a unique solution for the parameters that were estimated (also referred to a model identification) (Kelloway, 1998). According to Diamantopoulos and Siguaw, (2000) in order to determine whether a model meets the minimum requirement for identification the formula outlined below should be applied (see Figure 5.3 for a working example of identification formula).

$$\boxed{t \leq s/2}$$

Where: $t =$ the number of parameters to be estimated

$s =$ the number of variances and covariances amongst the manifest variables, calculated as $(p + q)\ (p + q + 1)$

$p =$ the number of y-variables

$q =$ the number of x-variables

Once the formula has been applied the result will fall under one of three possible categories. Either $t > s/2$ (the model is unidentified, and therefore needs to be further constrained), $t = s/2$ (the model is said to be just identified, that is a single unique solution can be obtained for the parameter estimates) or $t < s/2$ (the model is overidentified and more than one estimate of each parameter can be obtained) (Kelloway, 1998). Whilst the first and second outcomes are undesirable (the first because further alterations need to be made to model, such as the inclusion of further manifest variables (which have to be supported by the literature) and the second because all the information is used to derive the parameter estimates consequently meaning there is no information left to test the model). The third outcome (overidentification) is optimal (Kelloway, 1998). According to Kelloway (1998) and Diamantopoulos and Siguaw (2000) amongst others, although at first it may seem that an overidentified model is contradictory to the aim of obtaining a unique solution to the equations related to a hypothetical model in fact the opposite is true. This is because, when a model is overidentified its degrees of freedom are always positive, this consequently means that one set of estimates can be used to find a solution to the equations and another to test the models fit. If the two estimates differ it can be argued that the hypothesised model is false or misrepresentative.

Within the context of this study both the ISSAAC and UTAUT models were found to be overidentified meaning that not only was there adequate information within the data sets to obtain a unique solution for the parameters to be estimated, but there was also sufficient information remaining in order to test both model's fit. The results shown in Figure 5.3 demonstrates the overidentification of both models,

ISSAAC	**UTAUT**
$76 \leq 1122/2$	$47 \leq 380/2$
$76 \leq 561$	$47 \leq 190$
$76 < 561$	$47 < 190$

Figure 5.3: Worked Examples of Identification Formula for ISSAAC and UTAUT

$t =$ the number of parameters to be estimated (76, 47)
$s =$ the number of variances and covariances amongst the manifest variables, calculated as $(p + q)\ (p + q + 1)$
$p =$ the number of y-variables (33, 3)
$q =$ the number of x-variables (0, 16)

5.4.1 Measurement Model Analysis

In evaluating the measurement model the focus is on the relationships between the latent variables and their associated indicators. The aim is to determine the validity and reliability of the measures used to represent the underlying constructs of the model thereby testing the overall statistical stability of the research instrument and its associated items. Assessing the measurement model is essential as unless the quality of the measures associated with each construct can be trusted, the understanding of the links between constructs (as shown via the structural model) becomes problematic and the empirical support for the hypotheses is at best tentative (Diamantopoulos and Siguaw, 2000). Following the recommendations of the much-cited Hair *et al* (1998) and Diamantopoulos, and Siguaw (2000), the measurement model was assessed on three interdependent levels:

1. Parameter estimation - showing the magnitude of the relationships between construct and indicator.
2. Construct validity - measuring how well an indicator actually measures what it is supposed to.
3. General reliability - to what extent is the measure able to produce consistent results when the same entities are tested under the same conditions.

Parameter Estimation

The objective of parameter estimation is to minimise the difference between the elements found in the sample covariance matrix and the corresponding values found in the implied covariance matrix (similar to the comparison of the R and reproduced correlations matrices in EFA). In order to determine the degree of synchronicity between these values a number of different outputs must be examined (note that the type of output achieved is dependant upon the type of estimation method used (Diamantopoulos and Siguaw, 2000)).

In total, the LISREL program offers seven different estimation methods: Instrumental Values (IV), Two-Stage Least Squares (TSLS), Unweighted Least Squares (ULS), Generally Weighted Least Squares (WLS), Diagonally Weighted Least Squares (DWLS), Generalised Least Squares (GLS) and Maximum Likelihood (ML) (all of which are described in Table 2 in Appendix I). Of these seven the final technique ML was chosen for use in this study. The ML method was selected because not only is it the most widely accepted approach amongst researchers (and it is the default method selected by the LISREL program) but also because it is proven to provide consistently accurate estimations even when data is non-normally distributed, (which is the case with this data set –see section 5.2.1) (Kelloway, 1998). In addition to this, the ML method is an iterative and full-information technique meaning that all the information in the model is used to compute the end data as oppose to estimating each parameter equation separately. Using such an approach ultimately results in a more robustly tested model (Diamantopoulos and Siguaw, 2000).

The first output produced by the LISREL program in relation to the parameter estimates are the residual variances. In total the LISREL program provides information relating to two types of residuals: *actual residuals* and *fitted residuals*. Whilst data relating to the actual residuals is contained within the Q-plots, information related to the fitted residuals is presented via the residual matrix and stem leaf plots. Firstly, Q-plots. Q-plots show the distribution of the standardised residuals against the quantiles of normal distribution whereby the resulting path of residuals is indicative of the degree of fit associated with the values. The best possible fit is indicated by all residuals lying in a vertical line (the worst possible fit is indicated by all residuals lying in a horizontal line). However, according to Diamantopoulos and Siguaw (2000), attaining a perfect distribution represents an ideal situation and for the most part a Q-plot is deemed acceptable if the residuals lie approximately along the diagonal (45 degrees). Within the case of ISSAAC the general trend of the Q-plot was linear, the majority of standardised residuals did indeed lie on a 45-degree line and there were no significant outliers. This proves that although the data set was not normally distributed the values within the data set were in fact significantly correlated. In contrast to this, the Q-plots for data sets OLS, OBT and SSK within the context of UTAUT demonstrated a moderate fit and although a large proportion of the data points were on the 45-degree line, a number of points were skewed and were therefore not inline with the general trend of the data. This suggests that there are a number of significant discrepancies between the values in the sample and those in the model implied covariance matrices. In view of this disparity it items within the data sets were put forward as candidates for removal. The Q-plots for ISSAAC and UTAUT can be found in Appendix K and the removal of items will be examined later in model modification (see section 5.5.2).

The second and third outputs relating to the residuals are the residual matrix and the stem leaf plots respectively. Firstly, the residual matrix. The residual matrix is similar to the reproduced correlation matrix in SPSS and shows the difference between the values in the sample matrix and those in the implied covariance matrix. If the solution provided by LISREL is satisfactory there will be minimal discrepancy between the matrices and ideally the values will be at or around zero. The second use of the residual matrix is to determine whether the data set being used has been over or under fitted. In the case of underfitting the residual shown in the sample covariance is normally greater than the residual in the fitted covariance thus resulting in a positive value for the residual and an underestimation of the magnitude of the relationship between variables (and vice versa). If this is the case and there are a significant number of underfitted residuals in order to provide a more meaningful solution both the addition of paths between constructs and indicators and freeing of parameters should be considered. Alternatively, if the number of overfitted residuals is large then parameters should be constrained and the number of indicators per construct reduced.

The third output relating to the residuals is the stem leaf plot. Stem leaf plots show the residual values grouped according to common primary digits (represented by the stem (the leaf is made up of the second digit of the residual variance)). If a model fits well the stem-leaf plot will be characterised by residuals clustered around the centre point (zero) with few outliers at either end. However, if the model is a poor fit and there are a large amount of residuals at either end (that is positive or negative) this can mean that the model is either under-estimated or over-fitted respectively (Diamantopoulos and Siguaw, 2000). Within the case of ISSAAC (as can be seen from the stem-leaf plot illustrated in Figure 5.4), the majority of residuals are at or around zero. Overall, this shows a good fit of the model to the sample data, an argument that is further supported by a median residual value of .00. Similarly, within the case of UTAUT (across of three data sets), the majority of items within the residual matrix do not exceed a value of .60 and each stem-leaf plot is clustered around the zero mark. The stem leaf plot for ISSAAC is shown in Figure 5.4 and a summary of the fitted residuals for the three data sets pertaining to UTUAT is given in Table 5.9. The full output of the fitted and standardized residuals is shown in Appendix K due to size constraints.

```
-13|0
 -12|
 -11|
 -10|
 - 9|8
 - 8|
 - 7|
 - 6|83
 - 5|8
 - 4|
 - 3|5320
 - 2|96511
 - 1|8544332222221100
-0|887766666555555555555444444444443333333333332222222222222222222222+102
0|11111111111111111111111111111111111111111111111111111222222222222222+68
  1|011223345779
  2|012
  3|0118
  4|0
  5|
  6|0
```

Figure 5.4: Stem Leaf Plot - ISSAAC

Table 5.9: Fitted Residuals for Hypothesised Model – UTAUT

Data Set	**Underestimated Residuals**	**Overfitted Fitted Residuals**	**Smallest SR**	**Median SR**	**Largest SR**	**Recommended Action**
OLS	75	108	-10.64	0.00	7.10	Remove paths and fix parameters
OBT	85	114	-9.74	0.00	31.48	Remove paths and fix parameters
SSK	82	112	-4.69	0.00	12.05	Remove paths and fix parameers

Although the residual values shown in Figure 5.4 and Table 5.9 demonstrate that both ISSAAC and UTAUT have a moderate to good degree of fit the presence of large quantities of negative residuals suggest that each of the models have to some extent been overestimated. In view of this the removal of paths and the constraining of parameters should be considered as a means by which to improve fit and ultimately produce more statistically sound models (the outcome of these actions will be discussed in section 5.5).

The final major output relating to the parameters are the parameter estimates themselves. Traditionally, these are either illustrated via equations (in SIMPLIS output) or matrices (in LISREL output). Each equation or matrix contains data pertaining to the unstandardised parameter estimates, the standard errors, and the *t*-values of each of the hypothesised relationships within the model. The interpretation of unstandardised parameter estimates focuses on four areas. The estimate itself (showing the resulting change in a dependant variable from a unit change in an independent variable), the direction of the change (indicating whether the change is positive or negative), the standard error (which demonstrates how accurately the value of the parameter has been estimated) and the significance of the path (captured via the *t*-value) (Diamantopoulos and Siguaw, 2000). For example, the measurement equation IOS = 0.24*Aggre from the ISSAAC output tells us that a one unit change in 'the presence of Interorganisational Systems', will lead to a 0.24 increase in the presence of aggregation. In conjunction with this the associated standard error for the path (.04) suggests that the estimate is particularly accurate, and the *t*-value for the path (6.27) illustrates that the relationship between construct and indicator is also significant. A preliminary examination of all the parameter estimates within ISSAAC showed that the majority of the standard errors were less than .50 and all bar one of the associated *t*-values were greater than or equal to 1.96 and therefore significant (the item 'alt task' has an insignificant *t*-value of 1.55). Similarly, within the context of UTAUT, whilst all standard errors were significant only the *t*-value associated with the indicator FC3 in the OLS data set was insignificant. As a result of this sub-analysis the item 'alt task' was considered for deletion from ISSAAC and the item FC3 was considered for deletion from the OLS data set when reliability analysis was conducted. The full output of parameter estimations highlighting insignificant standard errors and *t*-values and the strongest relationships between indicator and construct can be found in Appendix K in LISREL form and Appendix L in SIMPLIS form.

Validity

Validity, also referred to as construct validity has long played a significant role in organisational research as it helps researchers to reduce the level of ambiguity in their results (Webb and Weick, 1979; Bagozzi *et* al, 1991). Essentially, it is defined as the extent to which an indicator measures the concept it is supposed to measure (Cook and Campbell, 1979). However, since construct validity is not technically measurable as an individual entity according to Chau and Lai (2003) amongst others, it must be measured via the presence of both convergent and discriminant validity. In view of this both these types of validity are discussed in the subsequent paragraphs.

Firstly, convergent validity. Convergent validity according to Trochim (2000) is defined as the extent to which measures of constructs that should in theory be related are in fact observed to be related (thus proving the hypothetical). In order to test for the presence of convergent validity both the significance of the paths between constructs and their indicators (illustrated via the *t*-value) and the contribution of individual indicators to the construct as a whole (illustrated via the factor loadings) must be examined (Diamantopoulos and Siguaw, 2000; Gefen *et al*, 2000). This in turn helps to establish both to what extent the indicator is a valid measure of the construct and to what degree do factor and indicator correlate (Field, 2005). For example, Diamantopoulos and Siguaw (2000) argue that if *y* is hypothesised to be a valid measure of η, then the direct relationship between y and η should be substantially different from zero in its absolute form. In order to test whether the relationship between y and η is in fact significant, the parameter estimate and the *t*-value associated with the hypothesised path must be examined. If the relationship between y and η is significant then the values of these statistics should be greater than .05 and greater than 1.96 (in absolute terms) respectively and vice versa. An example within the context of this study is: 'does the organisation exist in a common environment enabled by ICT?' (comm foc) relating to ISSAAC is said to be a direct indicator of the degree of cybernization (Cyber). Since the parameter estimate for this path is significant (2.32) against an absolute value of .05 and the associated *t*-value is well above the 1.96 threshold at 5.54, it can be argued that comm_foc is a valid indicator of Cyber and therefore convergent validity has been established. Within the context of ISSAAC all indicators bar one ('alt task') had both significant parameter estimates and *t*-values meaning that not only can it can be argued that the indicators selected form a valid representation of the underlying characteristics of the model, but also that convergent and therefore one half of overall construct validity has been established. Similarly, in the case of UTAUT, all parameter estimates and *t*-values were significant bar the variable FC3 in the OLS data set which has an insignificant *t*-value of .50

The next step in establishing convergent validity is to examine the overall significance of the factor loadings associated with each item. In doing this a similar process to that used to test for significance in correlation coefficients is employed. However, a stricter measure is preferred when dealing with factor loadings as they are more susceptible to standard errors than typical correlations. Indeed, according to Hair *et al* (1998), there are two areas that need to be addressed in order to asses the overall significance of factor loadings. The first item that needs to be examined is the practical significance of the factor loadings (found in the Lambda X and Y matrices in the LISREL output). This can be assessed by inspecting the absolute values of the loadings whereby values of ± .30 indicate the item has met the minimal level of practical significance, loadings of ± .40 shows a greater contributory role of the item to the construct, and finally loadings of ± .50, show practical significance has been achieved. In the case of ISSAAC and UTAUT, respectively 76% and 100% of the item loadings are considered practically significant (see Tables 5.10 and 5.11 and Tables 1 to 4 in Appendix M for an overview and full assessment of practical significance).

Table 5.10: Statistical and Practical Significance Analysis - ISSAAC

Significance Level	**Number of Loadings**	**%**
± .30 (minimal level of significance)	4	12
± .40 (relative importance)	4	12
± .50 or more (practically significant)	25	76

Table 5.11: Statistical and Practical Significance – UTAUT

Significance Level	**Number of Loadings**			**%**		
	OLS	OBT	SSK	OLS	OBT	SSK
< .30	1	--	--	5	--	--
± .30 (minimal level of significance)	--	--	--	--	--	--
± .40 (relative importance)	--	--	--	--	--	--
± .50 or more (practically significant)	18	19	19	95	100	100

The second item that contributes to determining overall significance is the statistical significance of factor loadings. Statistical significance can be tested by comparing the factor loadings against a pre-determined significance level. According to Hair *et al* (1998), if the objective is to attain an 80% power level and the sample size for the data set is between 200 and 300 (for ISSAAC and UTAUT respectively), in order to be statistically sound factor loadings should be greater than .4 and greater than .35 for each of the models respectively in absolute terms (note that Diamantopoulos and Siguaw (2000) recommend for comparative purposes examining the standardised values is preferred, as they are not subject to bias with relation to measurement scales). Using these guidelines in the case of UTAUT all bar one of the factor loadings in the OLS data set are defined as being statistically significant (namely FC3 –.10), and 100% of the factor loadings in data sets OBT and SSK are statistically significant. Equally, in the case of ISSAAC 88% of the factor loadings have absolute values greater than .4 and are therefore considered statistically sound (note that of the remaining 12%, of variables, half had absolute values greater than .3 and had absolute values less than .3). Those indicators with loadings less than .40 for ISSAAC are presented in Table 5.12 and were considered for deletion and or modification later on in the analysis. Possible reasons for insignificant indicators according to Cook and Campbell (1979) include: indicators or constructs have not been properly defined, indicators are not derived from a universal pool and therefore become study specific, not enough measures have been used to measure the construct and indicators have been 'labelled' or assigned incorrectly. (A full review of the indicator loadings is presented Appendix K).

Table 5.12: Insignificant Factor Loadings -ISSAAC

Construct	**Indicator**	**Factor Loading**
Special Product	trust re	-.02
Switching	comp adv	.26
Anchoring	Restruc	.28
	mang cha	.33
	rule cha	.32
	shar s a	.17

The second component of construct validity is discriminant validity. According to Gefen *et al* (2000), the primary means of assessing discriminant validity is via an analysis of the average variance extracted statistic (AVE). AVE measures the amount of variance that is captured by the underlying factor in relation to the amount of variance due to measurement error (Chau and Lai, 2003). In order to be significant the AVE of a construct must satisfy two conditions. Firstly, its absolute value must be greater than .50, and secondly the individual AVE of a construct must be greater than the amount of shared variance amongst constructs (illustrated via the ETA matrix).

Table 5.13: Shared Variance Analysis – ISSAAC

	Aggre	Anch	Cyber	Switch	Inter	Spl P
Aggre	**0.80**					
Anch	-0.24	**0.09**				
Cyber	0.73	-0.33	**0.93**			
Switch	0.69	-0.25	0.76	**0.47**		
Inter	0.42	-0.30	0.58	0.44	**0.80**	
Spl P	0.56	-0.20	0.61	0.68	0.35	**0.40**

Highlighted cells show insignificant AVE values

Table 5.14: Shared Variance Analysis – UTAUT

	Behave			Perform			Effort			Social			Facil		
	OLS	OBT	SSK	OLS	OBT	SSK	OLS	OBT	SSK	OLS	OBT	SSK	OLS	OBT	SSK
Behave	**.96**	**0.93**	**0.88**												
Perform	0.63	0.42	0.1	**0.84**	**0.85**	**0.98**									
Effort	0.64	0.49	0.43	0.59	0.58	0.72	**0.90**	**0.98**	**0.96**						
Social	0.25	0.5	0.27	0.18	0.82	0.78	0.14	0.67	0.70	**0.92**	**0.99**	**0.95**			
Facil	0.35	0.00	0.04	0.43	0.17	0.20	0.49	0.13	0.10	(0.11)	0.50	0.58	**0.93**	**0.92**	**0.88**

As shown in Table 5.13 within the context of ISSAAC three of the constructs of the model have AVE values less than the absolute threshold of .50: anchoring, switching and special product. In addition to this, the AVE associated with the construct switching is lower than the amount of shared variance it has with other constructs. This therefore means that in the case of anchoring, switching and special product the amount of variance due to measurement error is greater than that captured by the underlying factor of the data set. In contrast to this, the results of AVE analysis within the context of UTAUT (shown in Table 5.14) show that not only are the AVE values associated with the individual constructs of the model significant furthermore, all construct's AVE values are greater than those accounting for shared variance. Overall, this means that the majority of indicators for the most part accurately measure their respective phenomena in the 'real world' and to a certain extent discriminant validity has been established. However, in order to reduce the degree of error and increase the AVE for the insignificant constructs associated with ISSAAC additional indicators may need to be added to the constructs.

Reliability

Reliability can be defined as the ability of a measure to produce consistent results when the same variables are tested under the same conditions (Field, 2005). Unlike validity reliability looks at the individual items of a scale and does not compare across constructs. In order to test the overall reliability of the measures the individual item reliabilities, the level of internal consistency (Cronbach's alpha) and the composite reliability (ρc) scores for each of the grouped scales are examined.

Firstly, item reliability. Item reliability measures the amount of variance in an item accounted for by the underlying construct. Its value is obtained by squaring the factor loading and is significant when greater than or equal to .50. When the reliability of an item has reached this threshold it can be confidently argued that the majority of variance in the item is attributed to the construct it is examining appose to any form of error (Chau & Lai, 2003). As illustrated in Tables 5.15 and 5.16 (all reliability indicators can also be found in 5 and 6 in Appendix M) approximately 70% of the item reliabilities within ISSAAC meet the required threshold for acceptability, whilst 90% meet the threshold in the case of UTAUT (the only weak items across the data sets are variable FC3 in the OLS data set and SN2 and SF4 in data set SSK). This indicates that in the case of UTAUT the majority of items are reliable measures of the underlying constructs. Whilst in the case of ISSAAC although a reasonably large proportion of the measures are trustworthy in order to improve the explanatory power of the model it may be necessary to revise the indicators associated with some of the constructs, most notably those with insignificant item reliabilities such as interoperability and anchoring. This can be done via a number of means including: a further review of the literature, methods such as concept mapping and the use of additional peer reviews or focus groups (each of these methods will be discussed in Chapter seven).

Table 5.15: Reliability Analysis – ISSAAC

Latent Variable	**Item**	**Item Reliability**
Interoperability	mutual a	0.43
	mutual d	0.68
	alt task	0.42
	shar str	3.36
Switching	comp adv	0.26
	know and	1.18
	indvid k	0.74
	social k	0.65
	job role	1.01
Special Product	special	0.48
	less lea	1.04
	custom p	0.74
	trust re	-0.02
Aggregation	rich med	2.7
	ict conn	0.45

	ict net	2.73
	ict intd	0.55
	ios	0.65
Anchoring	mang cha	0.33
	rule cha	0.32
	restruc	0.28
	shar s a	0.17
Cybernization	codep ne	8.86
	multi sk	1.3
	comm foc	1.54
	ict core	0.66
	ind change	1.87
	outsourc	0.86
	role exc	0.69
	shar sys	0.87
	tech dev	2.49
	ext fac	0.99
	act take	1.89

Highlighted cells are those deemed insignificant with item reliabilities <.50

Table 5.16: Reliability Analysis – UTAUT (All Data Sets)

Latent Variable	Item	Item Reliability		
		Data Sets		
		OLS	**OBT**	**SSK**
Behavioural Intention	BI1A	16.10	1.34	1.21
	BI2A	8.91	22.00	11.42
	BI3A	15.51	0.89	0.88
Performance Expectancy	U6A	3.15	3.21	39.31
	RA1A	3.40	2.92	36.00
	RA5A	2.43	3.12	38.56
	OE7A	3.39	3.96	5.15
Effort Expectancy	EOU3A	62.09	61.31	2.76
	EOU5A	84.82	84.18	39.82
	EOU6A	9.24	9.17	5.62
	EU4A	36.60	36.53	8.18
Social Influence	SN1A	9.36	7.92	15.21
	SN2A	10.76	0.90	0.48
	SF2A	1.21	0.75	0.40
	SF4A	11.29	18.32	42.77
Facilitating Conditions	PBC2A	1.23	9.52	7.02
	PBC3A	34.46	10.36	6.86
	PBC5A	0.86	1.07	1.06
	FC3	0.01	12.65	5.95

Highlighted cells are those deemed insignificant with item reliabilities <.50

The second test of reliability is Cronbach's alpha. Cronbach's alpha, is a measure of internal consistency which works on the same principle as split-test reliability procedures. In order to calculate a construct's alpha value the data set is split a multiplicity of ways, a correlation co-efficient computed for each split and the average of these values is the Cronbach's alpha score (Cortina, 1993). For the purpose of this study alpha values are deemed significant when greater than or equal to .65, and highly significant at values greater than or equal to .70 (Cortina, 1993, Gefen et al, 2000). In line with this and as outlined in Tables 5.18 and 5.19 four out of six and four out of five of the constructs of ISSAAC and UTAUT respectively have significant alpha values greater than the threshold of .70. For those constructs with alpha values less than .70 (namely Inter (.68) and Switch (.67) in ISSAAC and FC (.10, .06 and .05) in UTAUT), the most insignificant indicators associated with these constructs were removed (as they do not adequately represent the latent constructs), and reliability analysis re-run.

However, before reliability analysis continued it was necessary to examine the effect of removing the insignificant items (note that insignificant items are only identified for UTAUT and not ISSAAC). The items in question were PBC2 and PBC5 across all three data sets and additionally item FC3 in data set OBT. Items were only removed if the removal significantly benefited the reliability of the respective scales. The results of item removals are illustrated in Table 5.17.

Table 5.17: Removal of Insignificant Indicators – UTAUT

	OLS		**OBT**		**SSK**	
	± alpha if item removed	Remove	± alpha if item removed	Remove	± alpha if item removed	Remove
PBC2	.05	✗	.04	✗	.01	✗
PBC5	.09	✗	.19	✗	.03	✗
FC3			.23	✗		

Following the examination of internal consistency, the final measure of reliability is composite (or construct) reliability (ρc). Composite reliability focuses on the degree to which sets of indicators provide a reliable measure of a given construct (Diamantopoulos and Siguaw, 2000). However, unlike other statistics that are produced by the LISREL program construct reliability has to be calculated by researchers themselves using the formula shown in Figure 5.5

$$\boxed{\rho c = (\sum^{\lambda})^2 / [(\sum^{\lambda})^2 + \sum(\theta)]}$$

Figure 5.5: Construct Reliability

If the product of the equation is greater than .6 then the combined indicators are said to be good measures of the latent variables and vice versa (Diamantopoulos and Siguaw, 2000). The ρc values for ISSAAC and UTAUT are shown in Tables 5.18 and 5.19 alongside the other measures of reliability. The data presented shows that all bar one of the constructs (anchoring) in both ISSAAC and UTAUT have acceptable ρc values above the threshold of .60. Considering these observations it can be argued that although there are weaker constructs and indicators within both models overall the indicators and constructs of ISSAAC and UTAUT are statistically reliable (note both insignificant constructs and items will be examined further in section 5.5 model modification).

Table 5.18: Reliability Analysis – ISSAAC

Latent Variable	**Reliability Indicators**		
	Average Item Reliability	**Construct Reliability (ρc)**	**Maximum Cronbach's Alpha**
Interoperability	1.22	.89	.68
Switching	0.77	.79	.67
Special Product	0.45	.64	.77
Aggregation	1.42	.93	.71
Anchoring	0.28	.29	.78
Cybernization	2.00	.98	.86

Highlighted cells are those deemed insignificant with item reliabilities <.50, ρc <.60 or *a* <.65

Table 5.19: Reliability Analysis – UTAUT

Latent Variable	Reliability Indicators								
	OLS			OBT			SSK		
	Average Item Reliability (AIR)	Construct Reliability (ρc)	Maximum Cronbach's Alpha (MCA)	Average Item Reliability (AIR)	Construct Reliability (ρc)	MCA	Average Item Reliability (AIR)	Construct Reliability (ρc)	MAC
BI	13.51	.94	.99	8.08	.96	.98	4.50	.94	.99
PE	3.09	.96	.91	3.30	.96	.93	29.76	.99	.91
EE	48.19	1.00	.98	47.80	1.00	.98	14.10	.99	.96
SI	8.16	.98	.79	6.97	1.00	.79	14.72	.98	.71
FC	9.14	.96	.30	8.40	.98	.30	5.22	.96	.39

Highlighted cells are those deemed insignificant with item reliabilities <.50, ρc <.60 or *a* <.65

5.4.2 Structural Model Analysis

Analysis of the structural model focuses on an examination of the relationships amongst the latent constructs of the data set and assesses the extent to which the hypothesised model is consistent with the data collected (Kelloway, 1998). According to Diamantopoulos and Siguaw (2000) when assessing the structural model, there are three main issues to consider:

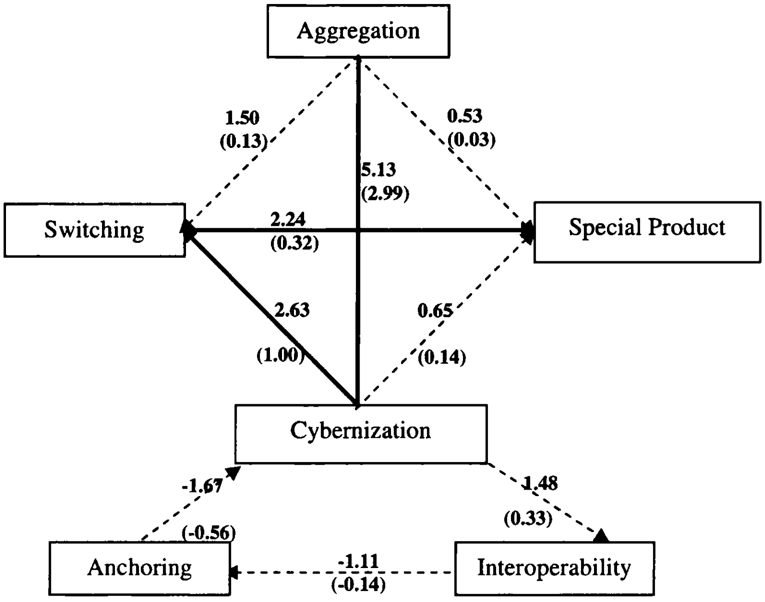
1. The strength of the estimated parameters and associated *t*-values, showing the statistical support for or against the theoretical hypotheses.
2. The explanatory power in each dependant (endogenous) variables that is accounted for by the remaining variables (shown via the squared multiple correlation values (R^2)).
3. The degree to which the hypothesised model(s) is consistent with the data – shown via the goodness of fit indices.

The following sections detail the results of the structural model analysis for ISSAAC and UTAUT based on the above criteria.

Parameter Estimation

The interpretation of the parameter estimates for the structural model is similar to that for the measurement model. Essentially, there are three key pieces of data: *the value of the estimate* (showing the resulting change in a dependant variable from a unit change in an independent variable), *the direction of change* (showing whether the change is positive or negative) and *the t-value* (showing the strength of the relationship) (Diamantopoulos and Siguaw, 2000). For example, the structural equation: Switch = 0.13*Aggre + 1.00*Cyber informs us that if 'Aggre' or 'Cyber' change by one unit, this will result in either a 0.13 or 1.00 increase in 'Switch' respectively. Figures 5.5 and Table 5.20 identify the co-efficients and associated *t*-values for each of the hypothesised relationships within ISSAAC and UTAUT illustrating which of the hypotheses outlined previously in sections 3.2.1 and 3.3.2 of Chapter three are either significant or insignificant.

The data presented in Figure 5.5 and Table 5.20 shows that a number of the hypothesised links between the constructs of ISSAAC and those of UTAUT are insignificant (H^1, H^3, H^3, H^5, H^7 and H^8 in ISSAAC and H^3 in data sets OBT and SSK of UTAUT). Although this may seem unsatisfactory, according to Diamantopoulos and Siguaw (2000) as long as there are at least three significant parameter estimates in a model the structural model can be said to have overall significance. Using this as a guide it can be argued that overall significance was achieved within the context of both ISSAAC and UTAUT. However, since there were still insignificant parameters within both models the parameters in question were considered as candidates for modification when alterations to the model were being made later in the analysis (see section 5.5).



Bold lines show significant paths, t-values are presented followed by co-efficients in parentheses.

Figure 5.6: Co-Efficients and *t*-values of Structural Model Pertaining to ISSAAC

Table 5.20: Co-Efficients and *t*-values of UTAUT Structural Model

Hypotheses	**Data Sets**					
	OLS		OBT		SSK	
	co-efficients	t-value	co-efficients	t-value	co-efficients	t-value
H^1 PE + BI	0.84	4.38	0.23	2.05	0.06	2.05
H^2 EE + BI	0.21	4.86	0.05	3.54	0.23	2.47
H^3 SI + BI	0.48	1.99	- 0.35	-1.12	- 0.42	-1.37

Highlighted cells represent those relationships that are not significant (those will *t*-values <1.96).

In addition to the standard residuals output the LISREL program also provides information relating to the standardised and completely standardised residuals. According to Diamantopoulos and Siguaw (2000), the standardised residuals are useful as not only do they help in the interpretation of the relative strength of the bivariate relationships within the data set. Furthermore, they also help in the easy identification of improper residual estimates, as researchers do not have to approximate unreasonable covariance values but instead can work by the guide that any correlation that is greater than 1.00 is improper and therefore deemed unreasonable. For example, is clear to see from the correlation matrix associated with ISSAAC (as shown in Table 5.21) that the strongest bivariate relationship was between cybernization and switching, with a value of .76; while the weakest relationship is between the constructs of cybernization and anchoring (-.33). Similarly the ETA and KSI matrices for data sets OLS, OBT and SSK relating to UTAUT (as presented in Table 5.22), showed that the strongest relationship within the the OLS data set was between effort expectancy and behavioural intention (.64), whilst the strongest relationship in both data sets OBT and SSK was between performance expectancy and social influence (.82 and .78 respectively). However, what both matrices more significantly showed was the lack of pure correlations (that is correlations equal to 1.00) within the data sets, thus meaning that there are no '*improper*' estimates within either ISSAAC or UTAUT. Table 5.21 and 5.22 highlight the strongest relationships within each hypothesised model.

Table 5.21: Bivariate Analysis - ISSAAC

	Aggre	Anch	Cyber	Switch	Inter	Spl P
Aggre	1.00					
Anch	-0.25	1.00				
Cyber	0.73	-0.34	1.00			
Switch	0.67	-0.26	0.74	1.00		
Inter	0.42	-0.32	0.57	0.42	1.00	
Spl P	0.56	-0.21	0.61	0.71	0.35	1.00

Highlighted cells show the most significant bivariate relationships for each construct.

Table 5.22: Bivariate Analysis – UTAUT

	Behave			Perform			Effort			Social			Facil		
	OLS	OBT	SSK	OLS	OBT	SSK	OLS	OBT	SSK	OLS	OBT	SSK	OLS	OBT	SSK
Behave	**1.00**	**1.00**	**1.00**												
Perform	0.63	0.42	0.10	**1.00**	**1.00**	**1.00**									
Effort	0.64	0.49	0.42	0.59	0.58	0.72	**1.00**	**1.00**	**1.00**						
Social	0.25	0.50	0.50	0.18	0.82	0.78	0.14	0.67	0.70	**1.00**	**1.00**	**1.00**			
Facil	0.35	0.00	0.00	0.43	0.17	0.20	0.49	0.13	0.10	-0.11	0.50	0.58	**1.00**	**1.00**	**1.00**

Highlighted cells show the most significant bivariate relationships for each construct.

Explanatory Power

In order to asses the explanatory power of the structural model both the error variances and the squared multiple correlations (R^2) associated with each construct should be examined. Error variances and squared multiple correlations show the amount of variance accounted for in each construct by error and by the other independent variable(s) respectively (Diamantopoulos and Siguaw, 2000). In order to determine the acceptability of each statistic the associated *t*-value of the error variance (which must be greater than or equal to 1.96) and the actual R^2 (which should be greater than or equal to .50) should be examined. If the *t*-value is less than 1.96 (in absolute terms) this signifies a large degree of error in either measurement or residual terms however, if this value is greater than 1.96 (in absolute terms) the amount of measurement and residual error can be said to be minimal. As is shown via the structural equations presented in Appendix L, all bar one of the error variances associated with ISSAAC have *t*-values greater than 1.96 (the only construct with an insignificant error variance is interoperability, with a *t*-value of .85), and all of the error variances associated with UTAUT are significant across the three data sets. This therefore means that in the context of both models error levels were minimal.

The second measure of explanatory power is the associated R^2 value of the construct. In order to be significant the R^2 of a construct must be greater than or equal to .50 or, in other words, the independent variable must account for 50% or more of the variance in the relevant dependant variable (similar in principle to the communality values generally associated with EFA). For example, the R^2 of the structural equation Switch = Aggre*Cyber is 0.59 (from ISSAAC), indicates that the latent variables ('Aggre' and 'Cyber') account for 59% of the variance in 'Switch'. In contrast to this, the R^2 for the structural equation BI = PE*EE*SI (from UTAUT – data set SSK) is 0.22. This shows that the constructs of performance expectancy, effort expectancy, and social influence only account for 22% of the variance in the primary construct BI, meaning that some form of error accounts for the remaining 78%. Within the context of ISSAAC and UTAUT there are both significant and insignificant R^2 values (as shown in Tables 5.23 and 5.24) indicating that although the relationships between the constructs of the models may be valid in theory they may require modification in order to achieve not only statistical significance, but also to improve the overall explanatory power of the models as representations of their respective phenomena. (Note whilst the R^2 values for all equations are summarised in Tables 5.23 and 5.24, the complete equations are presented in Appendix L).

Table 5.23: R^2 Values - ISSAAC

Construct	**R^2**
Interoperability	0.33
Switching	0.59
Special Product	0.52
Aggregation	0.53
Anchoring	0.09
Cybernization	0.11

Highlighted cells represent those relationships with insignificant R^2 values (that is those less than .50).

Table 5.24: R^2 Values - UTAUT

Construct	**R^2**		
	OLS	OBT	SSK
Behavioural Intention	.53	.28	.22

Highlighted cells represent those relationships with insignificant R^2 values (that is those less than .50).

Goodness of Fit

The final evaluation of the structural model is concerned with examining the extent to which the hypothesised model is consistent with the data collected. In total the LISREL program produces 28 fit indices each of which measure both the degree to which the measurement and structural models combined predict the observed covariance matrix, and the extent to which the covariances are successfully predicted from the parameter estimates and reproduced in the sample covariance matrix (Gerbing and Anderson, 1993; Diamantopoulos and Siguaw, 2000). However, despite the large number of statistics produced according to Gefen *et al* (2000) in order to adequately asses the fit of the model only six of these indices need to be assessed in detail. Namely: chi-square / degrees of freedom (df), Root Mean Square Error of Approximation (RMSEA), Standardised Root Mean Square Residual (SRMR), Adjusted Goodness of Fit Index (AGFI), Normed Fit Index (NFI) and Expected Cross Validation Index (ECVI). The following sections describe each of aforementioned fit indices, note their acceptable thresholds, and display the respective results within the context of both ISSAAC and UTAUT. The equations used to calculate the indices (where applicable) are shown in Figures 1 to 6 in Appendix A. Similarly, a full examination of all-28 fit indices is presented in Tables 1 and 3 in Appendix N.

Chi-Square

The chi-square statistic is the most traditional measure for assessing the overall fit of the model. In its broadest sense it tests the null hypotheses that the model perfectly fits the population data. However unlike other statistics unusually the aim is not to reject the null hypothesis but instead find support for it thereby proving that the hypothesised model perfectly fits the data extracted from the sample population (Hair *et al,* 1998; Diamantopoulos and Siguaw, 2000). In order to test the significance of the chi-square statistic the value is compared against the associated degrees of freedom (df) and if the ratio of the two statistics is less than 3:1 this shows that there is only a small degree of difference between the model-based covariance matrix and the implied covariance matrix, thus demonstrating a well fitting model (Diamantopoulos and Siguaw, 2000). Within the context of ISSAAC, the ratio between the chi-square statistic and df is 1:1 (443.53 and 396 respectively). Likewise, within the context of data sets OLS, OBT and SSK pertaining to UTAUT the ratio although larger (2:1 across all three data sets) is still below the 3:1 threshold, with the respective chi-square and df for each data set being: 297.66:143, 327.41:143 and 295.07:143. In the case of both models the chi-square results demonstrate that there is a small degree of difference between the implied and sample covariance matrices; thus meaning that for the most part both models represented a very good fit to the data.

RMSEA

The root mean square error of approximation (RMSEA) is generally regarded as one of the most informative fit indices available to a researcher (Diamantopoulos and Siguaw, 2000). Essentially it provides a value that is representative of the goodness of fit that could be expected if the hypothesised model were to be estimated in the larger population and not just the sample drawn for analysis (Hair *et al*, 1998). In practical terms it therefore gives a good indication as to how well the model statistically reflects the 'real world' environment that it is designed to investigate. According to Hair *et al* (1998), Gefen *et al* (2000) and Lin and Wu (2004) amongst others, the acceptable range for RMSEA values (as with other statistics) varies along a scale of zero to one. Whereby values less than .05 show a good fitting model, values between .05 and .08 show a reasonable fit, values between .08 and .10 show a mediocre fit and values greater than .10 show a poor fit of the model to the population. In the context of this study, the associated RMSEAs for ISSAAC and UTAUT are .03 and .05 (across the data sets) respectively thus demonstrating that not only do both models represent a good fit to the data, but also they adequately reflect the respective phenomena of organisational virtualness and consumer acceptance of technology in the 'real world' environment.

SRMR

The root mean square residual (RMR) and the standardised RMR (SRMR) belong to a group of statistics collectively referred to as residual values which measure the degree of difference between the sample covariance (variance) and a model or fitted covariance (variance) (Gefen *et al*, 2003). According to Hair *et al* (1998), although the RMR statistic is a good indicator of model fit it is subject to error due to variations in units of measurement. Therefore, it is recommended that the SRMR value is used as a better indicator of fit and parsimony. The acceptable threshold for the SRMR value is generally set at .05 with values greatly exceeding this being indicative of a high amount residual variance and therefore representative of a poorly fitting model (Hair *et* al, 1998; Diamantopoulos and Siguaw, 2000; Gefen *et al*, 2000). Within the context of both models the SRMR values for the models are slightly above the acceptable threshold measuring .07 and .06 across ISSAAC and UTAUT respectively. This consequently means that there may be a number of insignificant covariances within the data sets (a presumption that had already been made based on earlier analysis of the measurement models). However, since action can be taken to rectify this, such as the freeing of parameters or addition of different relationships between either indicator and construct or construct and construct; the SRMR value may decrease further after model modification. This therefore means that although the SRMR is insignificant the model's fit should not be rejected on this basis only.

AGFI

The adjusted goodness of fit index (AGFI) is what is defined as an absolute fit index. It shows how well the covariances predicted from the parameter estimates reproduce the sample covariances (Gerbing and Anderson, 1993). Unlike the previously discussed indices (such as the RMSEA), absolute fit indices are not based on comparisons with a 'null' model but instead are gauged on their individual level of acceptability (Diamantopoulos and Siguaw, 2000). Although in total there are three absolute fit indices produced by the LISREL program: *Goodness of fit index (GFI), adjusted goodness of fit index (AGFI)* and *parsimonious goodness of fit index (PGFI).* According to Hair *et al* (1998) and Gefen *et al* (2000), the AGFI is the most reliable measure of absolute fit. This is because not only does it show how closely the model comes to perfectly replicating the observed covariance matrix, in addition to this, the statistic adjusts itself according to the df in the model thus meaning that a more reliable and study specific indication of fit is attainted. According to Gefen *et al* (2000), in order to be acceptable AGFI values should be greater than or equal to .80. Within the context of both ISSAAC and UTAUT, the AFGI values are above the acceptable threshold, with values of .84, .92, .90 and .90 respectively. This therefore indicates that there is a good degree of replication in the covariance matrices for both models (see Tables 5.25 and 5.26 for complementary GFI and their associated thresholds).

Table 5.25: GFI Analysis - ISSAAC

	Threshold	**Value**
GF1	**.90**	0.86
AFGI	**.80**	0.84
PGFI	**.50**	0.73

Table 5.26: GFI Analysis – UTAUT

	Data Sets		
	OLS	OBT	SSK
GF1	0.93	0.92	0.93
AFGI	0.90	0.90	0.90
PGFI	0.70	0.69	0.70

NFI

The normed fit index (NFI) is part of a group of indices collectively referred to as relative fit indices, it is used to asses the comparative fit of the hypothesised model against other models such as the 'null' or saturated model (Bentler, 1990). The acceptable range for these indices, which include (alongside the NFI), the *non-normed fit index (NNFI), parsimony normed fit index (PNFI), comparative fit index (CFI), incremental fit index (IFI)* and *relative fit index (RFI)* varies along a scale of zero (indicating poor fit) to one (indicating a good fit) (Hui Lin and Her Wu, 2004).

According to Hair *et al* (1998) and Gefen *et al* (2000) in order to be statistically sound NFI values must exceed an absolute value of .80. The NFI for the ISSAAC and UTAUT models as shown in Tables 5.27 and 5.28 respectively and are above average and therefore deemed significant.

Table 5.27: Relative Fit Indices Analysis - ISSAAC

	Value
NFI	0.86
NNFI	0.98
PNFI	0.78
CFI	0.98
IFI	0.98
RFI	0.85

Table 5.28: Relative Fit Indices Analysis - UTAUT

	Data Sets		
	OLS	OBT	SSK
NFI	0.91	0.88	0.90
NNFI	0.94	0.92	0.93
PNFI	0.76	0.74	0.75
CFI	0.95	0.93	0.95
IFI	0.95	0.93	0.95
RFI	0.90	0.87	0.88

ECVI

The expected cross validation index (ECVI) is a comparative statistic that focuses on the overall error associated with the model as oppose to the error due to discrepancies between matrices. Its overall aim is to approximate the goodness of fit of the model if it were to be applied to another sample of the same size (in the case of this study, another sample size of between 200 or 300 items depending on the model) (Hair *et al*, 1998; Diamantopoulos and Siguaw, 2000). Unlike other fit indices, the ECVI value is not tested against a pre-defined threshold but instead compared against the ECVI values of the saturated (just-identified model, where the number of parameters are equal to the number of variances and covariances among the observed variables) and independent (totally independent model, where all observed variables are uncorrelated) models. Once all three ECVI values have been compared the model with the lowest value can be argued as also having the best fit. If the ECVI values of the saturated and independent models are significantly less than the ECVI value of the hypothesised model; this is a clear sign of a problematic or poorly fitting model. As shown in Table 5.29, the ECVI value for ISSAAC is notably lower than those associated with the independent and saturated models, this shows that the ISSAAC model represents the optimal most generalisable model with the least amount of error variance. In contrast to this, (as can be seen in Table 5.30), within the context of UTAUT only the ECVI relating to the OLS data set is lower than that of the saturated or null models. This means that for the remaining data sets (OBT and SSK), although the difference between the hypothesised and saturated model's ECVI value is minimal, modifications may be necessary in order to improve the models overall fit to the data set.

Table 5.29: ECVI analysis - ISSAAC

	Value
ECVI	3.13
ECVI for saturated model	4.63
ECVI for independence model	15.94

Table 5.30: ECVI analysis - UTAUT

	Data Sets		
	OLS	OBT	SSK
ECVI	1.01	1.11	1.01
ECVI for saturated model	1.00	1.00	1.00
ECVI for independence model	9.14	7.79	7.86

5.5 Model Modification

The final stage in the LISREL modelling process is concerned with making modifications to the model in order to improve either fit or parsimony (MacCallum (1986) argues that improving a model fit should always come before improving parsimony). Traditionally, in order to improve fit and parsimony modifications are concerned with either the addition or deletion of paths. However, in both cases it is vital that the researcher understands that standard modification procedures can only help to rectify internal errors such as the omission of parameters, and are not designed to act as fix for external errors such as the exclusion of key latent or manifest variables (Diamantopoulos and Siguaw, 2000). Indeed, any changes to the research model must be supported from a theoretical perspective and are essentially ineffective if the model under investigation is not already a true reflection of the chosen phenomena. Previous observations of the LISREL models relating to ISSAAC and UTAUT show that both models would benefit from the deletion of paths thus improving the model's parsimony as oppose to overall fit. This is exemplified via the large number of negative residuals present within both data sets (see section 5.4.1).

In order to determine which modifications should be made to the hypothesised model(s) the insignificant *t*-values (as identified in section 5.5.1), the modification indices (MI) or both of these statistics should be assessed. As discussed previously *t*-values show the significance of a parameter against an absolute threshold of 1.96, whereby values below this indicate that the parameter in question is not substantially different from zero and therefore the hypothesised path is not significant. In order to determine the modifications to be made the parameter(s) with the highest/lowest associated co-efficient/*t*-value is selected (Jöreskog and Sorbom, 1996). Alternatively, modifications can be made based on the outcome of the MI. MI, show the minimum decrease in the hypothesised models chi-square if a previously fixed parameter is set free. In order to determine which MI are the most significant the researcher looks for those which are deemed too large (that is those MI with an absolute value greater than 3.84) (Sorbom, 1989; Jöreskog and Sorbom, 1996). Once the largest MI has been identified the associated modification should be made and the goodness of fit indices re-examined. Subsequently, if the change in chi-square is greater than anticipated by the MI and there is theoretical support for the modification, then the modification should be made permanent. This process continues until no further modifications are suggested or deemed theoretically plausible (Diamantopoulos and Siguaw, 2000) (Tables 2 and 4 in appendix N list the relationships within ISSAAC and UTAUT with MI greater than 3.84).

For each modification that is made (whether based on *t*-value or MI or associated with fit or parsimony) what is referred to as a nested model is being created. Nested models contain exactly the same constructs and indicators as the original model; however, as a result of the modification they have differing parameter specifications

(Hair *et al,* 1998; Kelloway, 1998; Diamantopoulos and Siguaw, 2000; Gefen *et al,* 2000). In order to compare which nested model represents the best modification the D^2 statistic must be examined. D^2 represents the change in the chi-square statistic from the original to the nested model. If the value of D^2 is large compared to the change in df then the modification represents a '*real*' improvement to the model's fit (Hair *et al,* 1998). However, if the change is minimal the researcher is said to be 'capitalizing on chance' and any modification will be study specific and may not be valid in other contexts (Diamantopoulos and Siguaw, 2000 quoting MacCallum *et al,* 1992). However, despite this both Chin (1998) and Diamantopoulos and Siguaw (2000) argue that even if the change in D^2 is small, if there is significant theoretical support for the modification the change should still be made based on substance alone.

5.5.1 Suggested ISSAAC Modifications

The following sections explain each of the modifications made to ISSAAC and show the modified fit indices and D^2 values alongside those for the original model. The first modifications will be based on the previously identified insignificant paths of the structural model (that is those with insignificant *t*-values). Potential candidates for deletion on this basis are H^1, H^3, H^4, H^5, H^7 and H^8, (see section 3.2.1 of Chapter 3 for a description of each hypothesis). Following this, any further modifications will be based on the MI provided via the SIMPLIS output.

As stated, the first paths under review for modification are those paths within the structural model with *t*-values less than the acceptable threshold of 1.96. Table 5.31 briefly describes each of the insignificant paths, identifies whether their removal is theoretically plausible (that is supported by the literature) and shows their associated D^2 value. The path with the highest D^2 and theoretical support will then be removed and the subsequent nested model taken forward for the remainder of the analysis.

Table 5.31: Insignificant Paths - ISSAAC

Hypothesis	**Description**	**D^2**	**Theoretical Support for Removal**
H^1	The increased ability of virtual organisations to create shared ICT standards and like strategic goals will help organisations to provide the necessary support for cybernization.	1.47	✗
H^3	The success of switching is dependant upon the presence of aggregation within the virtual organisation such that the presence of ICT-enabled networks facilitates the alternating demands of virtual organisations.	2.38	✗
H^4	The ability of individual organisations to come together regardless of time and space to form a virtual organisation facilitates the production of a-typical products and services.	.27	✓
H^5	If an organisation wishes to achieve their potential through virtualisation they must implement a support system for ICT.	3.52	✗
H^7	Cybernization provides the environment within which the special product is created and is often the enabling factor that allows the product or service to be differentiated.	.39	✓
H^8	Cybernization allows organisations to share ICT standards and goals regardless of time and space.	28.35	✓

Although the data presented in Table 5.31 shows that there are three hypothesised paths whose removal would not affect the theoretical groundings of the model, only one has both theoretical and significant statistical support, namely H^8. H^8 argues that the degree to which virtual organisations exist in a time and space enabled by ICT and e-information flows directly affects the ability of the member organisations to create a set of shared ICT standards and strategic objectives that allow them to operate as one. Whilst some facets of the extant literature support this theory (see for example Barnes and Hunt, 2001; Travica, 2005), it is also plausible to suggest that instead of there being a dependant relationship between the constructs instead there merely exists a cause and effect relationship. This would mean that instead of organisations being reliant on cybernization to develop shared ICT standards, the presence of interoperability would instead be a reactive process that happens as a result of organisations becoming cybernized. Such that, as the degree of cybernization increases so to does the need to create shared ICT standards that allow members of virtual organisations to succeed in cybernized environments. However, before the link between cybernization and interoperability can be removed, it is necessary to examine the statistical impact of the modification. In view of this, the re-estimated goodness of fit statistics and the associated D^2 for the new model are presented in Table 5.32, alongside those of Travica's (2005) original model.

Table 5.32: Removal of the Path between Cybernization and Interoperability

	Fit Measures	
	Original Model	M_1
Chi-square	443.53	471.88
DF	396	397
Ratio	1:1	1:1
DF difference		1
D^2		28.35
RMSEA	.03	.03
ECVI	3.13	3.11
ECVI for saturated model	4.63	4.63
ECVI for independence model	15.94	15.94
SRMR	.07	.08
AGF1	.84	.84
CFI	.98	.97

The re-estimated fit indices and associated D^2 for the modified model presented in Table 5.32 show that the removal of the path between cybernization and interoperability creates a better fitting model to the data (ECVI and SRMR). In addition to this, of the remaining five hypotheses that are insignificant (see Table 5.31), H^5 now has a significant *t*-value of -2.72 and the relationships specified by H^4 and H^5 can be mediated via the positive relationships between cybernization and aggregation, aggregation and switching and switching and special product respectively. In view of since there is a lack of hardened statistical support, no significant literature to counter the removal and a more paths become significant, the path previously portrayed by H^8 has been removed from Travica's (2005) model and the resulting model taken forward for further modification.

Following the removal of the path between interoperability and cybernization, the re-estimated structural equations showed that there were four insignificant paths remaining within the model (see Table 5.33). Of these paths, the path with the most statistical and theoretical support for removal is that proposed by $H^{7\cdot}$ H^7 argues that cybernization provides the enabling environment that allows members of virtual forms to create niche products (Travica, 2005). However, it is also suggested that it is not cybernization that allows members of virtual organisations to provide specialised products and services, but it is instead the characteristics of virtual organisations such as aggregation and in turn switching which allow the production of niche products. For example, according to both Wiesenfeld *et al* (1999) and Mowshowitz (2002), one of the main reasons why switching is a key characteristic of virtual forms is because it provides a sense of flexibility; whereby individuals who are geographically de-localised can come together in order to share skills and knowledge that alone they may not possess. Brennan and Braswell (2005) amongst others argue that it is this ability to create an environment where members have a balanced set of both unique and complimentary skills that allows members of virtual forms to produce a product and service that is differentiated. In view of this argument and in order to test this alternative hypothesis the path was removed and the fit indices re-estimated (see Table 5.34 for the re-estimated goodness of fit indices for M^2).

Table 5.33: Insignificant Paths M^1

Hypothesis	**Description**	**D^2**	**Theoretical Support for Removal**
H^1	The increased ability of virtual organisations to create shared ICT standards and like strategic goals will help organisations to provide the necessary support for cybernization.	.00	✗
H^3	The success of switching is dependant upon the presence of aggregation within the virtual organisation such that the presence of ICT-enabled networks facilitates the alternating demands of virtual organisations.	3.75	✗
H^4	The ability of individual organisations to come together regardless of time and space to form a virtual organisation facilitates the production of a-typical products and services.	.33	✓
H^5	If an organisation wishes to achieve their potential through virtualisation they must implement a support system for ICT.	26.88	✗
H^7	Cybernization provides the environment within which the special product is created and is often the enabling factor that allows the product or service to be differentiated.	.30	✓

Table 5.34: Removal of Path between Cybernization and Special Product

	Fit Measures	
	M_1	**M_2**
Chi-square	471.88	472.18
DF	397	398
Ratio	1:1	1:1
DF difference		1
D^2		.30
RMSEA	.03	.03
ECVI	3.11	3.10
ECVI for saturated model	4.63	4.63
ECVI for independence model	15.94	15.94
SRMR	.08	.08
AGF1	.84	.84
CFI	.97	.97

Although the removal of the path between cybernization and special product does not have a significant affect on the fit of the model to the data. It is believed that the removal of the path will create a simplified model that more adequately reflects the characteristics of organisational virtualness in the 'real world'. The path will therefore be removed and the associated *t*-values re-examined.

Following the removal of the path between cybernization and special product there were four remaining insignificant paths and of these three had *t*-values less than 1.96 (namely H^1, H^2, and H^3). In view of this the path with the most statistical and least theoretical support respectively was removed, namely H^4. H^4 suggests that the ability of individual organisations to come together regardless of time and space via ICT-enabled networks facilitates the production of a-typical products and services (Souren *et al,* 2004/2005; Furst *et al,* 2004). However, similar to the argument regarding H^7, it is proposed that it is not the presence itself of ICT-enabled networks that allows the creation of niche products but it is instead what the networks facilitate (such as the sharing of skills and resources) that allows special products to be created. In light of this it is therefore suggested that the relationship between the two constructs although viable is more appropriately mediated via the positive relationship between aggregation and switching, and switching and special product respectively. It can be argued that by removing the direct path between aggregation and special product and instead proposing that the path is mediated via switching, not only will the modified model still be supported by the extant literature furthermore; the model will be greatly simplified. The statistical evidence in favour of the modification is presented in Table 5.35.

Table 5.35: Removal of path between Aggregation and Special Product

	Fit Measures		
	M_1	M_2	M_3
Chi-square	471.88	472.18	472.72
DF	397	398	399
Ratio	1:1	1:1	1:1
DF difference		1	1
D^2		.30	.54
RMSEA	.03	.03	.03
ECVI	3.11	3.10	3.10
ECVI for saturated model	4.63	4.63	4.63
ECVI for independence model	15.94	15.94	15.94
SRMR	.08	.08	.08
AGF1	.84	.84	.84
CFI	.97	.97	.97

Following the removal of the path between special product and aggregation the only remaining path with an insignificant *t*-value was that associated with H^1 and the constructs of interoperability and anchoring. However, since there is a significant amount of support in the extant literature for this path (see for example Gibson and Cohen, 2003; Travica, 2005), and there is none regarding an alternative path and the relationship cannot be mediated via a secondary construct, its removal would result in the model not being an accurate representation of the phenomena under investigation. Indeed, according to Stough *et al* (2000) and Introna (2001) amongst others, in the case of many virtual forms there is a collective need to create an environment that is supportive of ICT, and if such an environment does not exist then this in turn can potentially lead to the whole concept of virtuality failing. This therefore means that the complete removal of the relationship between interoperability and anchoring is not theoretically plausible. The hypothesised parameter although insignificant will therefore remain within the model and any further modifications will be based on either the MI or within the context of creating a more simplified version of Travica's (2005) original ISSAAC (possible reasons for the insignificance of H^1 will be discussed in section 6.2 of Chapter 6).

Before the MI for M^3 were examined it was felt that the model would benefit from the removal of surplus paths. As has already been identified a number of the direct paths originally hypothesised by Travica (2005) are able to be mediated via the presence of common constructs. Considering this, of the six remaining paths, the only path that is arbitrary is that between switching and cybernization. This path represented by H^9 proposes that cybernization facilitates the exchange of skills and the creation of virtual forms by providing an environment within which organisations can come together regardless of time and space. However, it is proposed that instead of switching being directly affected by cybernization, the relationship can be mediated via the positive path between cybernization and aggregation and again aggregation and switching. This proposition is also more logical as it is not necessarily ICT itself that facilitates switching, but instead it is what ICT enables such as the development of IOS and aggregated networks that provide members of the virtual organisation with the tools to share skills, knowledge and resources. The statistics associated with the removal of this path are shown in Table 5.36.

Table 5.36: Results of the removal of path between Cybernization and Switching

	Fit Measures			
	M_1	M_2	M_3	M_4
Chi-square	471.88	472.18	472.72	480.10
DF	397	398	399	400
Ratio	1:1	1:1	1:1	1:1
DF difference		1	1	1
D^2		.30	.54	7.38
RMSEA	.03	.03	.03	.03
ECVI	3.11	3.10	3.10	3.12
ECVI for saturated model	4.63	4.63	4.63	4.63
ECVI for independence model	15.94	15.94	15.94	15.94
SRMR	.08	.08	.08	.08
AGFI	.84	.84	.84	.84
CFI	.97	.97	.97	.97

Following the aforementioned modifications, the final model is presented in Figure 5.6. The diagram shows that the model has the potential to be a sequential model that depicts various stages or critical success factors associated with virtual forms. The first factor in which is the presence of ICT, e-information flows and global economies which help to create an environment within which independent organisations can come together as single unit. This in turn, creates a need to develop like ICT standards and shared strategic objectives so that individual organisations are able to operate as one towards a common goal (interoperability). These ICT standards and shared focus form the base for individual organisational changes in rules, management or structure (anchoring). This support structure in turn encourages and allows for the development of the ICT used to connect the individual companies (cybernization and aggregation). These ICT networks then allow organisations to share skills, knowledge and resources regardless of time and space (switching), and finally this in turn allows virtual forms to produce a-typical goods that other stand-alone organisations are unable to thereby allowing them to thrive in today's hypercompetitive markets. The development of this model although derived from statistical evidence is strongly supported by the literature. Indeed, many of the researchers who have examined the phenomena or organisational virtualness argue that the process of creating a virtual form is similar in nature to a life cycle approach; whereby each of the characteristics cause and effect one another with the end aim of achieving a common goal (see for example, Bryne, 1993; Strader *et al*, 1998; Joy-Matthews and Gladstone, 2000; May, 2000; Saabeel *et al*, 2002; Bauer and Koszegi, 2003). Although there are no further modifications based on *t*-values, additional modifications are recommended via the MI associated with M^4 (see Table 5.37 for an overview of the five largest MI and Table 2 in Appendix N for a full output). However, although each of the modifications suggested by the output have both significant MI and SEPC, none are theoretically plausible and therefore the model will remain as outlined in M^3.

Table 5.37: Largest MI for modified model M^4

Paths between Endogenous Latent Variables and their Associated Indicators	**MI**	**SEPC**
Switch and IOS	6.07	0.35
Switch and Tech Dev	6.18	-0.46
Cyber and Mang Cha	6.94	0.16
Anch and IOS	9.07	-0.3
Switch and Ext Fac	10.1	-0.94

Paths between Endogenous Latent Variables		
Anch and Cyber	13.54	-184.44
Switch and Aggre	5.14	0.05
Inter and Cyber	13.84	.38
Inter and Switch	11.85	.33

In order to demonstrate whether the modified model presented via M^4 more adequately represents the theories and concepts associated with organisational virtualness, it is necessary to asses the statistical significance of both the re-estimated structural and measurement models. Included in this reanalysis is an examination of the modified models construct reliability, internal consistency, R^2, and AVE scores. These assessments, which are shown in Tables 5.36 and 5.37 and Figure 5.6 respectively show that the re-estimated model has more reliable scales (shown via the increase in ρc switching and special produce), greater explanatory strength (shown via the increase in the R^2 values of the constructs aggregation, switching, cybernization and special product), and has more significant paths than the model originally proposed by Travica (2005). In addition to this, the AVE values for switching and special product which were once insignificant are now significant and the AVE for anchoring although still insignificant has increased by approx 22%. Overall, this suggests that not only does nested model M^4 present a better fit to the population data than the model originally proposed by Travica (2005). In addition to this, less of the variance in the model is attributed to measurement and other errors. Ultimately, this means that the model is a better representation of the surrounding literature and therefore presents a greater explanatory tool in terms of organisational virtualness. (The final modified model is shown in Figure 5.6).

Table 5.38: R^2 and Reliability Scores for ISSAAC and M^4

Constructs	**R^2 (ISSAAC)**	**R^2 (M_4)**	**Construct Reliability (ISSAAC)**	**Construct Reliability (M_4)**	**Cronbach's Alpha (ISSAAC)**	**Cronbach's Alpha (M_4)**
Interoperability	0.33	-----	0.89	0.89	0.68	0.68
Switching	0.59	0.70	0.67	0.78	0.67	0.67
Special Product	0.52	0.56	0.64	0.74	0.77	0.77
Aggregation	0.53	0.68	0.93	0.90	0.71	0.71
Anchoring	0.09	0.00	0.29	0.28	0.78	0.78
Cybernization	0.11	0.12	0.98	0.98	0.86	0.86

Highlighted cells represent those constructs with insignificant R_2, ρc or alpha

Table 5.39: Shared Variance Analysis for M^4

	Aggre	Anch	Cyber	Switch	Inter	Spl P
Aggre	**0.73**					
Anch	-0.28	**0.11**				
Cyber	0.81	-0.34	**0.93**			
Switch	0.83	-0.23	0.68	**0.53**		
Inter	0.00	-0.17	0.51	0.75	**0.68**	
Spl P	0.63	0.01	0.00	0.00	0.00	**0.51**

Highlighted cells are those deemed insignificant with AVE <.50 or an AVE lower than the amount of shared variance

Although the proposed modifications to the model are supported both statistically and theoretically, this Thesis is unable to conclusively state that the modified model presents a better fit to the data than Travica's (2005) original ISSAAC model as according to Diamantopoulos and Siguaw (2000) amongst others modifications can only be conclusively accepted once they have been independently validated using either a completely new sample or split sample. If neither of these options is available then the researcher is only able to hypothetically say the new model is superior. With this consideration in mind and because there was no opportunity to further validate the modified model within a different population (primarily due to time constrictions and insufficient data), the models superiority in terms of representing the 'real world' context of organisational virtualness and fit to the data can only be argued from a hypothetical point of view. In light of this, the independent validation of the modified model is discussed and recommended as an area for future research in Chapter 7.

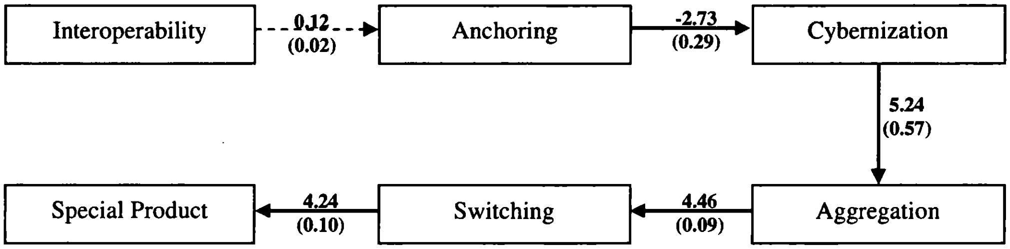


Figure 5.7: Modified ISSAAC Model (M^4)

5.5.2 Suggested UTAUT Modifications

Since there are three data sets pertaining to UTAUT model modification is broken down accordingly, with the modifications relating to the OLS data set being discussed first followed by those relating to data sets OBT and SSK. The pattern of modification as with ISSAAC first examines the insignificant *t*-values associated with each data set and then moves on to an examination of the corresponding MI (an index of the change in chi-square as a result of the modification). As with previous modifications the change was made, the resulting D^2 (change in chi-square from the original to the modified model) and goodness of fit indices compared against those of the original model, and finally the theoretical viewpoints relating to the modification examined. Subsequently, if the underpinnings of the study are not negatively affected by the modification and the resulting model presents a better fit to the data, a new version of the original UTAUT has been proposed, thus creating a series of nested models (Diamantopoulos and Siguaw, 2000; Gefen *et al*, 2000).

OLS Data Set

If no insignificant parameters are identified in the earlier analysis of the structural model modifications are based either on theory alone or on the MI produced by the LISREL program. Since therefore there were no insignificant *t*-values associated with the structural model in the context of the OLS data set the next stage was to examine the MI. Noting that, since earlier analysis of the measurement model, identified only one construct with insignificant reliability scores (namely, facilitating conditions), modifications (if theoretically plausible) were made to this construct only.

Upon examination of the MI relating to FC that with the largest MI was associated with the addition of a path between FC and the indicator RA1. FC looks at those factors that aid in an individual's usage of new technology such as resources and knowledge, whilst RAI is concerned with examining to what extent using the new technology allows the user to accomplish tasks more quickly. From these descriptions it becomes evident that there is little to no relationship between construct and indicator and therefore to add a relationship would be illogical.

Similarly, the statistical evidence shown in Table 5.40 demonstrates that although the D^2 for the modified model was significant. Overall, the fit of the model to the data was not substantially affected by the modification. Therefore, in line with the arguments presented by Diamantopoulos and Siguaw (2000), the parameter was not added as there was neither theoretical nor statistical support.

Table 5.40: Addition of path between Facilitating Conditions and RAI

	Fit Measures	
	Original Model	M_1
Chi-square	253.93	230.78
DF	126	125
Ratio	1:1	1:1
DF difference		1
D^2		23.15
RMSEA	.05	.05
ECVI	0.75	0.85
ECVI for saturated model	0.90	0.90
ECVI for independence model	0.96	0.96
SRMR	.06	.06
AGF1	0.93	0.91
CFI	0.96	0.97

The second highest MI associated with FC was with the indicator OE7. OE7 is similar in nature to RAI in that it measures the extent to which users feel that they are gaining additional benefits such as saving time or money as a direct result of using the new technology. As with RAI this definition is not related to FC apart from the fact that both variables are concerned with usage. In addition to this, whilst OE7 examines the after affects of system usage (associated with cognitive dissonance), FC looks more at the prerequisites that encourage use, such as available hardware and software etcetera. In view of this, it therefore becomes illogical to suggest a link between the construct FC and the indicator OE7 as they are concerned with different stages of the consumer adoption process. In addition to this, as is evident from the summary statistics shown in Table 5.41, whilst initially the statistical evidence supports the modification (shown via a positive D^2). Overall, the model's fit is not substantially affected. Indeed, in some cases, such as the ECVI and AGFI, the model's fit is actually negatively impacted. Overall, it can therefore be argued that the statistical evidence supports the decision made earlier not to add a path between OE7 and FC.

Following the decision not to add paths between RA1 or OE7 and FC, the remaining significant MI related to modifications associated with the addition of error covariances. According to Diamantopoulos and Siguaw (2000), any modifications concerning error covariances should be avoided unless there are clear theoretical or methodological reasons to do so. Examples, of instances when correlated error covariances are acceptable include when measures are taken at different points in time, or when responses are measured on different scales. Since however, there were no such instances within the context of this study; no further modifications were been made to UTAUT within the context of the OLS data set, and the model remains as outlined in Figure 5.2.

Table 5.41: Addition of path between Facilitating Conditions and OE7

	Fit Measures	
	Original Model	M_2
Chi-square	253.93	240.53
DF	126	125
Ratio	1:1	1:1
DF difference		1
D^2		13.4
RMSEA	.05	.05
ECVI	0.75	0.87
ECVI for saturated model	0.90	0.90
ECVI for independence model	0.96	0.96
SRMR	.06	0.06
AGF1	0.93	0.91
CFI	0.96	0.96

Data Sets OBT and SSK

Earlier analysis of the insignificant *t*-values shows that within both data sets OBT and SSK the same hypothesised parameter is insignificant, namely H^3 (-1.12 and -1.37). The following sections outline the result of the removal of this path within the context of both data sets and assess both the theoretical and statistical perspectives associated with the modification.

H^3 proposes that SI have a positive affect on BI. In real terms, this means that an individual's intention to use and ultimately adopt a new technology is affected by social factors such as peer pressure, social acceptability and image, amongst others (Venkatesh *et al,* 2003; Pincus, 2004). Indeed, Venkatesh *et al* (2003) argue that positive reinforcement from peers will act as a stimulant to behavioural intention, such that the greater the degree of positive peer opinion the more likely intention and usage becomes. Since therefore the available literature is in strong support of this link and studies dating back over 20 years have proposed and found support for the relationship between social conditions and intention to use the removal of the link is not theoretically justified and the parameter will remain as specified by Venkatesh *et* al (2003) (see for example Fishbein and Azjen 1975; Davis *et al* 1989; Mathieson 1991; Taylor and Todd 1995a, 1995b). However, in order ensure rigour the goodness of fit indices of the hypothetically revised model are shown next to those for the original UTAUT in Table 5.42.

Table 5.42: Deletion of path between Social Influences and Behavioural Intention

	Fit Measures			
	OBT		SSK	
	Original Model	M^1	Original Model	M^2
Chi-square	295.07	261.56	295.07	296.87
DF	143	127	143	144
Ratio	2:1	2:1	2:1	2:1
DF difference		16		1
D^2		33.51		1.8
RMSEA	0.05	0.05	0.05	0.05
ECVI	1.01	0.91	1.01	1.01
ECVI for saturated model	1.00	0.90	1.00	1.00
ECVI for independence model	7.86	7.15	7.86	7.86
SRMR	0.06	0.06	0.06	0.06
AGF1	0.90	0.91	.090	.090
CFI	0.95		0.95	0.95

Although in the case of the OBT data set there was a significant change in chi-square compared to the change in df (16:33.51), the remainder of the fit indices across both data sets showed that the removal of the path between SI and BI did not significantly improve the fit of the model. Therefore, as with the OLS data set, UTAUT will remain as originally specified by Venkatesh *et al* (2003) and as outlined in Figure 5.2 and Table 5.20. Possible reasons for the insignificance of the relationships within the context of both data sets OBT and SSK (namely online booking and self-service check in) will be discussed in Chapter six.

5.6 Summary

The aim of this Chapter has been to present the results of the data analysis in order to establish whether the models and their accompanying hypotheses proposed in sections 3.2.1 and 3.3.2 of Chapter 3 are supported by 'real world' data in the context of the airline industry.

The first stage in analysing the data was to conduct EFA in order to identify outliers within the data sets, observe whether intercorrelations between the items of the data set were present, reduce the data set to a more manageable size (where applicable), and in the case of ISSAAC establish the distribution of items across the constructs of the model. Following this, the screened data was then subjected to CFA (via LISREL) in order to asses the reliability and validity of the items and overall scales used to test for the presence of the underlying factors associated with ISSAAC and UTAUT. In addition to this, any insignificant items identified earlier via EFA were removed (if it was beneficial to the data set as a whole) and the hypothesised relationships specified in Chapter three were tested in order to establish which were and were not supported by the data respectively.

The subsequent results showed that of Travica's (2005) original nine hypotheses, only three were found to be statistically significant ($H^{2,}$ H6 and H^{9}). However, following a series of modifications (involving the removal of the paths between aggregation and special product and cybernization and interoperability, switching and special product) all but one of the remaining five hypotheses were supported by both the literature and the empirical data (H_{1} represents the only insignificant path). In addition to this, approximately 70 of the item reliabilities were significant, 100% of the constructs have significant alpha values greater than .65 (66% are greater than .7) (interoperability and switching have alpha values of .68 and .67 respectively); and finally all bar one of the associated ρc scores associated with M^{4} were greater than the significance threshold of .50 (anchoring is the only insignificant construct with a ρc value of .11). Overall, this suggests that the large majority of the scales and items presented in this study are both theoretically plausible and statistically viable and therefore effective at representing the constructs of ISSAAC in the 'real world'.

Similarly, in the case of UTAUT, across all three data sets 100% of the item reliabilities and ρc scores were greater than .50 and .60 respectively, and all bar one of the alpha values were greater than .65, with 60% being above .90 (facilitating conditions is the only insignificant scale in all three data sets). Furthermore, the analysis of the structural model showed that whilst H^1 and H^2 were significant across all three UTUAT data sets, H^3 was only significant in the context of the OLS data set. This therefore suggests that whilst the majority of the theories associated with UTAUT can be successfully transferred to a customer context a further examination of the effect of social influences may be necessary (possible reasons for the insignificance of paths across both models will be discussed in Chapter six).

Overall, data analysis has shown that the majority of the propositions made in Chapter three regarding the constructs and structure of ISSAAC and UTAUT are supported both via the extant literature and by 'real world' data. This therefore offers preliminary conformation that the ISSAAC model can indeed be used to assess organisational virtualness (including the concept of virtual organisations) and in the case of UTAUT its associated theories and concepts can in part be successfully applied to a customer context. Overall, the results of this Chapter can be used to contribute towards the literature associated with organisational virtualness and user acceptance of new technology and to assist in the general understanding of the respective phenomena in their 'real world' contexts. These issues and other outcomes of the study are discussed further in Chapters seven and eight: discussion of results and recommendations for future research.

Chapter 6

Findings and Discussion

6.1 Introduction

The purpose of the following Chapter is to discuss the findings and implications of the research presented in this Thesis. The Chapter examines whether the hypothesised relationships outlined in Chapter three have been proven or disproved and establishes how the work presented in this Thesis affects the current body of research associated with both organisational virtualness and consumer acceptance of new technology. The Chapter is divided into two sections, one each to examine the results and implications of the research within the context of ISSAAC and UTAUT respectively.

6.2 ISSAAC

Over the past ten years there have been a significant number of technological and societal changes which have affected not only the demands of the marketplace but also the way in which business is conducted (Walker, 1999; Stough *et al*, 2000). Amongst these changes are a move towards a more global economy, increased competition, growing consumer demands (because of a progressively more fast paced society) and changes in policies and politics (see for example, Igbaria *et al*, 1999; Cooper and Muench, 2000; Mcphee and Scott Poole, 2001). However, possibly the most notable change has been the increased use of ICT as a means by which organisations can develop new organisational forms and offer new and more differentiated products (Igbaria *et al*, 1999; Cooper and Muench, 2000; Gabbert, 2003; Powell *et al*, 2004). This trend towards ICT dependency is generally refereed to in the literature as the degree of virtualness of an organisation and is in part what this study has been concerned with (Bauer and Koszegi, 2003; Shekhar, 2006).

Understanding the phenomenon of organisational virtualness is of particular importance because unless both researchers and practitioners understand the dynamics of ICT dependency within organisations, the ability to create and maintain successful virtual organisations becomes stunted and in many cases organisations operating within this business model will not realise their full potential.

Within the context of this study in order explore the phenomenon of organisational virtualness and in particular virtual organisations an empirical investigation of Travica's (2005) ISSAAC model was preformed. Travica's (2005) model was selected above other theories associated with the phenomenon as it provides a unified framework within which to pull together the at times fragmented research associated with different levels of ICT dependency and according to Travica (2005) himself it is the ideal candidate for both qualitative and quantitative investigations with the latter lacking in number. With these considerations in mind it was anticipated that by quantitatively validating the constructs and measures associated with Travica's (2005) model not only would a second step be taken in validating the theoretical concepts proposed by ISSAAC, but also the overall understanding of virtual organisations and organisational virtualness as whole would be greatly enhanced. In addition to this, since there are few if any studies that hypothesise and test the dependant relationships between the common attributes of virtual forms it was anticipated that the current work would close an important gap in the literature via the assessment of the interrelationships between the constructs of ISSAAC (Shekhar, 2006). In accomplishing these aims it is suggested that a greater understanding of the mechanisms of organisational virtualness has been attained and that a contribution to the literature has been made.

The first task in accomplishing the studies objectives was to review the current drivers associated with the rise in new organisational forms such as the virtual organisation. Secondly, the theory associated with what is meant by the degree of virtualness of an organisation was defined, and the most common characteristics associated with different levels of virtualness were examined via a review of the virtual organisation and virtual team. It was anticipated that by examining the characteristics associated with different levels of virtualness this would help to better conceptualise the more general characteristics of the phenomenon, which in turn would result in ISSAAC having the potential to be used as a vehicle for assessing a variety of virtual forms along the entire continuum of virtuality. (In fact, in recommending areas for future research, Travica (2005) suggests the operationalisation of ISSAAC in different contexts). Furthermore, by conducting a wider review of the literature the constructs of Travica's (2005) ISSAAC model have been significantly strengthened in their definition and in turn this has provided the base upon which propositions relating to the interrelationships amongst the constructs were developed. Following this, a research instrument in the form of a quantitative survey was designed and subsequently used to collect original data from a leading international airline. The data collected was then subjected to general analysis via SPSS (in order to determine the overall distribution of the data set and identify the distribution of he items across the constructs of ISSAAC); and the subsequent data structure was taken forward and analysed using LISREL. LISREL was used to test both the reliability and validity of the individual items and the overall scales (referred to as the measurement model) and in order to confirm or reject the hypotheses associated with ISSAAC (the structural model). The following sections overview the results of both analyses and assess how the results affect validation of ISSAAC. (Note the majority of the statistics are taken from the modified model if not otherwise stated).

Firstly, measurement model analysis. Analysis of the measurement model is concerned with assessing the validity and reliability of the items and overall scales associated with the research instrument. Assessing the measurement model is essential as its shows whether the research instrument and its associated items are valid measures of the latent constructs of a model. Furthermore, according to Diamantopoulos and Siguaw (2000), unless the items used to test for the presence of the underlying constructs of a phenomenon are reliable the researcher is unable to trust the quality of the measures associated with each construct and the understanding of the links between constructs (as shown via the structural model) becomes problematic. In the context of ISSAAC analysis of the individual items showed of the final 30 items used to collect responses approximately 70 percent were considered statistically significant with individual item reliabilities of .50 or over. The exception to this and therefore the construct accounting for the remaining 30 percent were the item reliabilities associated with the construct "anchoring". Overall, this shows that whilst the variance in some items (those with reliabilities less than .50) may be attributed more to error than to the latent constructs the majority of items represent valid measures of the constructs of ISSAAC in the 'real world'. The second evaluation of the individual items was concerned with examining the factor loadings associated with each item. According to Hair *et al* (1998), in order to show a positive contribution to the overall significance of the construct items within the framework of this study must have a factor loading greater than or equal to ± .40. In this case approximately 80 percent of the item loadings are considered practically significant and therefore play a substantial role in contributing to the overall significance of the constructs of the model. This sentiment is reiterated in the results of the joint item analysis where the individual items were grouped according to the results of the earlier factor-loading pattern established via EFA. The results of the group analysis show that in addition to the majority of items loading cleanly onto individual constructs. The construct reliability (ρc), AVE and measures of internal consistency (shown via Cronbach alpha) are significant for all of the constructs bar one, meeting the citied minimum thresholds of .60, .50 and .65 respectively (anchoring consistently falls below the minimum threshold for each test). This means that not only is the amount of variance accounted for by error minimal but also the combined groupings of reflective indicators are good measures of the characteristics of organisational virtualness as a whole.

Overall, in terms of the measurement model this study has found that the items associated with the research instrument are for the most part both practically and statistically significant. This significant correlatory power between items shows that as a whole the items examined are good measures of the latent variables under investigation thereby implying that the instrument constructed to test ISSAAC in the 'real-world' is reliable and forms a valid representation of the phenomenon of organisational virtualness. However, though significant correlations have been identified since this study forms the first quantitative validation of ISSAAC and its associated indicators were derived predominately from qualitative data the item measures proposed should be viewed as preliminary. In line with this, future research should be targeted at developing and validating appropriate scales for each of the constructs of ISSAAC with an emphasis on insignificant items such as those associated with anchoring. Possible actions that can be implemented to achieve greater statistical significance will be discussed in Chapter seven.

The second stage of the analysis examined the relative strength of the structural model by testing the overall explanatory power of the constructs, the relationships amongst constructs (shown via the pre-specified hypotheses) and the fit of the model to the data sample collected. The first item examined was the explanatory power of the model. Explanatory power is shown via the R^2 statistic and the greater the value against a minimum threshold of .50, the greater the variable can be said to contribute to the overall variance within the model. For example, within ISSAAC the construct that accounts for the most variance is switching with an R^2 of .70. This suggests that at the heart of a successful virtual organisation is the ability to use ICT-enabled networks to share skills, knowledge and resources so that various objectives can be met simultaneously (Bryne, 1993; Barnes and Hunt, 2001; Introna, 2001). Whilst this finding contradicts Travica's (2005) original suggestions that cybernization is the hub variable within the ISSAAC model and therefore should explain the majority of the variance the findings are actually more akin to the extant literature associated with organisational virtualness. Indeed, according to both Franke (2001) and Mowshowitz (2002), it is switching that differentiates virtual forms and in particular virtual organisations by allowing them to become more efficient, increase productivity and ultimately successfully enhance their market share, thereby beating their traditional counterparts and competitors. In line with this, the findings of the study therefore suggest that whilst cybernization often provides the environment within which a number of the constructs of ISSAAC (such as aggregation and indeed switching) are able to develop it is actually switching which is the central construct, as it represents one of the key reasons why virtual forms such as the virtual organisation are formed and subsequently succeed. Furthermore, switching is potentially the main unique factor that contributes to the success of the virtual forms in today's ultra competitive marketplace. Another key observation regarding the explanatory power of the model is that one of the constructs namely anchoring accounts for 0 percent of the variance in the model with an R^2 of 0.00. This result is unexpected as according to Travica (2005), anchoring plays a key role within virtual forms as it provides the supportive framework within which the practicalities of virtuality are developed and maintained. It is therefore surprising that none of the variance in the model is attributed to this construct. In view of this, it is therefore suggested that future research should concentrate on examining the logistics and power of anchoring as an explanatory tool and determine whether this finding is generic across samples or, whether it is case specific and is a result of the insignificant manifest variables associated with the construct in the context of this study. If this is the case, future research should focus on improving the strength of the manifest variables before anchoring is excluded as a construct of ISSAAC.

The second focus of the structural model analysis concentrated on the interrelationships between the constructs of ISSAAC. The aim here was to examine whether the hypotheses derived from the extant literature were supported by the data collected and whether they could therefore act as representations of the relationships that are present within the 'real world' context of organisational virtualness. The resulting analysis showed that of the original nine hypotheses associated with ISSAAC, three were supported by both theory and data whilst the remaining five were supported by theory only. However, following model modification whereby a number of insignificant direct paths were removed and the relationships instead moderated via secondary constructs statistical evidence was found in favour of all but one of the remaining five paths (H^1 represents the only insignificant path). The subsequent paragraphs therefore explain each of the findings of the study and the modifications made and outline the possible implications of the results (based on rank order). As a guide, a summary of findings is presented in Table 6.1 and the final modified model is shown in Figure 6.1.

Table 6.1: Summary of Findings – ISSAAC

Hypothesis	Dependant Variable	Independent Variable	Explanation
H_1	Anchoring	Interoperability	The extent to which an organisation is technically and strategically synchronised with its partners does not affect their ability to create a supportive environment for cybernization.
H_2	Special Product	Switching	The ability to produce a-typical products/services is positively affected by the extent to which organisations are able to share skills and knowledge via alternating membership of virtual organisations.
H_3	Switching	Aggregation	The presence of ICT-enabled networks positively affects the extent to which individual parties are able to alternate their membership of virtual organisations with the aim of attaining additional skills and knowledge.
H_4 (Removed)	Special Product	Aggregation	The ability of virtual organisations to produce a-typical products and services is not directly affected by the extent to which individual organisations use ICT networks to transcend time and space.
H_5	Cybernization	Anchoring	The extent to which a virtual organisation is able to successfully exist in a time and space enabled by ICT is positively affected by their ability to create and maintain ICT-enabled networks.
H_6	Aggregation	Cybernization	Cybernization positively affects the ability of virtual organisations to create and maintain ICT-enabled networks and relationships.
H_7 (Removed)	Special Product	Cybernization	The ability to produce a-typical goods/services is not directly affected by the extent to which an organisation exists in a time and space enabled by ICT.
H_8 (Removed)	Interoperability	Cybernization	Cybernization positively affects the ability of virtual organisations to share ICT and strategic goals regardless of time and space.
H_9 (Removed)	Switching	Cybernization	The extent to which an organisation exists in a time and space enabled by ICT positively affects their ability to exchange skills and resources or enter competing markets.

Highlighted cells represent insignificant paths and patterned cells represent those paths that were removed

Of the four significant paths outlined in Table 6.1, the path with the highest associated *t*-value (5.24) and therefore the most significant is H_6. H_6 defines the relationship between cybernization and aggregation and suggests that the extent to which an organisation exists in a time and space enabled by ICT directly affects the ability of that same organisation to develop ICT-enabled networks. This in turn allows the organisation to connect with other parties outside of their traditional boundaries (for example across continents) thus allowing them to become boundaryless and operate on a global scale (Burn *et al,* 2002; Travica, 2005). Finding support for H_6 proves that the statistical data is in line with the conceptual theories presented by both Travica (2005) and others and it suggests that if organisations wish to successfully differentiate themselves from traditional networked organisations and create a framework that allows them to transcend time and space they must first develop their ICT capabilities. Such that they must increase occurrences of ICT in their operations so that they then have the necessary resources to develop ICT-enabled networks that in turn allow them access to a wider variety of skills and resources and allow them to connect with a variety of trading parties on a global scale.

The second and third most significant paths within ISSAAC are those associated with H^3 and H^2 (involving the constructs of aggregation, switching, and special product). These paths which represent two of the key functions of the virtual organisation have *t*-values of 4.46 and 4.24 respectively. They hypothesise that the presence of ICT-enabled networks positively affects the ability of virtual forms to share skills, knowledge and resources amongst its members; and in turn this allows the organisation as a whole to produce specialist products or services in a more effective and competitive manner. Indeed according to Souren *et al* (2004/2005) and Furst *et al* (2004), without the presence of ICT-enabled networks and flexible rules and procedures (captured via aggregation and interoperability) the transference of knowledge and resources would be near impossible across geographical boundaries. In turn, this would then result in a reduced ability to produce specialised products and possibly a complete inability to deal with the hyper-competitiveness of today's global economy. In addition to this, Travica (2005) argues that the greater the presence of aggregation and interoperability within virtual forms the easier it is for member organisations to alternate their participation dependant upon their needs at any given time. This subsequently provides an element of flexibility that allows virtual forms such as the virtual organisation to provide a rapid response to the demands of the marketplace it terms of yield and output. In practical terms, this suggests that if organisations want to succeed they must not only utilise the ICT available in the marketplace to connect with other organisations but that they must also develop like working practices so that they gain access to an increased range of skills and resources thereby developing a sense of cohesion that could ultimately result in them increasing their market potential and share.

The final significant hypothesis within the modified model is H^5 (-2.73). H^5 is concerned with the positive link between the support system that exists within an organisation for ICT and the ICT itself (embodied through the constructs of anchoring and cybernization). The negative result for this hypothesis (in terms of its *t*-value) supports the argument in the literature that the lesser the degree of support for ICT within a virtual form the less likely it is that the ICT and its associated components will be successfully maintained. Indeed, many authors argue that anchoring plays an essential role within any virtual form and in many cases acts as the catalyst that facilitates an organisations successful move along the continuum from being traditional to virtual (see for example Mowshowitz, 1997; Gibson and Cohen, 2003). Overall, this demonstrates the need for organisations to modify their structure, management techniques and general modus operandi if they wish to successfully accommodate and leverage the increasing opportunities enabled by ICT.

Although four out of five of the hypothesised relationships within ISSAAC were supported by statistical data, the remaining relationship represented by H_1 was supported by theoretical evidence only. $H_{1,}$ which is associated with the constructs interoperability and anchoring suggests that the greater the ability of individual members of virtual forms to create shared ICT standards and develop like strategic goals, the greater their ability to build and maintain a support structure for cybernization (Gibson and Cohen, 2003; Travica, 2005). Despite the significant theoretical support for this link the relationship between anchoring and interoperability was found to be unsupported by the statistical data. A possible reason for this may be that because according to the literature interoperability is a multifaceted construct concerned with both technical and social elements its affect may be different according to usage context. Therefore testing the construct as a whole may produce insignificant results as was the case here. For example, in some virtual forms it may be that the development of like ICT standards directly correlates with the organisations ability to create a support structure for ICT. However, because elements associated with the development of shared strategic objectives are also captured within interoperability it may be that these do not affect anchoring and therefore the relationship as a whole would be insignificant. Considering this, it may provide a better insight into the relationship between the two constructs if the effect of interoperability is examined as two separate variables, one relating to technical interoperability (shared ICT standards) and one relating to social interoperability (shared objectives).

In addition to the insignificant relationship between anchoring and interoperability there were a number of paths that were removed from Travica's (2005) original model because they had either insufficient statistical support or it was felt that they did not significantly contribute to the structure of the model. The paths in question are H^4, H^7, $H^{8,}$ and H^9. In the case of both H^4 and H^7 these hypotheses had *t*-values below the acceptable threshold of 1.96 meaning that they lacked statistical support. Furthermore, from a theoretical perspective each of the relationships represented by the aforementioned hypotheses could be mediated via secondary constructs. In light of this, since the literature only argues the presence of these relationships and not their direct path; it was felt that the removal of the paths would not negatively affect the theoretical groundings of the model but instead would produce a simplified model that was both reflective of the extant literature whilst also being true to the statistical evidence. In addition to this, in the case of H^4 it was felt that since in many cases it is often not the ICT or ICT networks themselves that facilitate the production of specialist goods but instead what these variables facilitate that affects the ability to produce non-standardised products and services, the modifications represented a more practical and logical perspective. This in turn meant that overall the model would better reflect the 'real world' context of organisational virtualness and therefore be more generalisable and relevant in a wider cross section of contexts.

Following the examination of the hypotheses, the final analysis of the structural model was focused on determining the fit of the model to the sample population. According to Diamantopoulos and Siguaw (2000) and Hair *et al* (1998), by analysing the goodness of fit indices associated with a model the researcher is able to understand to what extent the model is representative of the 'real world'. In total, the

LISREL program produces 28 fit indices that represent various aspects of the fit of the data to the sample fit of the data set to comparative statistics. However, according to Gefen *et al* (2000), in order to adequately asses the overall fit of the model only six of these indices need to be examined in detail. The six indices in question are, *chi-square / (df), RMSEA, SRMR, AGFI, NFI* and *ECVI.* The subsequent analysis of these fit indices showed that overall not only does the model proposed present a reasonably good fit to the data, but also it can be argued that the model is a true representation of the population and not just the sample extracted (shown via the small value of the RMSEA statistic). This in turn means that the model has the ability to be used in a variety of different contexts and industries and the results should be both theoretically and statistically viable. Examples of the positive fit of the proposed model to the extracted sample are shown via the significant results of the six aforementioned fit indices. For instance in the case of the df and chi-square, the literature suggests that the ratio between these variables should be no greater than 1:1 with a significance value of less than .05 (Hair *et* al, 1998; Gefen *et al*, 2000). In the context of ISSAAC not only was the statistical ratio achieved, thereby showing minimal discrepancy between the observed and estimated covariance matrices but also the significance value of the ratio was 0.00, showing that the proposed model fits the observed covariances and correlations well and therefore provides a good representation of the phenomenon in action. Similarly, the RMSEA of the modified ISSAAC model shows a good fit to the data with an end value of .03. This suggests that although the modified model may still require independent validation (via cross validation), overall it is a good reflection of the population as whole. In addition to this, the significant relative fit indices (such as the NFI) show that in comparison to a base line model such as the 'null' model the hypothesised model (with an average value of .89 across the indices) performs well. This is further supported by the results of the comparative statistics such as the ECVI, AIC and CAIC. The fact that the hypothesised model's values are significantly lower than those for the 'null' and saturated models demonstrates that not only has ISSAAC been correctly hypothesised moreover, it shows that the proposed model has the potential to accurately cross validate across samples of the same or a similar size to the one used in this study (202).

Taking into consideration all of these results the final model as reached via a review of the extant literature and the empirical findings combined is presented in Figure 6.1. The model presented is a nested model of Travica's (2005) original ISSAAC containing the same number of constructs with a reduced number of estimated parameters. The number of parameter estimates was reduced from nine to five via the complete removal of H^8 and H^9 (due to a lack of either theoretical or statistical support or both) and the mediation of the paths represented by H^4 and H^7 via the constructs of cybernization, aggregation, and switching respectively. The resulting model it is felt represents not only a statistically stronger and more explanatory model, but also one that is greatly simplified (compared to the original ISSAAC model) and more akin to the extant literature. However, it is important to note that although the final model is supported both theoretically and statistically it waits cross validation (using a different sample) in order to undeniably confirm the modifications and propositions made. Therefore, future research should concentrate on advancing the process of validating ISSAAC through both qualitative and quantitative analysis and an examination of the modifications made using a new sample.

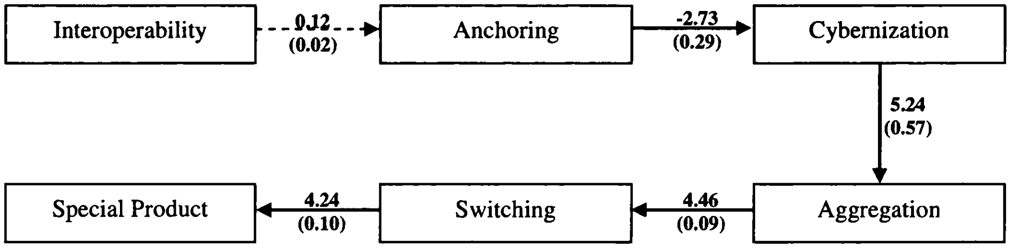


Figure 6.1: Final ISSAAC Model (M^4)

6.3 UTAUT

The increasing presence of ICT in the marketplace has not only led to a dynamic change in the way organisations are structured. In addition to this, it has affected as stated earlier the nature of the products and services offered by organisations. In that not only does ICT facilitate the ability to offer a wide variety of products and services, but it also allows organisations to deliver products and services that were not previously feasible (online shopping or TV on demand are prime examples of this) (Avgerou, 1998; Christiaanse and Kumar, 2000; Straub and Watson, 2001). In turn, this has meant that not only have the capabilities of ICT gained greater credence within organisations, furthermore consumers' exposure to ICT on an everyday basis has started to grow exponentially (Koufaris, 2002; Gefen and Straub, 2003; Venkatesh *et al*, 2003). Thus organisations are now presented with the challenge of understanding which factors will affect overall consumer acceptance of the new ICT phenomenon. Determining and understanding these factors is essential as without an appreciation of the variables that lead to consumer acceptance of ICT organisations cannot hope to increase their overall return on investment (Venkatesh, 1999; Venkatesh *et al,* 2003). The importance of understanding the determinants of consumer acceptance of new technology is exemplified via a number of high profile examples one of which being the case of the London ambulance service. On this occasion, a lack of understanding of end user requirements led to the implementation of an unsuccessful ambulance switchboard, which was poorly received and ultimately resulted in unnecessary costs for the local health authority involved (see Beynon-Davies, 2004).

In order to examine the key factors that affect consumer acceptance of ICT researchers and practitioners could choose to apply one of the many theories and or models associated with consumer behaviour or innovation acceptance in general (Chau, 1996; Mathieson *et al,* 2001). However, since the literature in these areas is vast it was felt that in the context of this study a more comprehensive and ICT specific model was needed. In view of this, the model selected for use was UTAUT. UTAUT was chosen as is it a multifaceted model that incorporates various aspects of technology acceptance from psychological perspectives such as image through to the

ICT specific variables such as IT usability. Furthermore, unlike other models UTAUT is capable of explaining as much as 70 percent of the variance in intention to use therefore making it one of the most informative models available for examining individual innovation acceptance. In addition to this, because of its comprehensiveness it can be used to investigate innovations across a broad spectrum of products and services and its suitability for the examination of self-service check-in is therefore higher than if single model or theory was used. However, despite its solid background UTAUT remains relatively untested especially within a customer context. In light of this, by applying the model in this study not only will understanding of consumer acceptance of technology as a whole be increased; furthermore, it was anticipated that the statistical validity and generalisability of UTAUT will be enhanced thereby making a significant contribution to the literature.

In order to thoroughly test UTAUT a number of analytical stages needed to be completed. The first step in this process was to conduct a brief review of the drivers of ICT products in order to set the context within which the growth of ICT-enabled offerings has risen. Following this, the foremost models and theories currently associated with both innovation adoption and technology acceptance were examined in order to identify some of the key variables that contribute to the phenomenon as a whole (and which add meaning to the constructs of UTAUT). The models examined included: *TAM, MM, TPB, C-TAM-TPB, MPCU, IDT* and *SCT* (See for instance, Maslow, 1954; Fishbein and Ajzen, 1975; Ajzen, 1985; Bandura, 1986; Davis, 1986; Moore and Benbasat, 1991; Thompson *et* al, 1991; Rogers, 1995; Taylor and Todd, 1995; Vallerand, 1997). The final stage in testing UTAUT was to use the pre-tested research instrument developed by Venkatesh *et al* (2003) to collect original data from the customers of an international airline. Data was collected at three stages of check-in: *online search for information*, *booking tickets* and the *use of self-service check-in kiosks.* All three stages were examined so that not only was UTAUT tested in three different contexts but also so that comparisons could be made as to the differences (if any) in the most influential constructs of the model at varying stages of the purchase life cycle. Following this and in the same manner within which ISSAAC was tested the data collected was subjected to both factor analysis and structural equation modelling in order to reduce the data set (where appropriate) and test the relationships between the determinants of behavioural intention respectively. The findings of this analysis are presented in brief in Table 6.2 and discussed in detail in the subsequent paragraphs.

Table 6.2: Summary of Findings – UTAUT

Hypothesis	Dependant Variables	Independent Variables	Findings and Explanation		
			Data Sets		
			OLS	OBT	SSK
H_1	BI	PE	✓	✓	✓
			Individuals BI is positively affected by PE in the context of online flight searcher, online ticket bookings and the use of SSK		
H_2	BI	EE	✓	✓	✓
			EE positively affects BI in the context of online flight searcher, online ticket bookings and the use of SSK		
H_3	BI	SI	✓	✖	✖
			The effect of SI on BI is only significant in the context of online flight searches		
H_4	Usage	FC	✓	✓	✓
			FC significantly affects usage in the context of online flights searches, ticket bookings, and the use of SSK		

Highlighted cells represent insignificant relationships

The results of the UTAUT analysis showed that of the four hypothesised relationships three were significant across all three data sets (H_1, H_2 and H_4) and the remaining hypothesis H_3 was significant in the OLS data set only.

The most significant hypothesis across all three data sets was H_2. H_2 proposes that EE positively affects an individual's intention to use such that the less effort required to use a technology the more likely intention is to occur. Within the context of this study findings showed that the effect of EE was considerable within all three data sets thus supporting the existing literature (see for instance Davis, 1989; Thompson *et al*, 1991). In view of this, it is therefore suggested that when organisations are designing and implementing online and self-service technologies they must ensure that the system requires a minimum level of effort on the customer's part. Indeed, according to Davis (1989), when all else is equal a system that is perceived as being easier to use than others will be more likely to be accepted. Within the context of online and self-service technologies this is especially important as usage of online facilities is often voluntary and therefore if users do not perceive the technologies to be easier to use they will invariably revert to using more traditional means to search for, book and check-into flights. Practical features therefore aimed at decreasing the level of effort required might include: website layout including - easy to read format, use of drop down lists, favourites and simple menu systems or, familiarity of systems, such as the use of the same or similar software and hardware that consumers are already exposed to and the provision of online help tools. For example, in the case of SSK's this may mean making the SSK similar in appearance and screen layout to ATMs, a technology which is already an established part of most consumers' everyday lives.

The second most significant hypothesis across the data sets was that associated with H_1. This hypothesis suggests that an individual's intention to use a new technology is significantly affected by performance related issues. According to Rogers (1983) amongst others, if an individual believes that they are increasing their yield to output ratio by using a technology they are more likely to use, accept and adopt the new technology and vice versa. Therefore, the more relative advantages organisations can make consumers aware of or indeed feel as a result of using their technology the more likely it becomes that intentions will occur and usage will follow. Examples of relative advantages within the context of this study might include: increased accessibility, ability to search multiple airlines at once, online discounts, quicker search times, speedier check-ins and enhanced personal image (as consumers are being seen as not being afraid of new technology and are thereby perceived as being innovative by association) amongst others.

The third and final hypothesis that was significant across all three usage contexts was H_4. H_4 is concerned with the constructs of FC and actual usage. However, unlike the other constructs within UTAUT FC do not affect the individual's intention to use but instead affect actual usage behaviour. Furthermore, it is important to note that the effect of FC on usage was not measured via SEM but instead via a combination of basic statistics and qualitative customer responses, therefore the proposed findings may require further validation (see Table 10 in Appendix F for a summary of the results relating to FC). Overall, FC are concerned with a number of different aspects ranging from users knowledge and available resources, to system compatibility and organisational support. In the context of this study, across all three data sets the majority of customers agreed that the most influential factor affecting usage of online and self-service facilities was the availability of resources. The reason for this is obvious as without the resources to use a product or perform behaviours then usage would not be possible. However, if the item reliabilities and factor loadings (found in Appendix M) related to facilitating conditions are examined a different picture is painted. In that, whilst resources remain the most influential factor in the context of SSK, the items associated with organisational support and knowledge are more prominent than those associated with available resources in the context of online bookings and online searches respectively. A possible reason for this in the case of online bookings is that there is a higher degree of risk associated with using the internet to make a purchase as users do not always have the confidence that their details are safe and secure (Assael, 2004). This is mainly because the existing laws concerning e-commerce are being severely strained, as legislators are not able to keep up with the rapid pace of development in today's technologically enabled environment (Lunseth II, 2001; Piazza, 2001). In light of this, if organisations wish to keep customers using their online facilities they should consider providing the same or a similar level of support as would be found in a traditional face-to-face business environment. Examples of which include, the provision of physical call centres (where customers are able to speak to an individual), helpdesks, e-mail services or instant messaging services such as those found of www.nectar.co.uk or www.ticketmaster.co.uk. Implementing these features will reduce the fear and risk associated with making online purchases and thereby should increase the likelihood of intention to use. In comparison to this, the most significant item within the context of online flight searches is the item PBC3. PBC3 deals with the extent to which the consumer has the necessary knowledge to use the technology. In the context of online searches a reason for this being the most influential factor may be that in nearly all cases the use of online facilities for flight searches is independent of the airline meaning that the customer must have the necessary knowledge to use the system unaided. The most effective organisational response in this case would be to educate customers in the use of online tools and make sure that airline sites are easy to use. This in turn would decrease the amount of knowledge needed to use online facilities and potentially help to increase consumer's intention to use the internet as a source of information for flights. In view of the differences between data sets, it may be beneficial to aim future research at examining whether FC would have greater explanatory strength if it were to be broken down into separate variables appose to examining multiple factors in a single construct as has been done here. For example, one construct relating to user resources and the other organisational resources.

The final hypothesis examined within the context of UTAUT is H_3. H_3 deals with the relationship between BI and SI and is only significant within the context of the OLS data set (online flight searches). According to a variety of previous studies an individual's intention to use a new technology is influenced by social moderators such as image, self-awareness and peer pressure (see for instance, Triandis, 1971; Thompson *et al,* 1991; Venkatesh *et a*l, 2003; Pincus, 2004). The literature proposes that the greater the degree to which an individual perceives that important others believe he or she should use the new system the more likely it is that intention will occur. The findings of this study for the most part contradict these claims shown via the fact that H_3 was found to be significant in only one of the usage contexts, namely online flight searches (OLS). A possible reason for the insignificance of SI within both the OBT and SSK usage contexts may be because according to Venkatesh *et al* (2003) SI are only important during the early stages of adoption; and within the context of these data sets the majority of respondents had already had significant exposure to the technologies under investigation (in most cases had used either SSKs or online facilities four times or more). This subsequently meant that as suggested by Venkatesh *et al* (2003) the effect of SI was no longer substantial enough to effect intention. Furthermore, in the context of SSK usage the affect of SI may have been insignificant as the use of SSKs was voluntary and according to Venkatesh *et al* (2003), SI will only affect use in mandatory contexts. Venkatesh *et al* (2003) amongst others argue this is because the majority of users are less likely to adopt an innovation willingly for fear of being perceived as inadequate if usage does not have a positive outcome. In light of this, if organisations cannot mandate use of a new technology they must ensure that they implement steps by which to decrease social discomfort, thereby making the consumer more comfortable with using the technology by reducing the likelihood of a negative outcome. Possible improvements in practical terms might include the increased presence of staff members to aid check-in, or the distribution of user manuals and help guides. Similarly, within the context of the OBT data set where use was both voluntary and mandatory. A possible reason for the insignificance of SI may be that in cases where use was mandated SI no longer played a significant role, as consumers had no choice but to use online resources as a means of booking flights regardless of the social consequences. This in turn means that all consumers are in the same social position. Therefore, in this context the recommendation is that organisations should consider concentrating on other moderators of intention that are significant, such as EE and FC. Alternatively, when use is voluntary organisations should increase promotion of their online facilities thus inciting positive feedback, which in turn will lead to positive SI, or, use of online facilities should be made obligatory as suggested by Venkatesh *et al* (2003).

Although the majority of the variance in UTAUT is accounted for by the direct determinants of PE, EE, SI and FC; each of these constructs are not exclusive and according to Venkatesh *et al* (2003) each is affected by a series of moderators, which in turn account for the remaining variance in the model. Within the context of this study, the effect of three key moderators was investigated namely: *gender, voluntariness of use* and *experience*. Note that whilst gender was hypothesised to affect PE, EE and SI, experience and voluntariness were hypothesised to affect EE, FC and SI only. For example, it was hypothesised that in the context of PE and BI the effect of PE will be greater for males as they are more task orientated and therefore attach greater importance to the attainment of extrinsic rewards such as gains in performance (Minton and Scneider (1980). The findings of this study support this and results showed that within the context of all three data sets 98 percent of participants who responded positively regarding the effects of PE on BI 67 percent were males, as appose to only 31 percent being female. This suggests that when organisations are designing new technologies that are likely to have a high male to female usage rate they may want to consider increasing the relative advantage of the product or service in order to increase the probability of acceptance. Examples of the benefits that could be offered include task-time reduction, financial savings or image enhancement. In a similar way, gender has a significant effect on the relationship between EE and SI and BI. However, in contrast to the effect of PE, research suggests that these relationships are more salient for women appose to men. Venkatesh and Morris (2000) argue this is because in the case of both EE and SI women are more influenced by psychological factors such as perceived effort and are more sensitive to the opinions of their peers. This therefore results in both EE and SI playing a larger role in the female decision making process than factors such as PE. The findings of this study are in contrast to this as 96 percent of respondents across all three data sets who rated EE and SI as having a significant effect on BI only 32 percent were female. The incongruent nature of these findings may be a result of the uneven gender split of the data (70/30 male/female) or they may indeed be a realistic reflection of the effect of EE and SI on the individual's willingness to use online and self-service resources as a means of searching for, booking and checking-into flights.

The second most significant moderator affecting the constructs of UTAUT is experience. In total experience has a moderating effect on three of the constructs within UTAUT, namely EE, SI and FC. In the case of EE and SI the effect of experience is said to be greater in the earlier stages of adoption and becomes non-significant over periods of sustained use (Venkatesh *et al*, 2003). Davis (1989) and Szajna (1996) argue that this is because it is only during the early stages of adoption that process issues such as effort and psychological issues such as image are seen as hurdles by the user that they must overcome. Conversely, in the context of FC, the effect of experience is proposed to grow stronger as usage increases. The main reason for this according to Venkatesh *et al* (2003) is that as users experience with an innovation or technology grows they also gain access to a wider variety of resources from which they can attain help meaning in turn that sustained usage becomes an easier attainable reality. Initially the findings of the study support the claim that EE and SI are positively affected by experience. However, findings showed that the majority of the 56 percent of participants who were inexperienced and significantly affected by the level of effort required to use the technologies under investigation were in fact male. However, since this result may again be skewed because of the male/female split, the hypothesis was tested within the context of females only across the three data sets. Under these constraints it was found that of all the females who responded that EE positively affected their intention to use, over half had limited experience with the online and self-service technology, thus supporting the original propositions made in the literature. Similarly, within the context of FC, results showed that in all three-usage contexts the effect of experience on usage did in fact grow as users exposure to the technologies increased. Indeed, of the 305 respondents who participated in the study over half-responded that as their experience with the system grew the effect of FC on system usage actually became more significant.

The final moderating influence upon UTAUT was voluntariness of use. According to Venkatesh *et al* (2003), voluntariness only affects one construct within UTAUT, namely SI. They argue that SI has a significantly positive effect on BI when use is mandated, as it is only in mandatory settings that significant others have the power to reward or punish the individual for not performing a behaviour. In the case of this study the effect of voluntariness was found to support the literature in the case of online flight bookings (OBT) and self-service check-in (SSK), but was found to contradict the literature in the case of online flight searches (OLS). A possible reason for this is that although all three usage contexts were voluntary and therefore it should be expected that voluntariness be insignificant in all cases. In the context of the OBT and SSK when questioned as to why they chose to use online and self-service facilities for booking and checking into flights, the majority of respondents said that they felt that usage was in fact mandated. Conversely, within the context of the OLS data set, because using the internet as a tool for flight information is a personal choice the voluntary context of the behaviour remained significant.

Considering these findings, the final models, showing the significant and non-significant paths' relating to both the primary hypothesises and the effect of the moderators on UTAUT are presented in Figures 6.2 to 6.4. Note that in a similar manner to ISSAAC, the current findings await cross validation in order to confirm whether the discrepancies between the current findings and the literature are study specific or are replicable within different environments. With this in mind, future research should focus on solidifying UTAUT's status as a comprehensive model for the investigation of consumer acceptance of new technology through both further qualitative and quantitative analysis.

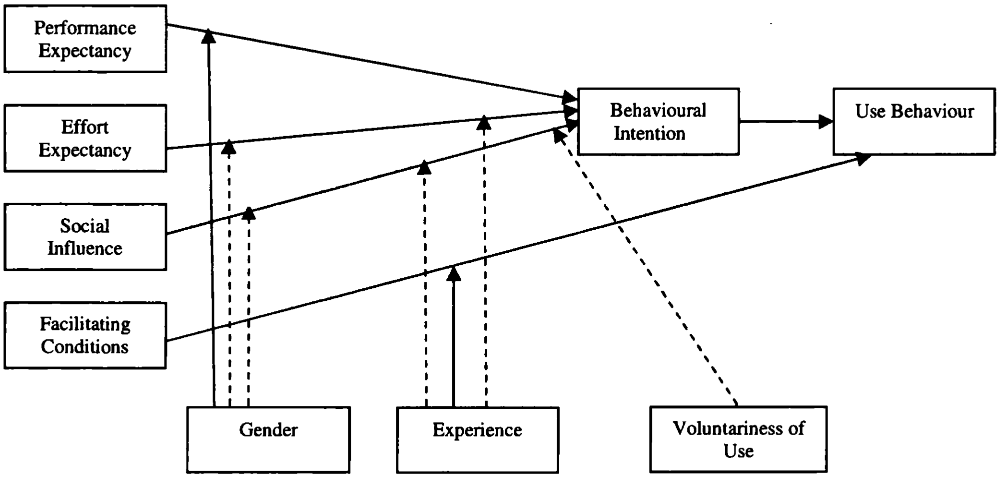


Figure 6.2: Final UTAUT (OLS)

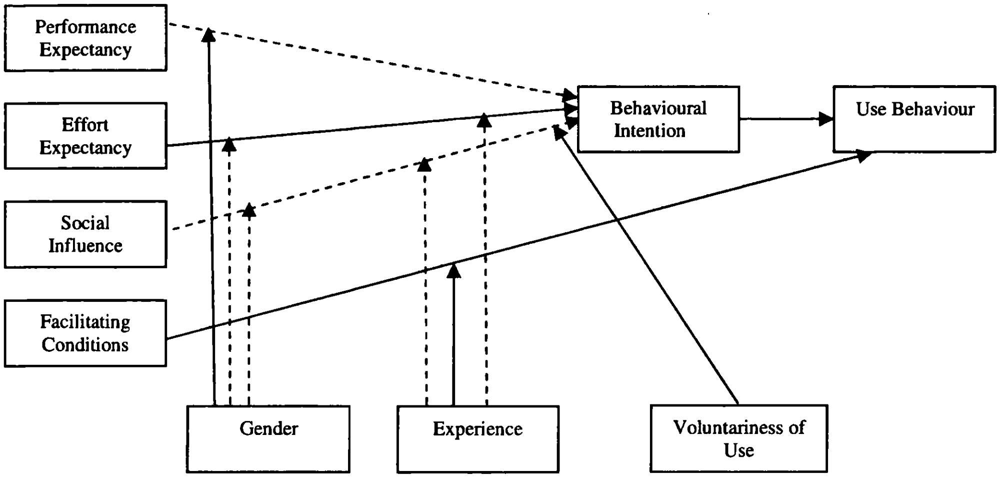


Figure 6.3: Final UTAUT (OBT)

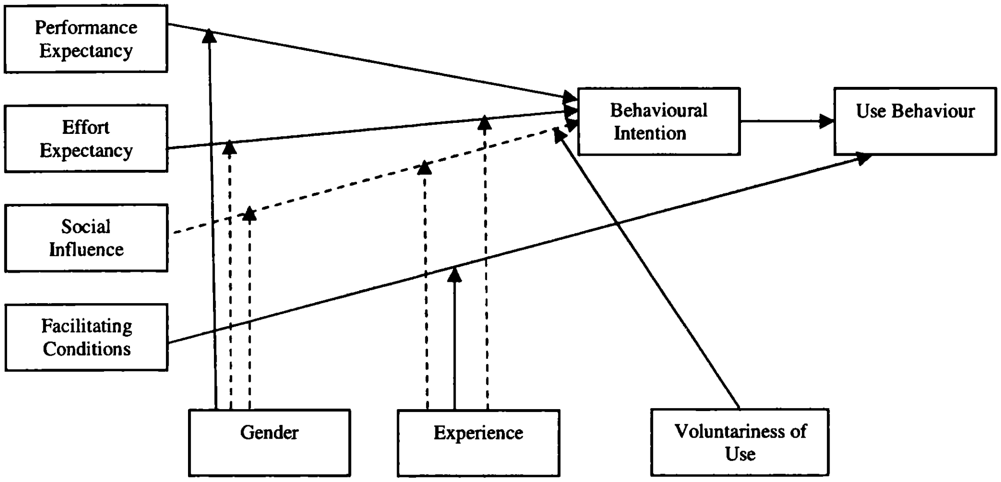


Figure 6.4: Final UTAUT (SSK)

6.4 Summary

This Chapter has aimed to discuss the findings and implications of the present research relating to both Travica's (2005) ISSAAC model and Venkatesh *et al's* (2003) UTAUT. The aim has been to evaluate the theories associated with both models so to provide quantitative evidence for or against the hypotheses made. Overall, this was done with the aim of achieving a greater understanding of the subject areas. Both ISSAAC and UTAUT were examined as it was felt that the literature as a whole would benefit from a dual investigation of both the internal and external impact of ICT on today's marketplace.

Within the context of ISSAAC, nine hypotheses were made relating to the relationships between the constructs of interoperability, switching, special product, aggregation, anchoring and cybernization. Following a series of modifications all bar one of the proposed hypotheses were found to be supported by the quantitative data collected. The implications of these findings suggest that if organisations wish to increase their potential through virtualisation they must ensure amongst other aspects that they: provide a substantive support system for ICT, develop and maintain ICT-enabled networks and share their portfolio of knowledge and skills with their virtual partners.

The second model examined was Venkatesh *et al's* (2003) UTAUT, which focused on the external impact of ICT. In total four hypotheses were tested examining the effect of performance expectancy, effort expectancy, facilitating conditions and social influences on behavioural intention and actual usage within the context of three usage scenarios relating to *online searches, online booking* and *self-service check-in.* Within the context of online flight searches, all four hypotheses were proved correct, implying that in order to increase intention to use the internet as a source for flight information, organisations should: enhance relative advantages, reduce the amount of effort required to use the system, induce positive social feedback and ensure the user has the necessary technical and organisational support to facilitate use. In contrast to this, within the context of online flight bookings and the use of SSKs all the constructs bar SI was significant. This means that in order to increase the usage of these facilities organisations should focus on increasing relative advantage and ease of use ensuring customers have the available resources to facilitate use.

The current work has made a contribution to the existing research surrounding organisational virtualness and consumer acceptance of new technology by empirically testing the theories and concepts associated with significant models in each field in completely new contexts. In the case of ISSAAC, this is of particular importance as the present research represents the first quantitative examination of the model and its associated constructs and relationships. Similarly, within the context of UTAUT, the quantitative analysis conducted provides further support for the theories and propositions offered by Venkatesh *et al* in their 2003 study; and in addition to this, the research presents an important step in increasing the generalisability of the theories associated with technology acceptance in the workplace to technology acceptance in a customer context. Overall, in the context of both models, the present research has opened doorways for further investigations into the relationships between what are often viewed as the critical success factors of organisational virtualness and consumer acceptance of new technology.

The following chapter continues the discussion of the current work by examining the limitations of the study and therefore possible reasons why some of the hypotheses associated with ISSAAC and UTAUT were found to be insignificant. These limitations are then used as the base upon which recommendations for future research are identified.

Chapter 7

Conclusions and Future Work

7.1 Introduction

The following Chapter aims to summarise the contribution of this work from both and a research and a practical perspective and aims to identify the limitations of the study. This is done with the aim of showing the 'real-world' contribution of the current research and in order to provide possible reasons for the disparity between the current findings and the extant literature where applicable. In addition to this, the chapter examines how the outlined limitations can be used in conjunction with the findings presented in Chapter six to provide recommendations for future research.

7.2 Conclusions

The work carried out in this Thesis aimed to evaluate the theories and hypotheses associated with two models exploring the phenomena of organisational virtualness and end user acceptance of ICT. The main objective was to provide quantitative evidence for or against the hypotheses made in order to test the statistical validity of the models in the 'real world'. In order to test these hypotheses data was collected from the staff and customers of a leading international airline and analysed using a combination of exploratory and confirmatory techniques including Structured Equation Modelling. Analysis of the data showed that in the context of the first model – ISSAAC which was used to examine organisational virtualness there are indeed substantive relationships of importance between the defining characteristics of the phenomena, namely: *Interoperability, Switching, Special*

Product, Aggregation, Anchoring and Cybernization. However, the results also showed that the relationships originally theorised by Travica (2005) and the extant literature were not supported by the data, and modifications to the model were necessary. Following these modifications the relationship of most significance was that between aggregation and switching. This supports the propositions in the literature that the sharing of skills and resources in virtual organisations is enabled by the creation of ICT enabled networks. Indeed, the data also showed that the most significant characteristic in the ISSAAC model was in fact *switching* – again confirming the suggestions in the extant literature that at the core of virtual organisations is the *HUB* of core competencies.

Similarly, the results of the analysis related to UTAUT which was used to examine customer acceptance of online flight bookings (OBT), online flight searches (OLS) and self-service check-in (SSK) showed that within the context of all three data sets effort expectancy had the most affect on behavioural intention. This finding was unsurprising given that self service technologies are traditionally associated with perceived higher degree of effort because users have to do everything themselves appose to more traditional methods which are more service orientated. The ranking of EE as the most significant relationship shows that when developing self service technologies organisations should ensure that the level of effort associated with use of the technology is lower or is at least perceived to be lower than if the traditional counterpart technology/method was being used.

It is anticipated that in finding support for and against the hypotheses theorised within ISSAAC and UTAUT and determining which relationships within these models are most significant a greater understanding of the respective phenomena has been attained. However, it is also noted that since modifications have been made to the ISSAAC model – this model and its associated theories will need to be re-tested using a new sample in order to independently validate the newly hypothesised model structure.

7.3 Practical Implementations

One of the key objectives of this work has been to make a contribution to the overall understanding of organisational virtualness and consumer acceptance of new technology. Whilst the contributions to understanding have been examined in the findings and discussions chapter (Chapter 6) the practical implications of the findings have yet to be discussed. The following sections therefore highlight how the current research has been implemented in the 'real world' and therefore how the findings of this study could help practitioners in the airline and other industries to leverage the research to achieve success through ICT.

7.3.1 ISSAAC

As a secondary activity whilst working with InterAirlines to collect data for this study, an analysis was conducted of InterAirlines internal infrastructure around ICT. The objective of this analysis was to establish which of the constructs of ISSAAC was most influential in affecting the acceptance of ICT within the context of the airlines staff. Based on the responses to the ISSAAC questionnaire it became apparent the key construct that was missing from InterAirlines was that of anchoring. For example, multiple staff responded that they did not feel that the management had adequately changed their working practices and processes to support the introduction of new virtualised elements such as online training, the introduction of SSK and virtual meetings amongst others. Subsequently this meant that as proposed by ISSAAC there was an inadequate support network available for this new ICT elements and because of this the likelihood of them succeeding was much lower. Recommendations were therefore made to the management of InterAirlines to improve the level of support for ICT within the organisation in order to increase its adoption and success. As a result the airline introduced additional staff training so that management understood how to effectively develop and deliver online training courses to the employees and management assigned ICT ambassadors who acted as a source of expertise with regards to ICT related matters (this helped the success of ICT initiatives as support was then provided by the core working team appose to staff having use an external support network – this was especially helpful in the context of the SSK machines). Following these changes a focus group was conducted and members of staff of InterAirlines were re-asked the questions relating to Anchoring. The responses showed that after the aforementioned initiatives were introduced staff felt that there was greater support for the IT services and consequently they would be leveraged more and in time help staff to achieve greater efficiencies through ICT.

7.3.2 UTAUT

At the core of UTAUT is the ability to understand what factors affect an individual's willingness to adopt a new behaviour or technology. Understanding these determinants can help in a number of practical ways. Indeed, following completion of this research the findings of the study have been actively used within the work environment. The key areas where UTUAT has been used include:

- ***Design and development of new software features and functionality***:

UTAUT has been used to in both generic and specific terms to help a leading IT Software vendor determine which new features and functionality should be incorporated into the next release of their product. For example by conducting focus groups with a core set of end users it has been possible to understand what are the key pain points for the customer with relation to both the constructs of UTUAT and the software under development. This data was then used when trade-offs between different features and functionality needed to be made. For example, a focus group conducted with customers found that with relationship to "Application A" the most significant construct within UTAUT was "performance expectancy", followed by "effort expectancy", "social influences" and finally "facilitating conditions". Having this information helped to make decisions later on in the product design phase when tradeoffs due to resource constraints needed to be made between functionality that improved application performance (support for Wide Area Network) and functionality that supported new technologies that were perceived as cutting edge (immergence of Web 2.0). Based on the focus group responses the decision was made to support WAN as this was of greater importance to the customer install base than Web 2.0, meaning that the likelihood of the product being accepted in the marketplace would be increased.

- ***Creation of sales enablement and marketing campaigns:***
  On a more generic level the theoretical underpinnings of UTUAT have been used within the same IT Software vendor in order to help design and execute sales enablement and marketing campaigns. Such that by emphasising to either sales (who are selling the value proposition associated with a product) or customers (who are normally assessing multiple products to make a selection) the key functionality associated with the four determinants of technology acceptance it is more likely that that the value of the product will be understood and subsequently the technology accepted into the workplace. Indeed, being able to show credibility in each of the core constructs of UTUAT has helped in ensuring the IT Software vendor's products have been placed in leadership positions in market analyst's reports.

7.4 Limitations

In providing quantitative support for and against the theories encompassed within ISSAAC and UTAUT the present work represents a vital step in validating both models so that they can be used as vehicles for assessing the phenomena of organisational virtualness and consumer acceptance of new technology. However, despite this contribution there are a number of limitations that must be considered when interpreting the findings of the current work. Table 7.1 outlines the most significant limitations of the study in both a general context and within the context of each model specifically, also note where applicable the impact of the limitation on the study as a whole has been included.

Table 7.1: Limitations of Current Study

Limitation	**Impact**	
	ISSAAC	**UTAUT**
Uneven gender split	Bias towards females: 41-59	Bias towards males: 70-30
Respondent bias	Bias introduced by degree of interaction with virtual elements of the organisation	Bias caused by respondents tendency to utilise IT in other contexts i.e. computer savvy respondents
Increased variance	Insignificant R^2 for the constructs: Interoperability, anchoring and cybernization	Insignificant R^2 for BI in the context of OLS and OBT data sets
Snapshot data	N/A	Seasonal and regional trend bias and reduced generalisability
Limited sample sizes	Inability to cross-validate the modified model.	N/A
Immature research instrument	Insignificant content validity for:	N/A
Use of a voluntary usage context	N/A	Reduced generalisability in mandatory usage contexts
Omission of model specific moderators	N/A	The moderating impact of age has not been successfully shown in a customer context

In accordance with the limitations shown in Table 7.1, caution should be taken when extrapolating the current findings to other user groups in other geographies and or business/social environments. In addition to this, since some of the limitation relate to variance and validity issues, the generalisability of some of the findings may have also been compromised. It is therefore suggested that future research should look at not only collecting longitudinal data therefore eliminating bias, but also extending both the research instruments to improve reliability and the models as a whole to include additional constructs and relationships. This it is expected will provide the potential for increasing the explanatory power of the models so that they can be used within a wider variety of organisational and consumer contexts. The following section expands upon these and other areas for future research with the aim of identifying those areas which is felt a deeper examination of will substantially contribute towards the overall understanding of organisational virtualness and consumer acceptance of new technology.

7.5 Recommendations for Future Research

In identifying and discussing the limitations of the current work not only have avenues for future research been unveiled. Furthermore, a greater understanding as to why the findings of the study vary from the existing theories associated with the surrounding literature has been obtained. In view of this and in order to contribute towards future validation of both ISSAAC and UTAUT and, to increase the overall level of understanding associated with organisational virtualness and user acceptance of new technology respectively the following sections expand upon the recommendations made in section 7.1 in order to identify key areas for future research.

7.5.1 ISSAAC

Within the context of organisational virtualness, this study has made a significant contribution to the literature by validating a comprehensive model for the examination of the key characteristics of the phenomena with particular emphasis on the virtual organisation. The principle means by which this was achieved was via a quantitative review of Travica's ISSAAC model. Furthermore, in addition to testing the explanatory power of the constructs of the model, the present research also tested the interrelationships between constructs and validated the reliability of the research instrument used to test for the physical presence of the constructs in the 'real world'.

However, despite the significant contributions of the study to the extant literature thus far future research is still needed in order to strengthen the overall findings of the study and to increase the generalisability of the model as a whole. Consequently, in achieving these aims it is expected that ISSAAC and its associated hypotheses will be able to be employed in a variety of different contexts and be used to examine a number of virtual forms operating along the entire continuum of virtuality. Examples of areas for future research within the context of ISSAAC include. Additional validation of the research instrument, cross validation of the modified model, a re-examination of both the constructs and the hypothesised relationships between the constructs of the model, an examination of the effect of moderators (if any) on the model and finally an assessment of the practical implications of the findings of the study on everyday business in action.

The first of the recommendations within the context of ISSAAC centres on the research instrument used to test for the presence of the constructs of the model in the 'real world'. Within the context of this study, although the variance explained by ISSAAC is high and the majority of complete scales have both alpha and AVE values greater than the specified thresholds of .70 and .50 respectively; a number of the individual items have item reliabilities significantly lower than the approved .50. This indicates that not only may the individual items not adequately explain or represent their associated constructs; but also that the research instrument may need to be amended in order to more realistically reflect both the literature and the 'real world'. The most insignificant items were found to be those associated with the construct 'anchoring'. Whereby, although the alpha and AVE values associated with the scale were above the minimum thresholds at .77 and .93 respectively. All of the individual item reliabilities were significantly less than the acceptable minimum of .50, with the highest item reliability measuring only.11 (note these values are taken from the analysis of Travica's original model and not the modified model). Considering this, future research should look at improving the items associated with anchoring and other insignificant constructs via: a re-examination of the extant literature, methods such as concept mapping and additional peer reviews amongst other options. By reassessing the items in this way this should not only improve the quality of items but additional items that may have been previously overlooked could hopefully be identified, with the ultimate objective of adding the additional items to the insignificant scales.

The second recommendation for future research is paramount to securing the findings of this study in that it focuses on the cross validation of the modified and notably more explanatory model as presented in Figure 6.1 of Chapter 6. According to both Diamantopoulos and Siguaw (2000) and Hair *et al* (1998), any new or modified model will be tentative until it has been independently validated using either a completely new or split sample. However, due to time constraints and insufficient data cross validation in this case was neither plausible nor possible. It is therefore recommended that future research look at testing the modified model within a new and independent sample. This will then help to ensure that the modified model presented can be argued to be both theoretically and statistically superior to that originally presented by Travica (2005). Furthermore, this will not only secure the findings of this research but also help in taking a further step in providing a generalisable and comprehensive model for examining organisational virtualness and virtual organisations in the 'real-world'

The third and fourth recommendations for future research focus on the content and structure of the ISSAAC model respectively. It is felt that future work should attempt to expand Travica's original model in order to broaden the overall scope of ISSAAC. Examples of potential areas for future research regarding the constructs of the model include identifying and testing additional characteristics of organisational virtualness, which although prominent in the literature are not captured by Travica's ISSAAC model; and examining whether the existing characteristics of ISSAAC are multi-faceted and would therefore benefit from being broken down into more specific sub-categories. Examples of additional constructs could include amongst others trust, purpose or goal specificity (see for example, Lucas and Baroudi, 1994; Barnes and Hunt, 2001; Burn *et al,* 2002; Czap, 2002; Clases, 2003; Brennan and Braswell, 2005). Whilst an example of a multi-faceted construct could be switching, which according to the literature is concerned not only with the exchange of knowledge and skills but also the different types of knowledge that exist within virtual forms (see for instance, Jackson, 1999; Griffith *et al,* 2003; Souren *et al,* 2004/2005; Brennan and Braswell, 2005). Exploring additional and sub constructs within the context of ISSAAC would not only increase the explanatory power of the model but it would also increase ISSAAC's generalisability.

In addition to increasing the number of constructs within ISSAAC, future research should also explore whether any substantive relationships of importance have been overlooked. This in turn would contribute further to the overall understanding of organisational virtualness and enhance operationalisation of the model in practical terms. For example, a relationship proposed by the literature that is not hypothesised by Travica (2005), is that between interoperability and special product. Some aspects of the literature suggest that the ability of virtual forms to make specialised products is not only affected by the degree of switching in the organisation but also by the degree of interoperability (Das *et al,* 2003; Gibson and Cohen, 2003; Mick, 2005). Indeed, Seshadri and Shapira (2001) argue that it is only through the development of clearly established goals and job specificities that members of virtual bodies are able to successfully co-ordinate their behaviours in order to produce specialist products and services. Hence, a lack of interoperability will negatively affect special product. By adding new relationships not only will the understanding of organisational virtualness as a whole increase furthermore, the generalisability of ISSAAC should be improved meaning that overall it will become a more robust model for examining the concept of virtuality within a variety of virtual forms, ranging from hybrid to pure virtual.

Another research area that is proposed by this study relates to the examination of the affect of different usage contexts and moderators on ISSAAC. However, unlike the moderators that are traditionally examined within IS and other subjects such as age and gender etcetera. Within the context of ISSAAC it is felt that an examination of the moderators relating to operationalisation issues such as time, organisational size, type of structure and cultural environment would provide greater insight into the workings of virtual forms and their key characteristics. For example, examining the constructs and relationships of the model within a longitudinal context would demonstrate whether the significance of each of the constructs changes as virtual forms mature, and if so, what impact does this have on the way in which virtual forms are managed and maintained. Similarly, it may be beneficiary to examine the effect of culture (if any) on ISSAAC. Testing such a theory would be valuable as it may help both researchers and practitioners to examine why different constructs within ISSAAC play a greater or lesser role in defining organisational virtualness in different cultural contexts. For example, according to Hofstede's cultural dimensions, countries such as the USA or the UK, which are more individualistic, may be averse to the collective nature of virtual forms, as they are fundamentally apposed to rules and procedures that are designed and implemented by the collective as appose to the individual. This would consequently mean that interoperability (which focuses on collective rules) would play a less significant role than if the model were to be tested in an organisation operating within a collectivist society such as China (Assael, 2004). Overall, it can be argued that by examining the effect of moderators such as usage context and culture on ISSAAC a greater insight into the underlying mechanisms of organisational virtualness and its associated successes and failures will be achieved.

The final recommendation for future research is concerned with examining the practical implications of the findings of this study. It is suggested that following cross validation of the modified model and its associated theories and concepts future research should look at examining in greater detail the actions that organisations need to take in order to ensure that they achieve their maximum potential through virtualisation. Whilst some work in this area was carried out post-research with the airline used as a sample for this study (see section 7.2) – it is felt that in order to asses the generalisability of such findings additional research utilising other samples in different contexts should be carried out. For example one relationship of interest is that of the effect of anchoring. Research in this area could focus on an examination of whether changes in the structure of an organisation (in terms of levels of hierarchy such as the removal of levels so that new rules and procedures can be more easily adapted to the introduction of ICT) in order to provide extra support for ICT affects the degree to which ICT is more readily accepted by staff and therefore virtualisation as a whole is more or less successful. Overall, it is felt that determining whether ISSAAC can be viewed as a critical success factor model as well as a descriptive model would add to the extant literature associated with the understanding of the phenomena as a whole, and, would help practitioners to understand whether the constructs of ISSAAC are indeed related to organisational performance.

7.5.2 UTAUT

Given that following Venkatesh *et al's* (2003) study, UTAUT already explained as much as 70 percent of the variance in intention it was possible that the practical limits of explaining individual acceptance and usage decisions in organisations had already been reached. In view of this, this study applied UTAUT and its associated theories within a customer appose to a staff environment. In doing this not only has support been provided for the use of UTAUT outside of its original context. Furthermore, it has also potentially helped to increase the overall understanding of consumer acceptance of new technology by showing how the relationships within UTAUT can effectively be applied to the examination of buyer behaviour in the airline industry. Similarly, the study has enhanced understanding of individual customer acceptance and usage decisions by applying and comparing the effects of the different components of UTAUT at various stages of the buying process ranging from initial need recognition and information search, through to intention to use and actual usage.

Although the current study has made an important contribution to the extant literature surrounding consumer acceptance of new technology in order to strengthen the predictive capabilities of UTAUT within a customer context and therefore develop understanding in the area as a whole further research is still required. The following paragraphs therefore detail a number of the areas for future research that are proposed by this study. Note that as well as the localised recommendations outlined below, general recommendations such as testing UTAUT within different customer contexts and testing using additional quantitative and qualitative data are also suggested.

The first major area recommended for future research is concerned with the structure of the direct determinants of UTAUT. At present, each construct although singular in nature, encompasses a wide variety of different aspects, each of which supposedly govern the individual's intention to use a new technology or their actual usage behaviour. However, since the scope of the constructs are so broad this leads to the possibility of confusion as to which of the individual components of the complete construct actually affect the individual's end decision. For example according to the literature, FC are defined as both the degree to which an individual believes that there is both an organisational and technical infrastructure available to them that supports system use; and the extent to which the user has the necessary resources available to facilitate use (Venkatesh *et al,* 2003). Accordingly, the items in the research instrument measure each of these aspects of FC and their associated affect on usage. However, because the direct relationship between FC and usage uses the complete scale of items as a measure there exists no way to differentiate which individual facets of FC are directly affecting usage behaviour. However, if FC were to be broken down into two separate constructs (one dealing with user resources and one organisational support), both researchers and practitioners would gain a greater understanding of which aspects of FC have the most effect on usage. Note that although to some extent this can already be measured by examining the individual and collective item reliabilities. Investigating FC as two separate constructs would avoid uncertainty in the findings and allow respondents to answer more honestly therefore producing more realistic results.

The second recommendation for future research is one that is also recommended by Venkatesh *et al* (2003). They argue that in order to provide a greater understanding of the cognitive phenomena explored via UTAUT, future research should focus on examining the casual antecedents of the constructs of the model. In a similar manner, the current work suggests that by looking back into the affecters of direct determinants such as SI, it becomes possible to more fully understand how and why they affect BI and or usage in their current form. For example, by understanding the influence of factors such as utilitarian versus hedonistic needs in the consumer decision-making process organisations may also gain a greater understanding of the effect of SI, as this is concerned with similar factors such image and self actualisation etcetera. This in turn means organisations would be able to specifically tailor their innovations so that they are more appealing to the individual needs of their consumers. From a theoretical perspective this would also mean that researchers would be able to further understand how, why and what aspects of SI specifically determine intention to use.

In the same way that future research would benefit from identifying and examining the determinants of the four primary constructs within UTAUT it is equally felt that the understanding of consumer acceptance of new technology would be enhanced if the effect of additional moderators such as culture and time amongst others were examined. For example, in the case of experience, it may by worthwhile examining if there is an 'inflection point' at which the effect of user experience begins to disappear. Thuis would show from a practical perspective at what point in the customer's adoption cycle does their level of exposure to the system no longer have an effect on their intention to use. This information could then be used by organisations in turn to determine the optimal point at which the new technology becomes the norm. Similarly, investigating the effect of moderators such as culture (possibly within the context of Hofstede's cultural dimensions) would allow both researchers and practitioners to identify whether case specific or societal trends determine the extent to which consumers intend to use a new technology. For example in more masculine societies such as Japan, moderators such as PE may be hypothesised to have a greater effect on BI than they would in feminine societies such as Sweden where greater importance is place on hedonic benefits such as emotion or self-image. Similarly, societies that are more individualistic are less likely to be influenced by SI than those with collectivist tendencies, as the focus in individualistic communities is less about peer influence and more about individual beliefs; making the overall effect of SI less significant.

The final recommendation within the context of UTAUT relates to the nature of the relationships within the model. Overall, it is felt that by examining in greater detail the nature of the relationships between the direct determinants of the model, their moderators and ultimately the effect these have on BI and usage, both researchers and practitioners will be able to better predict why certain determinants affect BI and usage more or less than others. A particular relationship of interest highlighted as a result of this study is between PE and BI. In the present context the relationship between these two constructs was significant across both data sets A and C, but not B. A possible reason for this is because in many cases unlike online flight searches and self-service check-in, the use of the internet as a means by which to book flights is often mandated and therefore aspects such as relative advantage (and in turn PE) are not applicable. Therefore, in order to prove whether this is indeed a general trend and not a study specific observation it is suggested that future work focus on investigating the effect of PE on BI within the context of self-service and internet technologies in both mandatory and voluntary settings. Note that this work acknowledges that this has already been investigated to some extent in other studies such as: Thompson *et al*, 1991; Compeau *et al,* 1999 and Venkatesh and Davis, 2000.

Overall, by investigating these and other areas and extending UTAUTs application to different contexts and environments it is expected that the model's position as a comprehensive and statistically sound vehicle for examining individual acceptance and usage decisions in a customer-orientated environment will be solidified. Furthermore, it is proposed that overall the areas of future research recommended will help both researchers and practitioners to understand further the factors that determine behavioural intention and actual usage in a consumer context.

The final recommendation of this study, relates to both ISSAAC and UTAUT. In that the recommendation is made that future research should examine the possibility of relationships between the constructs of both models. Indeed, according to Venkatesh *et al* (2003) one of the most important directions for future research within the context of UTAUT is to tie the model and its associated theories with other established streams of work. Note that although it can be argued that the relative newness of Travica's (2005) model does not make it an ideal candidate for such an investigation; it is also argued because the theories and concepts that ISSAAC is based on are well established such an investigation will not only deepen understanding of organisational virtualness and consumer acceptance of technology, but it will also help to strengthen the ISSAAC model as an explanatory tool within its respective field. Examples of the possible relationships between the two models that may be worthwhile investigating include: identifying whether the degree to which consumer acceptance of new technology influences the overall success of ICT within the organisation, and, examining whether the constructs of ISSAAC are able to act as moderators on the constructs of UTAUT. For example, does the extent to which virtual forms successfully implement the constructs and relationships of ISSAAC affect the extent to which consumers accept and consequently use the new technologies often produced by virtual forms. For example, is the degree of anchoring within a virtual organisation reflected in the affect of FC in UTAUT? This hypothesis would look at examining the direct correlation between whether the degree to which organisations create a supportive internal environment for ICT has an impact on consumer's perception of the external support that is available to them when adopting new technologies (captured via FC). Similarly, another link between models is between switching and PE/EE. Indeed, according to the literature, it can be argued that if virtual forms are able to successfully introduce switching and its associated dependant constructs (namely cybernization and aggregation), this in turn will allow members of virtual forms to enhance the performance benefits of their product as they have access to a wider range of knowledge and skills. This in turn would typically result in the enhanced ability to produce more specialised products which are more tailored to the consumer's individual needs and therefore have the possibility of being perceived as easier to use; therefore influencing both PE and EE in UTAUT.

Due to time constraints, it was not possible to examine the aforementioned relationships and others. However, it is strongly felt that by examining possible linkages between ISSAAC and UTAUT a more rounded understanding of the overall impact of ICT on today's organisations will be attained. Furthermore, by examining the effect of ICT from a multi-faceted perspective it is believed that both researchers and practitioners will be able to move forward in their quest to understand not only the mechanisms of operating virtually, but also how modern organisations can successfully use ICT as a means of responding to the increasing pressures of a hypercompetitive market.

7.6 Summary

This Chapter has provided a summary of the limitations of the current work and used these alongside the findings presented in Chapter six to provide a review of the recommendations for future research. It has identified that although there are facets of the current research that may result in the reduced generalisability of the findings to other sample populations; in spite of these limitations the research presented in this Thesis still makes a valid contribution to the areas of organisational virtualness and consumer acceptance of new technology by providing vital quantitative support for and against the theories outlined within ISSAAC and UTAUT.

It is hoped that by recognising the limitations of the work a greater understanding of the results of the study has been achieved and in recognising areas for future research it has been possible to show how the present work can be expanded upon in order to close the gaps in the aforementioned research areas.

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Appendices (1)

(An Empirical Investigation of Organisational Virtualness and End User Accepetnace of Technology – Genefa Murphy 19722)

Volume 2 of 3

DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed .... (candidate)

Date 09.03.2009

STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated. Where correction services have been used, the extent and nature of the correction is clearly marked in a footnote(s).

Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

Signed .... (candidate)

Date 09.03.2009

STATEMENT 2

I hereby give consent for my thesis, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

Signed .... (candidate)

Date 09.03.2009

Appendix A

$$(N-1)F_{min}$$

and

$$\frac{1}{2}\,k\,(k+1)-t$$

Figure 1: Chi-Square Statistic
(X^2)

$$\lambda = X^2 - df$$

and

$$\lambda \div N$$

Figure 2: Estimated Non-Centrality

$$(F_o \,/\, df)^{1/2}$$

Figure 3: Root Mean Square Error of Approximation (RMSEA)

$$(X^2_{null} - X^2_{proposed}) \,/\, X^2_{null}$$

Figure 4: Normed Fit Index (NFI)

$$f^2 = \frac{R^2_{revised\text{-}model} - R^2_{original\text{-}model}}{1 - R^2_{original\text{-}model}}$$

Figure 5: f^2 Statistic

$$AVE = (\sum^{\lambda 2}) \,/\, [\sum^{\lambda 2} + \sum(\theta)]$$

Figure 6: Average Variance Extracted

Appendix B

Table 1: Original Questionnaire – ISSAAC

To what degree do you agree with the following statements? Please write the corresponding number in the box provided, according to the scale given below:

1= Strongly Disagree 2= Disagree 3= Neither 4= Agree 5= Strongly Agree

1. External factors (such as fuel prices and stand charges) cause changes to the day-to-day operation and running of the airline
2. Action has been taken within the airline to counteract these external factors
3. Industry changes have resulted in an increased reliance on ICT
4. Technological developments in society as a whole has made alliances easier to develop
5. As a result of ICT the airlines structure has been forced to change/adapt
6. ICT has allowed the workforce to become more multi skilled
7. Staff within departments, teams and alliances have common focus and goals
8. Internal (airline) and external (alliance) staff are not equally focused towards similar goals
9. Having a common focus and common goals makes it easier to share roles and responsibilities (both internally and externally)
10. Job specific roles exist within the airline (e.g. check in agent or ticket sales agent)
11. Pre-assigned roles are swapped in order to achieve an end goal
12. ICT is used to connect staff who are separated by time and space (e.g. staff at
13. different airports use video conferencing to conduct a meeting)
14. Interorganisational Systems (IOS) exist within the airline and amongst external partners

15. Communication amongst team members both within the airline and within alliances is primarily dependant upon ICT and rich media forms (e.g. e-mail)

16. ICT helps to create a sense of team spirit between airline staff and the staff of alliances such as OneWorld, Star or SkyTeam (i.e. staffs become dependant upon one another)

17. Most of the airline's core operations (such as checking customers in) predominately depends on ICT

18. The airline frequently uses ICT to interact with 3rd parties (e.g. e-mail, video conferences, fax etc)

19. Individual knowledge exists within the airline (e.g. information that is given through formal manuals and training which is then learnt by staff as they carry out tasks)

20. Social knowledge exists within the airline (e.g. staff know certain members of staff have a greater level of experience than others)

21. Staff have both complementary and unique skills

22. Staff are able to alternate their membership of teams in order to complete task due to shared ICT standards (e.g. a ticket desk agent may go on check in if it is a busy shift)

23. Re-structuring (e.g. acquisition or loss of staff) has taken place within the airline in order to accommodate ICT (e.g. online or self service facilities)

24. Management technique has changed to accommodate the introduction ICT

25. Outsourcing occurs within the airline in order to get the most out of ICT (e.g. ICT support comes from a third party)

26. Rules and procedures within the airline are manipulated in order to accommodate the introduction of ICT

27. Similar ICT software and standards are used across the airline (e.g. all staff use the same check in software)

28. Airlines within alliances like systems to create an overall support system for ICT (e.g. everyone uses the same system and procedure to report delays on flights)

29. Mutual dependency exists between staff (i.e. staff are reliant upon one another for completion of goals or tasks)

30. Mutual dependency exists between the airline and its external partners

31. Alliance members (e.g. OneWorld, Star or SkyTeam) share common strategic goals, standards and schedules

32. Staff trust the information they receive from others (e.g. management or colleagues) is true and accurate

33. The products and services produced by the airline are different to those produced before the introduction and increased use of ICT

34. The methods by which products and services are produced are different from the methods used by the airline 10 years ago (e.g. the way customers are checked in)

35. Being part of an alliance (such as OneWorld, Star or SkyTeam) allows the airline to offer unique products and services (such as a greater range of routes)

36. An airline stays in an alliance such as OneWorld, Star or SkyTeam due to:

Technological benefits	☐
Shared distribution channels (e.g. amount of check in desks at an airport)	☐
Marketing benefits (e.g. more exposure to more customers)	☐
Competitive advantage	☐
Skills and Knowledge acquisition	☐

37. An airline leaves an alliance such as OneWorld, Star or SkyTeam due to:

Fulfilment of the original business opportunity	☐
Decrease in the amount of common focus	☐
Lack of shared aims and goals	☐
Decrease in the degree of competitive advantage	☐

Table 2: Amended Questionnaire – ISSAAC

To what degree do you agree with the following statements? Please write the corresponding number in the box provided, according to the scale given below:

1= Strongly Disagree 2= Disagree 3= Neither 4= Agree 5= Strongly Agree

1. External factors (such as fuel prices and stand charges) cause changes to the day-to-day operation and running of the airline
2. Action has been taken within the airline to counteract these external factors
3. Industry changes have resulted in an increased reliance on IT
4. Technological developments in society as a whole has made alliances easier to develop
5. IT has allowed the workforce to become more multi skilled
6. Staff within departments, teams and alliances have common focus and goals
7. Having a common focus and common goals makes it easier to share roles and responsibilities (both internally and externally)
8. Job specific roles exist within the airline (e.g. check in agent or ticket sales agent)
9. Pre-assigned roles are swapped in order to achieve an end goal
10. IT is used to connect staff who are separated by time and space (e.g. staff at different airports use video conferencing to conduct a meeting)
11. Interorganisational Systems (IOS) exist within the airline and amongst external partners
12. Communication amongst team members both within the airline and within alliances is primarily dependant upon IT and rich media forms (e.g. e-mail)
13. IT helps to create a sense of team spirit between airline staff and the staff of alliances such as OneWorld, Star or SkyTeam (i.e. staffs become dependant upon one another)
14. Most of the airline's core operations (such as checking customers in) predominately depends on IT

15. The airline frequently uses IT to interact with 3rd parties (e.g. e-mail, video conferences, fax etc)

16. Individual knowledge exists within the airline (e.g. information that is given through formal manuals and training which is then learnt by staff as they carry out tasks)

17. Social knowledge exists within the airline (e.g. staff know certain members of staff have a greater level of experience than others)

18. Staff are able to alternate their membership of teams in order to complete task due to shared IT standards (e.g. a ticket desk agent may go on check in if it is a busy shift)

19. Re-structuring (e.g. acquisition or loss of staff) has taken place within the airline in order to accommodate IT (e.g. online or self service facilities)

20. Management technique has changed to accommodate the introduction IT

21. Outsourcing occurs within the airline in order to get the most out of IT (e.g. IT support comes from a third party)

22. Rules and procedures within the airline are manipulated in order to accommodate the introduction of IT

23. Similar IT software and standards are used across the airline (e.g. all staff use the same check in software)

24. Airlines within alliances like systems to create an overall support system for IT (e.g. everyone uses the same system and procedure to report delays on flights)

25. Mutual dependency exists between staff (i.e. staff are reliant upon one another for completion of goals or tasks)

26. Mutual dependency exists between the airline and its external partners

27. Alliance members (e.g. OneWorld, Star or SkyTeam) share common strategic goals, standards and schedules

28. Staff trust the information they receive from others (e.g. management or colleagues) is true and accurate and build trusting relationships

29. The products and services produced by the airline are different to those produced before the introduction and increased use of IT

30. The methods by which products and services are produced are different from the methods used by the airline 10 years ago (e.g. the way customers are checked in)

31. Being part of an alliance (such as OneWorld, Star or SkyTeam) allows the airline to offer unique products and services (such as a greater range of routes)

32. An airline stays in an alliance such as OneWorld, Star or SkyTeam due to a gain in competitive advantage.

33. An airline stays in an alliance such as OneWorld, Star or SkyTeam due to technological benefits

Table 3: Original Questionnaire – UTAUT

To what degree do you agree with the following statements? Please write the corresponding number in the box provided, according to the scale given below. Only complete those columns relevant to your circumstances.

1= Strongly Disagree 2= Disagree 3= Slightly Disagree 4= Neither

5= Slightly Agree 6= Agree 7= Strongly Agree

		SYSTEMS			
		Online Flight Search	**Online Booking**	**Online Check-In**	**Self Service Kiosks (SSK)**
1	I find this system useful				
2	Using the system enables me to accomplish tasks more quickly (e.g. finding a flight / checking in)				
3	Using the system increases my productivity				
4	If I use the system I will receive additional benefits e.g. save money on a ticket or check in quicker				
5	My interaction with the system is clear and understandable				
6	It find it easy to become skilful at using the system				
7	I find the system easy to use				
8	Learning to work the system is easy for me				
9	People who influence my behaviour (e.g. friends and piers) think that I should use the system				
10	People who are important to me (e.g. work colleagues) think that I should use the system				
11	The airline promotes use of the system				
12	A positive attitude toward the system by the airline encourages me to use the system				
13	I have the resources necessary to use the system e.g. access to the Internet, Credit Cards				
14	I have the knowledge necessary to use the system				
15	The system is compatible with other systems I use				
16	A specific person is available for assistance with system difficulties				
17	I intend to use the system in the next time I fly				
18	I think I would use the system in the next time I fly				
19	I plan to use the system in the next time I fly				

Appendix C

Contact Summary Form: ISSAAC

Contact Type: Focus Group	Site: Birmingham International Airport
Visit ×	Contact Date: 19th December 2006
Phone	Today's Date: 19th December 2006
(with whom) Participants of Staff Pilot Study	Written By: GM

1. Main Issues

Identify which questions in the survey need further clarification. A variety of topics were discussed:

- Wording of questionnaires
- Use of correct terminology
- Need for extra examples

2. Summary of Information

The general wording of questions has been amended in order to make the questionnaire less intimidating and more user-friendly. In addition to this extra examples and explanations were added to questions where applicable in order to make them more relevant and therefore easier to understand and answer. Table 1 shows the alterations made as a result of the focus group. (Please note the original question number is shown first, followed by the amended question number in brackets). Similarly, Table 2 shows the questions that were deleted from the final questionnaire and the reasons for their deletion.

Table 1: Amended Questions

Question	**Information**
17 (15)	Examples were added, so that the question became more relevant. Example: The airline frequently interacts electronically with a series of other trading partners ***Changed to:*** The airline frequently uses IT to interact with 3rd parties (e.g. e-mail, video conferences, fax etc)
35 (28)	Question was too complicated and used unfamiliar terms; the terminology was therefore changed to be more applicable to everyday use. Example: Personal (confidence in colleagues), expert (information is always shared and accurate) and structural (actions affect personal relationships) trusts exist within the airline. ***Changed to:*** Staffs trust the information they receive from colleagues is correct and this subsequently leads to confidence in their colleagues and the development of personal and trusting relationships.

Table 2: Removed Questions

Question Number	Description	Why Removed
8	Internal (airline) and external (alliance) staff are not equally focused towards similar goals	Question caused confusion due to its reverse nature
20	Staff have both complementary and unique skills	Question was deemed to open, staff had difficulty answering it
35 a, b and c	Technological benefits, shared distribution channels (e.g. amount of check in desks at an airport) and marketing benefits (e.g. more exposure to more customers) keep an organisation in a virtual organisation.	Staff felt these questions were repetitive and had already been covered in questions such as Q26 and 27
36	An organisation leaves a virtual organisation because of: Fulfilment of the original business opportunity ,decrease in the amount of common focus, lack of shared aims and goals and decrease in the degree of competitive advantage	Staff felt these questions were the same as Q35 and therefore answering them twice may cause confusion and therefore skew the data.

3. Extra Information

All focus group participants agreed that the abbreviation IT should be used as appose to ICT as staff were more familiar with this term.

Questions relating to why airlines should stay in virtual organisations should use the same mode of questioning and response scale as the rest of the questionnaire, as the respondent is used to this mode of answering already. Changing the scale causes confusion

After alterations had been made to the questionnaire, it was administered to the participant of the focus group for completion.

Contact Summary Form: ISSAAC

Contact Type: Semi Structured Interview	Site: Birmingham International Airport
Visit × ________	Contact Date: 21st February 2006
Phone ________	Today's Date: 21st February 2006
With Whom: Interviewee N° 2	Written By: GM

1. Main Issues

Obtain additional qualitative information when administering quantitative questionnaire

2. Summary of Information

Question	Qualitative Response
10. The operations of the airline transcend normal organisational boundaries (for example ICT is used to connect staff who are separated by time and space to have a meeting)	Staff members try to avoid using IT enabled means such as video or phone conferencing as not all parties know how to use the software and therefore mistakes happen. This makes the process longer and more inconvenient rather than quicker and more efficient.
21. To what extent does the airline outsource in order to maintain a best fit due to the introduction of ICT	The airline uses both their own internal IT department and external parties for the production of new software and the supply of support.
24. Airlines within alliances have a set of shared ICT standards that stretch across their members	Check in software is not necessarily the same but communication technology is e.g. telex

4. Extra Information

5. Information to be Obtained in Next Contact

Same as point 1

Contact Summary Form: ISSAAC

Contact Type: Semi Structured Interview
Visit ×__________
Phone ___________
With Whom: Interviewee N° 3

Site: Birmingham International Airport
Contact Date: 21st February 2006
Today's Date: 21st February 2006
Written By: GM

1. Main Issues

Obtain additional qualitative information when administering quantitative questionnaire

2. Summary of Information

Question	**Qualitative Response**
28. Staff trust the information they receive from others is true and accurate	With regard to expert trust staff believe about 80% of the time that information provided is accurate e.g. there may be a period when all requests are fulfilled by HQ then all of a sudden they are not and staff feel let down.

6. Extra Information

7. Information to be Obtained in Next Contact

Same as point 1

Contact Summary Form: ISSAAC

Contact Type: Semi Structured Interview	Site: Birmingham International Airport
Visit ×__________	Contact Date: 21st February 2006
Phone ____________	Today's Date: 21st February 2006
With Whom: Interviewee N° 10	Written By: GM

1. Main Issues

Obtain additional qualitative information when administering quantitative questionnaire

2. Summary of Information

Question	Qualitative Response
8. Job specific roles exist within the airline (e.g. check in agent or ticket sales agent)	This may be one of the reasons why the use of self service check is not always promoted. Because front line staffs are not reminded to promote self service check in at the beginning of shift or are not assigned the duty specifically (even though they know they are meant to always promote self-service) they do not encourage SSK usage and consequently customers lose out and the equipment is not used.
21. The airline outsource in order to maintain a best fit due to the introduction of ICT	The airline has internal and external IT help. However, this help is normally not on location at regional airports such as Birmingham or Bristol and if staffs have a problem which they can not solve, they have to call HQ in London which can waste valuable time.

8. Extra Information

9. Information to be Obtained in Next Contact

Same as point 1

Contact Summary Form: ISSAAC

Contact Type: Semi Structured Interview	Site: Birmingham International Airport
Visit ×_________	Contact Date: 22nd February 2006
Phone ___________	Today's Date: 22nd February 2006
With Whom: Interviewee Nº 13	Written By: GM

1. Main Issues

Obtain additional qualitative information when administering quantitative questionnaire

2. Summary of Information

Question	**Qualitative Response**
10. The operations of the airline transcend normal organisational boundaries (for example IT is used to connect staff who are separated by time and space to have a meeting)	For the discussion of major or important issues such as training schedules and recruitment face-to-face contact is preferred as it is felt using rich media forms lacks the personal feeling

10. Extra Information

11. Information to be Obtained in Next Contact

Same as point 1

Contact Summary Form: ISSAAC

Contact Type: Focus Group	Site: Birmingham International Airport
Visit ×_______	Contact Date: 21st March 2006
Phone ___________	Today's Date: 22nd March 2006
(with whom) Participants of Staff Pilot Study	Written By: GM___________

1. Main Issues

According to Cronbach (1951) reliability can be tested according to how well the same question can be answered the same or approximately the same each time it is asked. The aim of this focus group has therefore been to assess the reliability of the instrument in accordance with Cronbach's argument (in this case a questionnaire). All of the original pilot study participants were asked to answer the questionnaire again to see how their responses differed, if at all.

2. Summary of Information

The overall reliability of the questionnaire was calculated to be 96% (with a cut off point of 80%). This figure was calculated by adding the individual reliability scores for each question (calculated using the formula below). The following table shows a sample of reliability scores.

$$\frac{\textit{total participants (15)} - \textit{1 per each participant that answered differently}}{\textit{total participants (15)} \times \textit{100}}$$

Question	**Reliability Score %**
1	87
6	93
12	100
13	100
14	100
20	100
24	87
27	100
30	93

3. Information to be Obtained in Next Contact

In addition to the reliability test as outlined above, SPSS and LISREL will also be used to test scale reliability against Cronbach's *a*, where the acceptable range will be from .65 upwards

Contact Summary Form: ISSAAC

Contact Type: Focus Group	Site: Birmingham International Airport
Visit × ________	Contact Date: 30th March 2006
Phone ____________	Today's Date: 30th March 2006
(with whom) Airline Staff	Written By: GM___________

1. Main Issues

Go over the full questionnaire with the members of the focus group in order to obtain general qualitative feedback regarding each of the items of the questionnaire.

2. Summary of Information

Question	**Additional Information**
1	Amongst the most significant changes has been the rise in low-cost airlines and increased airport charges. These have resulted in airlines needing to significantly reduce cost in order to remain competitive and the first way in which many management feel they can do this is to streamline costs and increase IT thereby supposedly increasing efficiency.
2	Several job cuts and penalties introduced if use of self-service and online products are not encouraged.
3	See question 1
4	Without IT the airline and its alliances would not be able to progress and would not have achieved the success they have today
5	Does not necessarily allow the workforce to be multi-skilled but instead allows them to accomplish more tasks in the same amount of time.
7	Because everyone is working towards the same goals there are no hidden agendas so people are more willing to share jobs and responsibilities.
10	IT systems are vital in emergencies and having access to other airports flight information allows the airline to run more smoothly as delays can be handled quickly and effectively, without having to rely on individuals to get back to you with the required information.
12	More so at senior levels – that is between management
13	the sense of team spirit comes from everyone working together to embrace the IT
15	Same as 12
17	Very much so – most day to day information is passed on via word of mouth and is tacit information that is learnt via experience
19	This has defiantly taken place and resentment normally occurs towards the IT that has been introduced
20	Management are very conscious of achieving IT related goals and as a result management technique has become less personal
21	Occurs a lot especially within regional airports
24	More so in terms of communication as appose to checking in technology
28	The majority of the time staff trust the information they receive, but sometimes if something goes wrong the first thing people blame is the increased presence of IT and supposed lack of personal management concern
29-30	Everything is focused on the increased use of IT and using IT to give the customers more control
33	Being part of an virtual organisation alliance means breakthroughs in technology can be shared but it also means members have to keep up with one another and this can often have a detrimental effect on other aspects of the business

Contact Summary Form: UTAUT

Contact Type: Focus Group Site: Birmingham International Airport
Visit ×_________ Contact Date: 15th June 2006
Phone ___________ Today's Date: 15th June 2006
(with whom) Participants of Customer Pilot Study Written By: GM___________

1. Main Issues

Identify which questions in the survey need further clarification. A variety of topics were discussed:

- Wording of questionnaires
- Use of correct terminology
- Need for extra examples

2. Summary of Information

The main modification is to the layout of the questionnaire. Such that, whilst initially four separate questionnaires were administered, modifications were made so that all questions were on one A4 sheet and customers were asked to answer whichever stages of the buying life-cycle related to them by ticking one or more of the columns.

As with the staff questionnaire, the general wording of questions has been amended in order to make the questionnaire less intimidating and more user-friendly. Similarly, examples were added to some of the questions in order to make them more relevant and therefore easier to understand and answer.

3. Information to be Obtained in Next Contact

Make relevant changes to questionnaire and re-administer via a second pilot study.
Please note no further amendments were required.

Contact Summary Form: UTAUT

Contact Type: Focus Group
Visit ×_________
Phone ___________
(with whom) Airline Customers

Site: Birmingham International Airport
Contact Date: 1st August 2006
Today's Date: 1st August 2006
Written By: GM___________

1. Main Issues

Re-administer questionnaires to members of the focus group and discuss additional qualitative responses.

2. Summary of Information

Question	**Additional Information (Use of SSK)**
2	Using the system does not always allow the individual to accomplish tasks more quickly, more importantly it allows the individual to complete tasks within their own time.
4	Time and money savings are one of the key reasons for use online and self service facilities, if airlines don't have these facilities available it is almost as if something is wrong with the airline and this leads to trust issues
6	More help should be offered to customers, there is too much presumption that individuals should just know how to use ICT
12	Staff are often openly negative towards the ICT and this has a very negative impact on the individuals intention to use
13	Being able to use a passport or driving licence as ID would be more useful as it is something you already have with to travel and it stops worries about security

Appendix D

Table 1: Anti-image Matrix (ISSAAC)

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33
Anti-image Covariance	Q1	.294	-.093	-.022	-.128	-.056	-.055	-.014	-.003	-.007	.021	-.057	.010	-.039	-.014	-.055	.047	-.014	-.015	-.035	.051	-.004	-.022	-.018	.029	-.020	.014	.053	.048	-.015	-.018	.026	.028	-.037
	Q2	-.093	.383	.024	-.064	-.059	-.093	.047	-.004	.004	.008	-.018	-.002	-.038	.007	.015	-.064	.096	.009	.026	-.054	-.005	-.003	-.019	-.014	.011	.010	-.017	-.032	-.018	.057	-.016	-.102	.014
	Q3	-.022	.024	.286	-.136	-.016	-.062	-.099	.004	-.033	-.006	.042	.042	-.029	-.037	.026	.006	-.019	.059	-.062	.068	-.040	.008	.096	-.045	-.026	.076	.025	-.034	-.068	.007	-.003	-.012	.013
	Q4	-.128	-.064	-.136	.281	.033	.114	.019	.032	.003	-.034	.002	.003	.110	.041	.000	.003	-.047	-.020	.060	-.053	-.051	-.006	-.032	.039	.055	-.069	-.065	.008	.057	-.030	.007	.048	.016
	Q5	-.056	-.059	-.016	.033	.430	-.007	-.098	-.038	-.071	-.054	.055	.027	-.032	-.021	.013	.063	-.061	.092	-.042	.038	-.014	.081	-.002	-.045	.067	-.048	-.035	.039	.024	-.016	.036	.024	-.014
	Q6	-.055	-.093	-.062	.114	-.007	.283	-.062	.020	-.063	-.049	.048	.011	.066	.005	-.030	-.010	-.086	-.004	.016	-.047	-.077	.014	.011	.051	.032	-.014	-.054	-.019	.028	-.009	-.006	.072	-.011
	Q7	-.014	.047	-.099	.019	-.098	-.062	.352	-.021	.031	.040	-.024	.018	-.009	-.115	-.020	-.078	.048	-.066	.065	-.038	.024	-.008	-.102	-.041	-.074	-.057	.026	.036	-.017	-.003	.037	-.059	.034
	Q8	-.003	-.004	.004	.032	-.038	.020	-.021	.442	-.014	-.031	-.002	-.014	.108	-.062	.053	-.055	.074	-.085	-.018	-.015	.070	-.032	.067	.088	.101	.051	-.037	-.122	.021	-.060	.003	.055	-.095
	Q9	-.007	.004	-.033	.003	-.071	-.063	.031	-.014	.332	.008	.021	.063	-.073	-.052	.046	-.058	.045	-.176	.086	-.092	.035	-.022	-.038	.004	-.051	-.020	-.023	-.038	.033	-.014	-.017	-.026	.068
	Q10	.021	.008	-.006	-.034	-.054	-.049	.040	-.031	.008	.284	-.108	-.038	-.090	-.046	-.161	-.018	.028	-.006	.018	.035	-.005	-.008	-.004	-.080	-.019	.061	-.034	.029	-.013	-.022	.000	-.048	-.047
	Q11	-.057	-.018	.042	.002	.055	.048	-.024	-.002	.021	-.108	.368	.024	-.011	-.018	.002	-.019	-.082	.053	.091	-.020	-.030	-.016	.021	.000	.014	-.005	-.104	-.040	-.010	-.008	.005	-.025	.075
	Q12	.010	-.002	.042	.003	.027	.011	.018	-.014	.063	-.038	.024	.634	-.082	-.145	-.090	-.060	-.035	-.056	-.002	.003	.039	.076	.024	-.087	-.034	-.029	-.050	.011	.059	-.050	.006	.066	.066
	Q13	-.039	-.038	-.029	.110	-.032	.066	-.009	.108	-.073	-.090	-.011	-.082	.503	-.041	-.026	.054	-.035	-.023	-.044	-.036	-.085	.026	.052	.042	.079	-.040	-.021	-.066	.006	-.003	.012	.028	-.022
	Q14	-.014	.007	-.037	.041	-.021	.005	-.115	-.062	-.052	-.046	-.018	-.145	-.041	.483	.018	.065	-.010	.030	-.007	-8.04E-005	-.043	-.022	-.050	.096	.047	.056	.021	-.017	.028	.013	-.031	-.013	.032
	Q15	-.055	.015	.026	.000	.013	-.030	-.020	.053	.046	-.161	.002	-.090	-.026	.018	.573	-.023	.043	-.061	-.008	-.071	.071	.019	.018	.030	-.014	-.070	.088	-.033	.006	.058	-.102	.019	.034
	Q16	.047	-.064	.006	.003	.063	-.010	-.078	-.055	-.058	-.018	-.019	-.060	.054	.065	-.023	.368	-.209	.053	.014	-.015	-.060	-.056	-.049	.048	.005	.016	.003	-.015	-.018	-.045	.041	.035	-.051
	Q17	-.014	.096	-.019	-.047	-.061	-.086	.048	.074	.045	.028	-.082	-.035	-.035	-.010	.043	-.209	.491	-.063	-.011	.022	.105	.047	-.024	-.024	.044	-.070	.028	.028	.004	-.003	.036	-.040	-.003
	Q18	-.015	.009	.059	-.020	.092	-.004	-.066	-.085	-.176	-.006	.053	-.056	-.023	.030	-.061	.053	-.063	.466	-.026	.075	-.092	-.014	.075	-.040	-.058	-.027	-.058	.077	-.014	.007	-.017	.023	-.055
	Q19	-.035	.026	-.062	.060	-.042	.016	.065	-.018	.086	.018	.091	-.002	-.044	-.007	-.008	.014	-.011	-.026	.347	-.164	-.027	-.094	-.058	-.010	-.101	-.058	-.055	.042	.051	-.045	.014	-.042	.085
	Q20	.051	-.054	.068	-.053	.038	-.047	-.038	-.015	-.092	.035	-.020	.003	-.036	-8.04E-	-.071	-.015	.022	.075	-.164	.405	-.010	-.104	.007	-.095	.031	.034	.050	.034	-.029	-.023	-.005	-.042	.029

Table 1: Anti-image Matrix (ISSAAC)

															005																			
	Q21	-.004	-.005	-.040	-.051	-.014	-.077	.024	.070	.035	-.005	-.030	.039	-.085	-.043	.071	-.060	.105	-.092	-.027	-.010	.518	.014	-.092	.030	-.003	.074	.015	-.018	-.018	.006	-.010	-.050	.009
	Q22	-.022	-.003	.008	-.006	.081	.014	-.008	-.032	-.022	-.008	-.016	.076	.026	-.022	.019	-.056	.047	-.014	-.094	-.104	.014	.469	.100	-.119	.011	-.080	.054	-.017	-.034	.026	.058	.048	-.004
	Q23	-.018	-.019	.096	-.032	-.002	.011	-.102	.067	-.038	-.004	.021	.024	.052	-.050	.018	-.049	-.024	.075	-.058	.007	-.092	.100	.557	-.018	.067	-.010	-.032	-.074	-.060	.033	-.036	.069	-.070
	Q24	.029	-.014	-.045	.039	-.045	.051	-.041	.088	.004	-.080	.000	-.087	.042	.096	.030	.048	-.024	-.040	-.010	-.095	.030	-.119	-.018	.703	.071	-.039	-.018	-.032	-.022	.038	-.029	-.008	.003
	Q25	-.020	.011	-.026	.055	.067	.032	-.074	.101	-.051	-.019	.014	-.034	.079	.047	-.014	.005	.044	-.058	-.101	.031	-.003	.011	.067	.071	.515	-.143	-.033	-.097	.047	-.012	.012	.041	-.081
	Q26	.014	.010	.076	-.069	-.048	-.014	-.057	.051	-.020	.061	-.005	-.029	-.040	.056	-.070	.016	-.070	-.027	-.058	.034	.074	-.080	-.010	-.039	-.143	.447	-.059	-.036	-.060	.023	-.056	-.034	-.027
	Q27	.053	-.017	.025	-.065	-.035	-.054	.026	-.037	-.023	-.034	-.104	-.050	-.021	.021	.088	.003	.028	-.058	-.055	.050	.015	.054	-.032	-.018	-.033	-.059	.286	-.061	-.067	.090	-.077	-.039	1.88E-005
	Q28	.048	-.032	-.034	.008	.039	-.019	.036	-.122	-.038	.029	-.040	.011	-.066	-.017	-.033	-.015	.028	.077	.042	.034	-.018	-.017	-.074	-.032	-.097	-.036	-.061	.323	.011	-.107	.072	.003	-.008
	Q29	-.015	-.018	-.068	.057	.024	.028	-.017	.021	.033	-.013	-.010	.059	.006	.028	.006	-.018	.004	-.014	.051	-.029	-.018	-.034	-.060	-.022	.047	-.060	-.067	.011	.394	-.166	-.071	.083	-.017
	Q30	-.018	.057	.007	-.030	-.016	-.009	-.003	-.060	-.014	-.022	-.008	-.050	-.003	.013	.058	-.045	-.003	.007	-.045	-.023	.006	.026	.033	.038	-.012	.023	.090	-.107	-.166	.309	-.145	-.070	.004
	Q31	.026	-.016	-.003	.007	.036	-.006	.037	.003	-.017	.000	.005	.006	.012	-.031	-.102	.041	.036	-.017	.014	-.005	-.010	.058	-.036	-.029	.012	-.056	-.077	.072	-.071	-.145	.559	.023	-.002
	Q32	.028	-.102	-.012	.048	.024	.072	-.059	.055	-.026	-.048	-.025	.066	.028	-.013	.019	.035	-.040	.023	-.042	-.042	-.050	.048	.069	-.008	.041	-.034	-.039	.003	.083	-.070	.023	.499	-.231
	Q33	-.037	.014	.013	.016	-.014	-.011	.034	-.095	.068	-.047	.075	.066	-.022	.032	.034	-.051	-.003	-.055	.085	.029	.009	-.004	-.070	.003	-.081	-.027	1.88E-005	-.008	-.017	.004	-.002	-.231	.403
Anti-image Correlation	Q1	.831(a)	-.277	-.077	-.446	-.158	-.190	-.044	-.009	-.022	.074	-.175	.023	-.100	-.036	-.135	.142	-.038	-.040	-.111	.149	-.010	-.059	-.045	.063	-.051	.040	.184	.157	-.045	-.058	.063	.074	-.107
	Q2	-.277	.874(a)	.073	-.196	-.146	-.281	.128	-.011	.012	.024	-.047	-.004	-.086	.016	.033	-.171	.222	.022	.072	-.138	-.010	-.007	-.041	-.028	.025	.024	-.050	-.092	-.046	.166	-.034	-.233	.036
	Q3	-.077	.073	.791(a)	-.479	-.045	-.218	-.313	.011	-.107	-.022	.129	.098	-.078	-.098	.064	.018	-.051	.161	-.197	.199	-.103	.022	.242	-.101	-.069	.213	.088	-.112	-.202	.024	-.008	-.031	.038
	Q4	-.446	-.196	-.479	.637(a)	.094	.405	.059	.089	.011	-.122	.007	.006	.293	.112	-.001	.008	-.126	-.055	.193	-.158	-.133	-.018	-.080	.087	.145	-.194	-.229	.027	.172	-.102	.017	.128	.048
	Q5	-.158	-.146	-.045	.094	.862(a)	-.020	-.252	-.088	-.187	-.155	.138	.051	-.070	-.047	.026	.158	-.134	.205	-.109	.092	-.030	.181	-.004	-.083	.143	-.110	-.101	.106	.059	-.043	.073	.052	-.034
	Q6	-.190	-.281	-.218	.405	-.020	.847(a)	-.198	.056	-.206	-.174	.149	.025	.175	.014	-.076	-.030	-.230	-.011	.050	-.139	-.200	.037	.027	.114	.085	-.040	-.191	-.063	.084	-.029	-.015	.192	-.031
	Q7	-.044	.128	-.313	.059	-.252	-.198	.830(a)	-.053	.090	.126	-.065	.039	-.022	-.279	-.044	-.217	.115	-.163	.186	-.101	.057	-.020	-.230	-.083	-.174	-.145	.082	.108	-.046	-.010	.084	-.140	.091
	Q8	-.009	-.011	.011	.089	-.088	.056	-.053	.764(a)	-.036	-.088	-.005	-.027	.229	-.134	.106	-.137	.158	-.186	-.046	-.036	.146	-.070	.134	.158	.212	.115	-.103	-.323	.051	-.162	.005	.116	-.225

Table 1: Anti-image Matrix (ISSAAC)

Q9	-.022	.012	-.107	.011	-.187	-.206	.090	-.036	.837(a)	.026	.059	.138	-.178	-.130	.104	-.166	.113	-.448	.254	-.250	.084	-.056	-.088	.008	-.125	-.051	-.075	-.117	.090	-.043	-.039	-.064	.186
Q10	.074	.024	-.022	-.122	-.155	-.174	.126	-.088	.026	.866(a)	-.335	-.089	-.239	-.125	-.401	-.056	.075	-.015	.057	.105	-.014	-.021	-.009	-.179	-.050	.171	-.119	.095	-.039	-.075	-.001	-.127	-.139
Q11	-.175	-.047	.129	.007	.138	.149	-.065	-.005	.059	-.335	.849(a)	.049	-.026	-.042	.004	-.053	-.192	.129	.254	-.051	-.070	-.040	.045	.000	.033	-.013	-.320	-.115	-.026	-.024	.010	-.058	.195
Q12	.023	-.004	.098	.006	.051	.025	.039	-.027	.138	-.089	.049	.663(a)	-.146	-.263	-.149	-.124	-.063	-.103	-.003	.006	.067	.139	.041	-.131	-.060	-.055	-.118	.025	.117	-.112	.011	.118	.130
Q13	-.100	-.086	-.078	.293	-.070	.175	-.022	.229	-.178	-.239	-.026	-.146	.786(a)	-.084	-.048	.125	-.071	-.048	-.104	-.080	-.167	.053	.098	.071	.156	-.085	-.057	-.164	.014	-.006	.023	.055	-.050
Q14	-.036	.016	-.098	.112	-.047	.014	-.279	-.134	-.130	-.125	-.042	-.263	-.084	.857(a)	.035	.154	-.020	.063	-.018	.000	-.087	-.046	-.096	.165	.094	.120	.056	-.042	.063	.034	-.060	-.027	.073
Q15	-.135	.033	.064	-.001	.026	-.076	-.044	.106	.104	-.401	.004	-.149	-.048	.035	.595(a)	-.050	.081	-.117	-.018	-.147	.130	.036	.031	.047	-.025	-.139	.218	-.076	.013	.139	-.181	.036	.070
Q16	.142	-.171	.018	.008	.158	-.030	-.217	-.137	-.166	-.056	-.053	-.124	.125	.154	-.050	.818(a)	-.492	.128	.039	-.040	-.137	-.136	-.109	.095	.011	.039	.009	-.044	-.046	-.132	.091	.081	-.132
Q17	-.038	.222	-.051	-.126	-.134	-.230	.115	.158	.113	.075	-.192	-.063	-.071	-.020	.081	-.492	.678(a)	-.133	-.026	.050	.209	.098	-.045	-.041	.088	-.150	.074	.071	.008	-.008	.069	-.081	-.007
Q18	-.040	.022	.161	-.055	.205	-.011	-.163	-.186	-.448	-.015	.129	-.103	-.048	.063	-.117	.128	-.133	.702(a)	-.064	.172	-.188	-.029	.147	-.070	-.118	-.058	-.160	.199	-.032	.019	-.034	.047	-.128
Q19	-.111	.072	-.197	.193	-.109	.050	.186	-.046	.254	.057	.254	-.003	-.104	-.018	-.018	.039	-.026	-.064	.706(a)	-.438	-.064	-.233	-.132	-.020	-.240	-.146	-.175	.125	.138	-.137	.031	-.102	.227
Q20	.149	-.138	.199	-.158	.092	-.139	-.101	-.036	-.250	.105	-.051	.006	-.080	.000	-.147	-.040	.050	.172	-.438	.634(a)	-.021	-.238	.015	-.178	.068	.081	.146	.094	-.073	-.065	-.011	-.093	.073
Q21	-.010	-.010	-.103	-.133	-.030	-.200	.057	.146	.084	-.014	-.070	.067	-.167	-.087	.130	-.137	.209	-.188	-.064	-.021	.879(a)	.029	-.171	.050	-.005	.153	.040	-.043	-.041	.016	-.019	-.098	.019
Q22	-.059	-.007	.022	-.018	.181	.037	-.020	-.070	-.056	-.021	-.040	.139	.053	-.046	.036	-.136	.098	-.029	-.233	-.238	.029	.803(a)	.195	-.207	.023	-.174	.148	-.043	-.079	.068	.113	.098	-.009
Q23	-.045	-.041	.242	-.080	-.004	.027	-.230	.134	-.088	-.009	.045	.041	.098	-.096	.031	-.109	-.045	.147	-.132	.015	-.171	.195	.835(a)	-.029	.125	-.021	-.079	-.175	-.127	.080	-.064	.131	-.148
Q24	.063	-.028	-.101	.087	-.083	.114	-.083	.158	.008	-.179	.000	-.131	.071	.165	.047	.095	-.041	-.070	-.020	-.178	.050	-.207	-.029	.619(a)	.118	-.070	-.040	-.068	-.042	.081	-.046	-.014	.006
Q25	-.051	.025	-.069	.145	.143	.085	-.174	.212	-.125	-.050	.033	-.060	.156	.094	-.025	.011	.088	-.118	-.240	.068	-.005	.023	.125	.118	.592(a)	-.298	-.085	-.237	.105	-.031	.023	.081	-.179
Q26	.040	.024	.213	-.194	-.110	-.040	-.145	.115	-.051	.171	-.013	-.055	-.085	.120	-.139	.039	-.150	-.058	-.146	.081	.153	-.174	-.021	-.070	-.298	.687(a)	-.164	-.096	-.143	.062	-.112	-.073	-.063
Q27	.184	-.050	.088	-.229	-.101	-.191	.082	-.103	-.075	-.119	-.320	-.118	-.057	.056	.218	.009	.074	-.160	-.175	.146	.040	.148	-.079	-.040	-.085	-.164	.828(a)	-.202	-.199	.304	-.192	-.104	5.54E-005
Q28	.157	-.092	-.112	.027	.106	-.063	.108	-.323	-.117	.095	-.115	.025	-.164	-.042	-.076	-.044	.071	.199	.125	.094	-.043	-.043	-.175	-.068	-.237	-.096	-.202	.836(a)	.032	-.340	.168	.007	-.021
Q29	-.045	-.046	-.202	.172	.059	.084	-.046	.051	.090	-.039	-.026	.117	.014	.063	.013	-.046	.008	-.032	.138	-.073	-.041	-.079	-.127	-.042	.105	-.143	-.199	.032	.824(a)	-.477	-.151	.187	-.042
Q30	-.058	.166	.024	-.102	-.043	-.029	-.010	-.162	-.043	-.075	-.024	-.112	-.006	.034	.139	-.132	-.008	.019	-.137	-.065	.016	.068	.080	.081	-.031	.062	.304	-.340	-.477	.765(a)	-.349	-.178	.011

Table 1: Anti-image Matrix (ISSAAC)

Q31	.063	-.034	-.008	.017	.073	-.015	.084	.005	-.039	-.001	.010	.011	.023	-.060	-.181	.091	.069	-.034	.031	-.011	-.019	.113	-.064	-.046	.023	-.112	-.192	.168	-.151	-.349	.819(a)	.044	-.004
Q32	.074	-.233	-.031	.128	.052	.192	-.140	.116	-.064	-.127	-.058	.118	.055	-.027	.036	.081	-.081	.047	-.102	-.093	-.098	.098	.131	-.014	.081	-.073	-.104	.007	.187	-.178	.044	.653(a)	-.515
Q33	-.107	.036	.038	.048	-.034	-.031	.091	-.225	.186	-.139	.195	.130	-.050	.073	.070	-.132	-.007	-.128	.227	.073	.019	-.009	-.148	.006	-.179	-.063	5.54E-005	-.021	-.042	.011	-.004	-.515	.749(a)

a Measures of Sampling Adequacy(MSA)

2: Correlation Matrix (ISSAAC)

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33

2: Correlation Matrix (ISSAAC)

Correlation	**Q1**	1.000	.591	.615	.669	.498	.480	.435	.001	.313	.333	.280	-.056	.206	.293	.171	.176	.247	.143	-.145	-.072	.425	-.135	.257	-.099	-.093	.018	.165	.048	.186	.128	.047	.046	.073
	Q2	.591	1.000	.422	.463	.463	.564	.361	.159	.424	.439	.381	-.011	.279	.276	.114	.330	.149	.157	-.217	.022	.449	-.161	.339	-.032	-.072	.065	.399	.292	.240	.162	.142	.271	.208
	Q3	.615	.422	1.000	.583	.471	.517	.573	.099	.377	.291	.165	-.115	.182	.372	.006	.258	.228	.079	-.104	-.056	.474	-.117	.195	-.053	-.048	-.065	.157	.200	.306	.268	.074	.062	.040
	Q4	.669	.463	.583	1.000	.259	.200	.248	-.035	.169	.239	.297	-.097	-.039	.080	.037	.197	.259	.059	-.225	-.100	.340	-.115	.228	-.066	-.134	.056	.221	.060	.176	.111	.060	.002	.024
	Q5	.498	.463	.471	.259	1.000	.530	.528	.132	.420	.415	.202	.036	.357	.423	.096	.166	.233	.122	-.129	-.098	.358	-.293	.305	-.010	-.097	.061	.298	.152	.160	.140	.080	.157	.137
	Q6	.480	.564	.517	.200	.530	1.000	.603	.237	.613	.484	.291	.074	.329	.429	.174	.447	.328	.314	-.178	.018	.489	-.191	.362	-.076	.042	.113	.412	.364	.313	.292	.202	.139	.192
	Q7	.435	.361	.573	.248	.528	.603	1.000	.197	.482	.326	.221	.036	.253	.490	.116	.406	.260	.264	-.140	.025	.377	-.109	.380	-.003	.107	.160	.244	.260	.310	.280	.109	.163	.145
	Q8	.001	.159	.099	-.035	.132	.237	.197	1.000	.316	.287	.240	.055	.020	.263	-.113	.365	.005	.206	-.244	-.113	.088	-.096	.138	-.189	-.008	-.053	.313	.547	.301	.464	.195	.187	.380
	Q9	.313	.424	.377	.169	.420	.613	.482	.316	1.000	.390	.252	.063	.390	.386	.087	.382	.165	.528	-.151	.091	.361	-.073	.290	-.011	.193	.224	.449	.440	.293	.325	.244	.178	.166
	Q10	.333	.439	.291	.239	.415	.484	.326	.287	.390	1.000	.623	.280	.478	.404	.384	.352	.232	.266	-.346	-.183	.359	-.307	.297	.035	-.012	.067	.546	.401	.340	.328	.318	.315	.339
	Q11	.280	.381	.165	.297	.202	.291	.221	.240	.252	.623	1.000	.168	.270	.244	.142	.395	.326	.100	-.456	-.221	.268	-.274	.303	-.036	-.069	.096	.567	.434	.352	.287	.250	.225	.210
	Q12	-.056	-.011	-.115	-.097	.036	.074	.036	.055	.063	.280	.168	1.000	.289	.248	.312	.101	.129	.190	-.004	-.031	-.043	-.137	.024	.102	.091	.139	.212	.103	.002	.073	.151	-.074	-.077
	Q13	.206	.279	.182	-.039	.357	.329	.253	.020	.390	.478	.270	.289	1.000	.378	.277	.079	.095	.255	.008	.049	.312	-.145	.134	.055	.042	.137	.317	.252	.149	.149	.174	.162	.078
	Q14	.293	.276	.372	.080	.423	.429	.490	.263	.386	.404	.244	.248	.378	1.000	.117	.159	.085	.124	-.150	-.036	.353	-.197	.258	-.142	-.115	-.139	.188	.238	.135	.200	.124	.089	.027
	Q15	.171	.114	.006	.037	.096	.174	.116	-.113	.087	.384	.142	.312	.277	.117	1.000	.030	.044	.183	.072	.147	-.001	.017	.000	.123	.098	.195	.050	-.013	.020	-.013	.192	-.030	-.068
	Q16	.176	.330	.258	.197	.166	.447	.406	.365	.382	.352	.395	.101	.079	.159	.030	1.000	.533	.150	-.268	-.021	.271	-.073	.385	-.087	.037	.135	.327	.456	.413	.450	.156	.185	.321
	Q17	.247	.149	.228	.259	.233	.328	.260	.005	.165	.232	.326	.129	.095	.085	.044	.533	1.000	.127	-.190	-.134	.086	-.173	.245	-.015	-.041	.199	.216	.126	.191	.168	.036	.101	.157
	Q18	.143	.157	.079	.059	.122	.314	.264	.206	.528	.266	.100	.190	.255	.124	.183	.150	.127	1.000	-.029	-.062	.193	-.031	.061	.053	.331	.338	.396	.173	.153	.124	.228	.130	.226
	Q19	-.145	-.217	-.104	-.225	-.129	-.178	-.140	-.244	-.151	-.346	-.456	-.004	.008	-.150	.072	-.268	-.190	-.029	1.000	.578	-.136	.505	-.217	.256	.245	.189	-.262	-.278	-.197	-.123	-.106	-.111	-.334
	Q20	-.072	.022	-.056	-.100	-.098	.018	.025	-.113	.091	-.183	-.221	-.031	.049	-.036	.147	-.021	-.134	-.062	.578	1.000	-.025	.537	-.109	.308	.029	.075	-.247	-.146	-.022	.028	-.030	-.052	-.290
	Q21	.425	.449	.474	.340	.358	.489	.377	.088	.361	.359	.268	-.043	.312	.353	-.001	.271	.086	.193	-.136	-.025	1.000	-.190	.362	-.106	-.057	-.085	.273	.247	.258	.225	.141	.180	.141
	Q22	-.135	-.161	-.117	-.115	-.293	-.191	-.109	-.096	-.073	-.307	-.274	-.137	-.145	-.197	.017	-.073	-.173	-.031	.505	.537	-.190	1.000	-.295	.312	.123	.152	-.316	-.165	-.080	-.089	-.175	-.159	-.242
	Q23	.257	.339	.195	.228	.305	.362	.380	.138	.290	.297	.303	.024	.134	.258	.000	.385	.245	.061	-.217	-.109	.362	-.295	1.000	-.061	-.042	.116	.374	.353	.345	.243	.217	.121	.246
	Q24	-.099	-.032	-.053	-.066	-.010	-.076	-.003	-.189	-.011	.035	-.036	.102	.055	-.142	.123	-.087	-.015	.053	.256	.308	-.106	.312	-.061	1.000	.043	.205	.013	-.080	.019	-.083	.033	.002	-.118
	Q25	-.093	-.072	-.048	-.134	-.097	.042	.107	-.008	.193	-.012	-.069	.091	.042	-.115	.098	.037	-.041	.331	.245	.029	-.057	.123	-.042	.043	1.000	.498	.211	.237	.035	.085	.094	.107	.177
	Q26	.018	.065	-.065	.056	.061	.113	.160	-.053	.224	.067	.096	.139	.137	-.139	.195	.135	.199	.338	.189	.075	-.085	.152	.116	.205	.498	1.000	.369	.209	.203	.102	.228	.134	.153
	Q27	.165	.399	.157	.221	.298	.412	.244	.313	.449	.546	.567	.212	.317	.188	.050	.327	.216	.396	-.262	-.247	.273	-.316	.374	.013	.211	.369	1.000	.537	.386	.247	.385	.294	.349
	Q28	.048	.292	.200	.060	.152	.364	.260	.547	.440	.401	.434	.103	.252	.238	-.013	.456	.126	.173	-.278	-.146	.247	-.165	.353	-.080	.237	.209	.537	1.000	.452	.570	.277	.267	.379
	Q29	.186	.240	.306	.176	.160	.313	.310	.301	.293	.340	.352	.002	.149	.135	.020	.413	.191	.153	-.197	-.022	.258	-.080	.345	.019	.035	.203	.386	.452	1.000	.666	.479	.107	.241
	Q30	.128	.162	.268	.111	.140	.292	.280	.464	.325	.328	.287	.073	.149	.200	-.013	.450	.168	.124	-.123	.028	.225	-.089	.243	-.083	.085	.102	.247	.570	.666	1.000	.483	.234	.287

2: Correlation Matrix (ISSAAC)

	Q31	.047	.142	.074	.060	.080	.202	.109	.195	.244	.318	.250	.151	.174	.124	.192	.156	.036	.228	-.106	-.030	.141	-.175	.217	.033	.094	.228	.385	.277	.479	.483	1.000	.114	.165
	Q32	.046	.271	.062	.002	.157	.139	.163	.187	.178	.315	.225	-.074	.162	.089	-.030	.185	.101	.130	-.111	-.052	.180	-.159	.121	.002	.107	.134	.294	.267	.107	.234	.114	1.000	.587
	Q33	.073	.208	.040	.024	.137	.192	.145	.380	.166	.339	.210	-.077	.078	.027	-.068	.321	.157	.226	-.334	-.290	.141	-.242	.246	-.118	.177	.153	.349	.379	.241	.287	.165	.587	1.000
Sig. (1-tailed)	**Q1**		.000	.000	.000	.000	.000	.000	.497	.000	.000	.000	.213	.002	.000	.008	.006	.000	.021	.020	.154	.000	.028	.000	.081	.095	.401	.010	.251	.004	.035	.252	.259	.151
	Q2	.000		.000	.000	.000	.000	.000	.012	.000	.000	.000	.438	.000	.000	.054	.000	.017	.013	.001	.381	.000	.011	.000	.325	.154	.180	.000	.000	.000	.010	.022	.000	.001
	Q3	.000	.000		.000	.000	.000	.000	.080	.000	.000	.010	.052	.005	.000	.468	.000	.001	.131	.071	.215	.000	.049	.003	.228	.249	.178	.013	.002	.000	.000	.148	.191	.285
	Q4	.000	.000	.000		.000	.002	.000	.312	.008	.000	.000	.084	.289	.130	.302	.002	.000	.203	.001	.079	.000	.051	.001	.177	.029	.214	.001	.198	.006	.059	.199	.491	.366
	Q5	.000	.000	.000	.000		.000	.000	.031	.000	.000	.002	.306	.000	.000	.087	.009	.000	.041	.034	.082	.000	.000	.000	.443	.085	.193	.000	.016	.012	.023	.130	.013	.026
	Q6	.000	.000	.000	.002	.000		.000	.000	.000	.000	.000	.147	.000	.000	.007	.000	.000	.000	.006	.401	.000	.003	.000	.140	.278	.054	.000	.000	.000	.000	.002	.024	.003
	Q7	.000	.000	.000	.000	.000	.000		.003	.000	.000	.001	.304	.000	.000	.050	.000	.000	.000	.023	.362	.000	.061	.000	.484	.064	.011	.000	.000	.000	.000	.062	.010	.020
	Q8	.497	.012	.080	.312	.031	.000	.003		.000	.000	.000	.219	.390	.000	.055	.000	.473	.002	.000	.054	.107	.088	.025	.003	.457	.226	.000	.000	.000	.000	.003	.004	.000
	Q9	.000	.000	.000	.008	.000	.000	.000	.000		.000	.000	.188	.000	.000	.109	.000	.009	.000	.016	.100	.000	.152	.000	.438	.003	.001	.000	.000	.000	.000	.000	.006	.009
	Q10	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.005	.000	.000	.000	.309	.434	.172	.000	.000	.000	.000	.000	.000	.000
	Q11	.000	.000	.010	.000	.002	.000	.001	.000	.000	.000		.008	.000	.000	.022	.000	.000	.078	.000	.001	.000	.000	.000	.307	.164	.088	.000	.000	.000	.000	.000	.001	.001
	Q12	.213	.438	.052	.084	.306	.147	.304	.219	.188	.000	.008		.000	.000	.000	.077	.034	.003	.478	.329	.271	.026	.369	.075	.098	.025	.001	.072	.487	.150	.016	.146	.139
	Q13	.002	.000	.005	.289	.000	.000	.000	.390	.000	.000	.000	.000		.000	.000	.133	.090	.000	.454	.244	.000	.020	.028	.219	.277	.026	.000	.000	.017	.017	.007	.011	.134
	Q14	.000	.000	.000	.130	.000	.000	.000	.000	.000	.000	.000	.000	.000		.049	.012	.115	.039	.016	.306	.000	.002	.000	.022	.052	.024	.004	.000	.028	.002	.039	.105	.354
	Q15	.008	.054	.468	.302	.087	.007	.050	.055	.109	.000	.022	.000	.000	.049		.337	.269	.004	.155	.018	.496	.403	.498	.041	.084	.003	.239	.428	.391	.427	.003	.336	.167
	Q16	.006	.000	.000	.002	.009	.000	.000	.000	.000	.000	.000	.077	.133	.012	.337		.000	.017	.000	.386	.000	.153	.000	.109	.299	.028	.000	.000	.000	.000	.013	.004	.000
	Q17	.000	.017	.001	.000	.000	.000	.000	.473	.009	.000	.000	.034	.090	.115	.269	.000		.036	.003	.029	.112	.007	.000	.416	.279	.002	.001	.038	.003	.008	.306	.076	.013
	Q18	.021	.013	.131	.203	.041	.000	.000	.002	.000	.000	.078	.003	.000	.039	.004	.017	.036		.340	.191	.003	.330	.196	.225	.000	.000	.000	.007	.015	.040	.001	.032	.001
	Q19	.020	.001	.071	.001	.034	.006	.023	.000	.016	.000	.000	.478	.454	.016	.155	.000	.003	.340		.000	.027	.000	.001	.000	.000	.003	.000	.000	.003	.040	.067	.057	.000
	Q20	.154	.381	.215	.079	.082	.401	.362	.054	.100	.005	.001	.329	.244	.306	.018	.386	.029	.191	.000		.364	.000	.061	.000	.343	.145	.000	.019	.380	.345	.337	.230	.000
	Q21	.000	.000	.000	.000	.000	.000	.000	.107	.000	.000	.000	.271	.000	.000	.496	.000	.112	.003	.027	.364		.003	.000	.067	.209	.115	.000	.000	.000	.001	.023	.005	.022
	Q22	.028	.011	.049	.051	.000	.003	.061	.088	.152	.000	.000	.026	.020	.002	.403	.153	.007	.330	.000	.000	.003		.000	.000	.041	.015	.000	.009	.128	.103	.006	.012	.000
	Q23	.000	.000	.003	.001	.000	.000	.000	.025	.000	.000	.000	.369	.028	.000	.498	.000	.000	.196	.001	.061	.000	.000		.195	.277	.051	.000	.000	.000	.000	.001	.043	.000
	Q24	.081	.325	.228	.177	.443	.140	.484	.003	.438	.309	.307	.075	.219	.022	.041	.109	.416	.225	.000	.000	.067	.000	.195		.273	.002	.430	.130	.392	.121	.323	.488	.048
	Q25	.095	.154	.249	.029	.085	.278	.064	.457	.003	.434	.164	.098	.277	.052	.084	.299	.279	.000	.000	.343	.209	.041	.277	.273		.000	.001	.000	.311	.115	.092	.065	.006
	Q26	.401	.180	.178	.214	.193	.054	.011	.226	.001	.172	.088	.025	.026	.024	.003	.028	.002	.000	.003	.145	.115	.015	.051	.002	.000		.000	.001	.002	.073	.001	.028	.015
	Q27	.010	.000	.013	.001	.000	.000	.000	.000	.000	.000	.000	.001	.000	.004	.239	.000	.001	.000	.000	.000	.000	.000	.000	.430	.001	.000		.000	.000	.000	.000	.000	.000

2: Correlation Matrix (ISSAAC)

	Q28	.251	.000	.002	.198	.016	.000	.000	.000	.000	.000	.000	.072	.000	.000	.428	.000	.038	.007	.000	.019	.000	.009	.000	.130	.000	.001	.000		.000	.000	.000	.000	.000
	Q29	.004	.000	.000	.006	.012	.000	.000	.000	.000	.000	.000	.487	.017	.028	.391	.000	.003	.015	.003	.380	.000	.128	.000	.392	.311	.002	.000	.000		.000	.000	.065	.000
	Q30	.035	.010	.000	.059	.023	.000	.000	.000	.000	.000	.000	.150	.017	.002	.427	.000	.008	.040	.040	.345	.001	.103	.000	.121	.115	.073	.000	.000	.000		.000	.000	.000
	Q31	.252	.022	.148	.199	.130	.002	.062	.003	.000	.000	.000	.016	.007	.039	.003	.013	.306	.001	.067	.337	.023	.006	.001	.323	.092	.001	.000	.000	.000	.000		.054	.009
	Q32	.259	.000	.191	.491	.013	.024	.010	.004	.006	.000	.001	.146	.011	.105	.336	.004	.076	.032	.057	.230	.005	.012	.043	.488	.065	.028	.000	.000	.065	.000	.054		.000
	Q33	.151	.001	.285	.366	.026	.003	.020	.000	.009	.000	.001	.139	.134	.354	.167	.000	.013	.001	.000	.000	.022	.000	.000	.048	.006	.015	.000	.000	.000	.000	.009	.000	

a Determinant = 1.95E-008

Table 3: Reproduced Correlations Matrix (ISSAAC)

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33
Reproduced	**Q1**	.665(b)	.515	.591	.531	.505	.516	.480	-.037	.339	.330	.268	-.043	.216	.314	.095	.274	.287	.105	-.167	-.038	.438	-.169	.303	-.041	-.126	.011	.202	.062	.148	.042	.017	.077	.030

Table 3: Reproduced Correlations Matrix (ISSAAC)

Correlation	**Q2**	.515	.484(b)	.492	.385	.459	.529	.475	.144	.433	.407	.316	.008	.267	.338	.084	.336	.256	.206	-.199	-.072	.425	-.201	.327	-.057	-.009	.091	.341	.261	.257	.215	.134	.178	.207
	Q3	.591	.492	.608(b)	.458	.469	.527	.501	.096	.389	.269	.212	-.113	.180	.347	.013	.310	.222	.086	-.118	.051	.460	-.089	.308	-.060	-.119	-.048	.165	.163	.247	.203	.051	.093	.055
	Q4	.531	.385	.458	.519(b)	.325	.338	.324	-.061	.162	.205	.268	-.094	.032	.109	.014	.304	.314	.003	-.208	-.086	.295	-.138	.271	-.041	-.145	.035	.153	.040	.184	.062	.007	.043	.039
	Q5	.505	.459	.469	.325	.481(b)	.514	.453	.103	.415	.407	.261	.052	.325	.410	.123	.223	.188	.194	-.170	-.065	.422	-.222	.273	-.063	-.045	.003	.278	.182	.147	.116	.092	.138	.124
	Q6	.516	.529	.527	.338	.514	.626(b)	.557	.229	.558	.504	.347	.077	.379	.453	.145	.374	.240	.283	-.159	.002	.484	-.180	.360	-.034	.032	.120	.409	.362	.341	.329	.217	.206	.215
	Q7	.480	.475	.501	.324	.453	.557	.510(b)	.181	.498	.389	.261	.015	.302	.371	.103	.331	.207	.241	-.085	.059	.435	-.093	.310	-.014	.039	.121	.323	.296	.300	.285	.166	.175	.173
	Q8	-.037	.144	.096	-.061	.103	.229	.181	.462(b)	.285	.242	.214	-.004	.108	.236	-.103	.281	.031	.123	-.238	-.130	.193	-.190	.209	-.145	.045	-.045	.289	.476	.352	.477	.234	.213	.360
	Q9	.339	.433	.389	.162	.415	.558	.498	.285	.585(b)	.447	.259	.089	.383	.387	.139	.323	.152	.363	-.042	.069	.403	-.084	.289	.009	.182	.232	.430	.419	.328	.362	.249	.254	.294
	Q10	.330	.407	.269	.205	.407	.504	.389	.242	.447	.679(b)	.522	.332	.455	.429	.279	.361	.275	.316	-.328	-.198	.341	-.375	.346	-.037	.038	.175	.555	.411	.344	.322	.333	.202	.250
	Q11	.268	.316	.212	.268	.261	.347	.261	.214	.259	.522	.518(b)	.208	.226	.231	.143	.411	.320	.166	-.406	-.267	.240	-.361	.338	-.072	-.038	.132	.469	.368	.380	.334	.283	.162	.255
	Q12	-.043	.008	-.113	-.094	.052	.077	.015	-.004	.089	.332	.208	.379(b)	.287	.157	.308	.018	.055	.158	-.029	-.009	-.021	-.105	.032	.094	.051	.145	.211	.081	.074	.052	.197	-.015	-.078
	Q13	.216	.267	.180	.032	.325	.379	.302	.108	.383	.455	.226	.287	.439(b)	.387	.285	.102	.077	.289	-.032	.023	.245	-.146	.152	.043	.091	.133	.315	.202	.119	.123	.199	.108	.059
	Q14	.314	.338	.347	.109	.410	.453	.371	.236	.387	.429	.231	.157	.387	.547(b)	.140	.144	.050	.144	-.172	-.036	.379	-.247	.222	-.098	-.116	-.185	.215	.241	.173	.225	.157	.083	.031
	Q15	.095	.084	.013	.014	.123	.145	.103	-.103	.139	.279	.143	.308	.285	.140	.318(b)	.012	.078	.176	.089	.108	.035	.008	.032	.147	.075	.206	.162	.000	.039	-.019	.137	-.030	-.137
	Q16	.274	.336	.310	.304	.223	.374	.331	.281	.323	.361	.411	.018	.102	.144	.012	.502(b)	.305	.153	-.265	-.091	.272	-.152	.355	-.043	.028	.192	.409	.437	.501	.482	.274	.193	.301
	Q17	.287	.256	.222	.314	.188	.240	.207	.031	.152	.275	.320	.055	.077	.050	.078	.305	.280(b)	.095	-.215	-.127	.166	-.158	.234	-.006	-.012	.174	.279	.165	.239	.154	.130	.094	.145
	Q18	.105	.206	.086	.003	.194	.283	.241	.123	.363	.316	.166	.158	.289	.144	.176	.153	.095	.343(b)	.027	.020	.151	-.040	.126	.073	.270	.349	.365	.259	.140	.145	.188	.204	.260
	Q19	-.167	-.199	-.118	-.208	-.170	-.159	-.085	-.238	-.042	-.328	-.406	-.029	-.032	-.172	.089	-.265	-.215	.027	.589(b)	.515	-.176	.535	-.261	.256	.189	.182	-.296	-.259	-.174	-.171	-.106	-.147	-.322
	Q20	-.038	-.072	.051	-.086	-.065	.002	.059	-.130	.069	-.198	-.267	-.009	.023	-.036	.108	-.091	-.127	.020	.515	.555(b)	-.045	.508	-.128	.240	.105	.136	-.223	-.124	.040	.045	-.003	-.144	-.344
	Q21	.438	.425	.460	.295	.422	.484	.435	.193	.403	.341	.240	-.021	.245	.379	.035	.272	.166	.151	-.176	-.045	.411(b)	-.184	.284	-.090	-.053	-.035	.252	.252	.229	.231	.110	.150	.164
	Q22	-.169	-.201	-.089	-.138	-.222	-.180	-.093	-.190	-.084	-.375	-.361	-.105	-.146	-.247	.008	-.152	-.158	-.040	.535	.508	-.184	.557(b)	-.210	.238	.148	.175	-.299	-.200	-.049	-.051	-.082	-.148	-.293
	Q23	.303	.327	.308	.271	.273	.360	.310	.209	.289	.346	.338	.032	.152	.222	.032	.355	.234	.126	-.261	-.128	.284	-.210	.294(b)	-.074	-.029	.066	.324	.311	.326	.309	.184	.153	.223
	Q24	-.041	-.057	-.060	-.041	-.063	-.034	-.014	-.145	.009	-.037	-.072	.094	.043	-.098	.147	-.043	-.006	.073	.256	.240	-.090	.238	-.074	.177(b)	.125	.224	-.027	-.084	-.001	-.042	.031	-.063	-.153
	Q25	-.126	-.009	-.119	-.145	-.045	.032	.039	.045	.182	.038	-.038	.051	.091	-.116	.075	.028	-.012	.270	.189	.105	-.053	.148	-.029	.125	.355(b)	.407	.203	.146	.033	.051	.098	.160	.235
	Q26	.011	.091	-.048	.035	.003	.120	.121	-.045	.232	.175	.132	.145	.133	-.185	.206	.192	.174	.349	.182	.136	-.035	.175	.066	.224	.407	.651(b)	.355	.178	.173	.101	.190	.169	.229
	Q27	.202	.341	.165	.153	.278	.409	.323	.289	.430	.555	.469	.211	.315	.215	.162	.409	.279	.365	-.296	-.223	.252	-.299	.324	-.027	.203	.355	.610(b)	.488	.370	.361	.330	.302	.462
	Q28	.062	.261	.163	.040	.182	.362	.296	.476	.419	.411	.368	.081	.202	.241	.000	.437	.165	.259	-.259	-.124	.252	-.200	.311	-.084	.146	.178	.488	.595(b)	.493	.578	.348	.287	.455
	Q29	.148	.257	.247	.184	.147	.341	.300	.352	.328	.344	.380	.074	.119	.173	.039	.501	.239	.140	-.174	.040	.229	-.049	.326	-.001	.033	.173	.370	.493	.593(b)	.615	.346	.150	.215
	Q30	.042	.215	.203	.062	.116	.329	.285	.477	.362	.322	.334	.052	.123	.225	-.019	.482	.154	.145	-.171	.045	.231	-.051	.309	-.042	.051	.101	.361	.578	.615	.703(b)	.369	.182	.274
	Q31	.017	.134	.051	.007	.092	.217	.166	.234	.249	.333	.283	.197	.199	.157	.137	.274	.130	.188	-.106	-.003	.110	-.082	.184	.031	.098	.190	.330	.348	.346	.369	.284(b)	.121	.164
	Q32	.077	.178	.093	.043	.138	.206	.175	.213	.254	.202	.162	-.015	.108	.083	-.030	.193	.094	.204	-.147	-.144	.150	-.148	.153	-.063	.160	.169	.302	.287	.150	.182	.121	.225(b)	.369
	Q33	.030	.207	.055	.039	.124	.215	.173	.360	.294	.250	.255	-.078	.059	.031	-.137	.301	.145	.260	-.322	-.344	.164	-.293	.223	-.153	.235	.229	.462	.455	.215	.274	.164	.369	.658(b)
Residual(a)	**Q1**		.076	.024	.138	-.006	-.037	-.044	.038	-.026	.003	.012	-.013	-.010	-.021	.076	-.097	-.041	.038	.022	-.035	-.013	.033	-.046	-.057	.034	.007	-.037	-.014	.038	.085	.031	-.031	.043

Table 3: Reproduced Correlations Matrix (ISSAAC)

Q2	.076		-.070	.078	.004	.035	-.114	.015	-.008	.032	.065	-.019	.013	-.063	.029	-.006	-.107	-.049	-.018	.093	.024	.040	.012	.025	-.063	-.026	.058	.031	-.017	-.053	.008	.093	.001
Q3	.024	-.070		.125	.002	-.011	.071	.003	-.011	.022	-.047	-.001	.002	.026	-.007	-.052	.006	-.006	.014	-.107	.013	-.028	-.113	.007	.071	-.017	-.008	.037	.059	.065	.023	-.031	-.015
Q4	.138	.078	.125		-.066	-.138	-.076	.026	.007	.034	.029	-.004	-.072	-.029	.023	-.107	-.054	.056	-.017	-.014	.045	.022	-.043	-.025	.011	.021	.068	.020	-.008	.048	.053	-.041	-.015
Q5	-.006	.004	.002	-.066		.016	.076	.028	.006	.008	-.059	-.016	.033	.013	-.027	-.057	.045	-.071	.041	-.033	-.064	-.071	.031	.053	-.052	.058	.020	-.030	.012	.025	-.013	.019	.013
Q6	-.037	.035	-.011	-.138	.016		.046	.008	.056	-.020	-.057	-.003	-.050	-.024	.029	.073	.088	.031	-.020	.016	.005	-.011	.002	-.042	.010	-.007	.003	.002	-.028	-.038	-.016	-.067	-.023
Q7	-.044	-.114	.071	-.076	.076	.046		.016	-.015	-.063	-.040	.022	-.048	.119	.013	.075	.053	.023	-.055	-.034	-.058	-.016	.070	.011	.069	.040	-.079	-.036	.010	-.005	-.057	-.012	-.027
Q8	.038	.015	.003	.026	.028	.008	.016		.031	.044	.026	.059	-.088	.027	-.009	.083	-.026	.082	-.006	.017	-.106	.094	-.071	-.044	-.053	-.008	.024	.071	-.051	-.013	-.038	-.027	.020
Q9	-.026	-.008	-.011	.007	.006	.056	-.015	.031		-.057	-.007	-.026	.007	-.002	-.053	.060	.014	.165	-.108	.021	-.042	.011	.001	-.020	.010	-.009	.020	.021	-.036	-.037	-.005	-.076	-.128
Q10	.003	.032	.022	.034	.008	-.020	-.063	.044	-.057		.101	-.052	.023	-.025	.106	-.008	-.043	-.051	-.017	.015	.018	.069	-.049	.073	-.050	-.108	-.010	-.010	-.004	.007	-.015	.113	.089
Q11	.012	.065	-.047	.029	-.059	-.057	-.040	.026	-.007	.101		-.040	.044	.013	-.001	-.016	.006	-.065	-.050	.046	.028	.087	-.036	.036	-.031	-.036	.098	.066	-.028	-.047	-.033	.063	-.045
Q12	-.013	-.019	-.001	-.004	-.016	-.003	.022	.059	-.026	-.052	-.040		.002	.091	.005	.083	.074	.032	.025	-.023	-.022	-.032	-.009	.007	.040	-.006	.001	.022	-.072	.022	-.045	-.059	.001
Q13	-.010	.013	.002	-.072	.033	-.050	-.048	-.088	.007	.023	.044	.002		-.008	-.009	-.023	.017	-.034	.040	.026	.067	.000	-.018	.011	-.049	.004	.002	.049	.030	.026	-.025	.054	.020
Q14	-.021	-.063	.026	-.029	.013	-.024	.119	.027	-.002	-.025	.013	.091	-.008		-.023	.015	.035	-.020	.022	.000	-.026	.050	.037	-.044	.001	.046	-.027	-.003	-.039	-.026	-.032	.006	-.004
Q15	.076	.029	-.007	.023	-.027	.029	.013	-.009	-.053	.106	-.001	.005	-.009	-.023		.017	-.034	.008	-.017	.039	-.035	.009	-.032	-.024	.023	-.011	-.112	-.012	-.020	.006	.055	1.78E-005	.069
Q16	-.097	-.006	-.052	-.107	-.057	.073	.075	.083	.060	-.008	-.016	.083	-.023	.015	.017		.228	-.003	-.003	.070	-.001	.079	.030	-.045	.010	-.057	-.082	.019	-.088	-.031	-.118	-.008	.020
Q17	-.041	-.107	.006	-.054	.045	.088	.053	-.026	.014	-.043	.006	.074	.017	.035	-.034	.228		.032	.025	-.006	-.080	-.016	.011	-.009	-.029	.025	-.063	-.039	-.048	.014	-.094	.007	.013
Q18	.038	-.049	-.006	.056	-.071	.031	.023	.082	.165	-.051	-.065	.032	-.034	-.020	.008	-.003	.032		-.056	-.082	.042	.009	-.066	-.020	.060	-.011	.031	-.086	.012	-.021	.040	-.073	-.034
Q19	.022	-.018	.014	-.017	.041	-.020	-.055	-.006	-.108	-.017	-.050	.025	.040	.022	-.017	-.003	.025	-.056		.063	.041	-.030	.044	.000	.056	.008	.034	-.019	-.022	.048	.000	.036	-.012
Q20	-.035	.093	-.107	-.014	-.033	.016	-.034	.017	.021	.015	.046	-.023	.026	.000	.039	.070	-.006	-.082	.063		.021	.028	.018	.067	-.077	-.062	-.023	-.023	-.062	-.017	-.027	.092	.053
Q21	-.013	.024	.013	.045	-.064	.005	-.058	-.106	-.042	.018	.028	-.022	.067	-.026	-.035	-.001	-.080	.042	.041	.021		-.007	.078	-.016	-.005	-.050	.021	-.005	.029	-.006	.031	.031	-.023
Q22	.033	.040	-.028	.022	-.071	-.011	-.016	.094	.011	.069	.087	-.032	.000	.050	.009	.079	-.016	.009	-.030	.028	-.007		-.084	.074	-.026	-.023	-.017	.035	-.031	-.038	-.093	-.011	.051
Q23	-.046	.012	-.113	-.043	.031	.002	.070	-.071	.001	-.049	-.036	-.009	-.018	.037	-.032	.030	.011	-.066	.044	.018	.078	-.084		.013	-.013	.050	.050	.042	.019	-.066	.033	-.032	.023
Q24	-.057	.025	.007	-.025	.053	-.042	.011	-.044	-.020	.073	.036	.007	.011	-.044	-.024	-.045	-.009	-.020	.000	.067	-.016	.074	.013		-.082	-.019	.040	.004	.020	-.041	.002	.065	.035
Q25	.034	-.063	.071	.011	-.052	.010	.069	-.053	.010	-.050	-.031	.040	-.049	.001	.023	.010	-.029	.060	.056	-.077	-.005	-.026	-.013	-.082		.091	.008	.091	.002	.034	-.004	-.053	-.058
Q26	.007	-.026	-.017	.021	.058	-.007	.040	-.008	-.009	-.108	-.036	-.006	.004	.046	-.011	-.057	.025	-.011	.008	-.062	-.050	-.023	.050	-.019	.091		.013	.031	.030	.001	.038	-.035	-.077
Q27	-.037	.058	-.008	.068	.020	.003	-.079	.024	.020	-.010	.098	.001	.002	-.027	-.112	-.082	-.063	.031	.034	-.023	.021	-.017	.050	.040	.008	.013		.050	.016	-.113	.055	-.008	-.114
Q28	-.014	.031	.037	.020	-.030	.002	-.036	.071	.021	-.010	.066	.022	.049	-.003	-.012	.019	-.039	-.086	-.019	-.023	-.005	.035	.042	.004	.091	.031	.050		-.041	-.008	-.071	-.020	-.076
Q29	.038	-.017	.059	-.008	.012	-.028	.010	-.051	-.036	-.004	-.028	-.072	.030	-.039	-.020	-.088	-.048	.012	-.022	-.062	.029	-.031	.019	.020	.002	.030	.016	-.041		.051	.133	-.043	.026
Q30	.085	-.053	.065	.048	.025	-.038	-.005	-.013	-.037	.007	-.047	.022	.026	-.026	.006	-.031	.014	-.021	.048	-.017	-.006	-.038	-.066	-.041	.034	.001	-.113	-.008	.051		.114	.052	.013
Q31	.031	.008	.023	.053	-.013	-.016	-.057	-.038	-.005	-.015	-.033	-.045	-.025	-.032	.055	-.118	-.094	.040	.000	-.027	.031	-.093	.033	.002	-.004	.038	.055	-.071	.133	.114		-.007	.001
Q32	-.031	.093	-.031	-.041	.019	-.067	-.012	-.027	-.076	.113	.063	-.059	.054	.006	1.78E-005	-.008	.007	-.073	.036	.092	.031	-.011	-.032	.065	-.053	-.035	-.008	-.020	-.043	.052	-.007		.219
Q33	.043	.001	-.015	-.015	.013	-.023	-.027	.020	-.128	.089	-.045	.001	.020	-.004	.069	.020	.013	-.034	-.012	.053	-.023	.051	.023	.035	-.058	-.077	-.114	-.076	.026	.013	.001	.219	

Table 3: Reproduced Correlations Matrix (ISSAAC)

Extraction Method: Alpha Factoring.
a Residuals are computed between observed and reproduced correlations. There are 151 (28.0%) nonredundant residuals with absolute values greater than 0.05.
b Reproduced communalities

Table 4: Anti-image Matrices (UTAUT – OLS Data Set)

Table 4: Anti-image Matrices (UTAUT – OLS Data Set)

		U6a	RA1a	RA5a	OE7a	EOU3a	EOU5a	EOU6a	EU4a	SN1a	SN2a	SF2a	SF4a	PBC2a	PBC3a	PBC5a	FC3a	B11a	B12a	B13a
Anti-image Covariance	**U6a**	.307	-.040	-.084	-.002	.002	-.007	.002	.000	-.005	.002	.057	-.121	-.051	.003	.043	-.107	-.021	.010	.009
	RA1a	-.040	.143	-.098	-.086	.042	.043	-.012	-.007	.003	-.002	.004	-.056	-.039	.021	.098	-.058	-.006	.003	.008
	RA5a	-.084	-.098	.214	.011	-.053	-.005	.007	-.002	.003	-.002	-.016	.051	.044	-.003	-.124	.062	.007	-.005	-.004
	OE7a	-.002	-.086	.011	.151	-.042	-.062	.013	.012	-.002	.002	.035	.017	.046	-.057	-.068	.063	.002	.001	-.015
	EOU3a	.002	.042	-.053	-.042	.202	.001	-.019	.003	.002	-.001	-.065	-.003	-.009	.130	-.027	-.017	.001	-.006	.008
	EOU5a	-.007	.043	-.005	-.062	.001	.051	-.009	-.009	.001	-.001	-.006	-.007	-.024	-.003	.042	-.029	-.002	.001	.004
	EOU6a	.002	-.012	.007	.013	-.019	-.009	.020	-.016	-.001	.001	.002	-.004	-.015	.019	-.025	-.002	-.001	.001	-.001
	EU4a	.000	-.007	-.002	.012	.003	-.009	-.016	.021	3.49E-005	-.001	.000	.011	.027	-.035	.013	.014	.002	-.001	-.002
	SN1a	-.005	.003	.003	-.002	.002	.001	-.001	3.49E-005	.023	-.022	-.001	.001	.001	.005	-.028	-.004	.001	-.001	.000
	SN2a	.002	-.002	-.002	.002	-.001	-.001	.001	-.001	-.022	.023	-.005	-.003	-.003	-.001	.027	.005	-.001	.000	.001
	SF2a	.057	.004	-.016	.035	-.065	-.006	.002	.000	-.001	-.005	.726	-.152	-.025	-.092	.082	-.076	-.003	.015	-.025
	SF4a	-.121	-.056	.051	.017	-.003	-.007	-.004	.011	.001	-.003	-.152	.731	.081	.004	-.036	.139	.035	-.017	-.021
	PBC2a	-.051	-.039	.044	.046	-.009	-.024	-.015	.027	.001	-.003	-.025	.081	.842	-.048	-.146	.214	.022	-.013	-.015
	PBC3a	.003	.021	-.003	-.057	.130	-.003	.019	-.035	.005	-.001	-.092	.004	-.048	.463	-.163	-.045	-.009	.002	.011
	PBC5a	.043	.098	-.124	-.068	-.027	.042	-.025	.013	-.028	.027	.082	-.036	-.146	-.163	.514	-.115	-.015	.016	.007
	FC3a	-.107	-.058	.062	.063	-.017	-.029	-.002	.014	-.004	.005	-.076	.139	.214	-.045	-.115	.764	.050	-.041	-.013
	B11a	-.021	-.006	.007	.002	.001	-.002	-.001	.002	.001	-.001	-.003	.035	.022	-.009	-.015	.050	.029	-.019	-.013
	B12a	.010	.003	-.005	.001	-.006	.001	.001	-.001	-.001	.000	.015	-.017	-.013	.002	.016	-.041	-.019	.029	-.015
	B13a	.009	.008	-.004	-.015	.008	.004	-.001	-.002	.000	.001	-.025	-.021	-.015	.011	.007	-.013	-.013	-.015	.040
Anti-image Correlation	**U6a**	.875(a)	-.192	-.326	-.010	.006	-.055	.024	.004	-.057	.026	.120	-.256	-.101	.008	.109	-.222	-.225	.104	.085
	RA1a	-.192	.677(a)	-.561	-.588	.247	.496	-.223	-.125	.044	-.038	.013	-.172	-.111	.082	.359	-.174	-.100	.053	.109
	RA5a	-.326	-.561	.782(a)	.063	-.253	-.047	.114	-.026	.038	-.022	-.041	.129	.104	-.011	-.374	.154	.092	-.061	-.038
	OE7a	-.010	-.588	.063	.733(a)	-.243	-.706	.240	.214	-.035	.027	.105	.052	.130	-.215	-.245	.186	.038	.012	-.196
	EOU3a	.006	.247	-.253	-.243	.861(a)	.007	-.306	.042	.029	-.010	-.169	-.007	-.022	.424	-.085	-.042	.019	-.074	.089
	EOU5a	-.055	.496	-.047	-.706	.007	.793(a)	-.272	-.288	.038	-.024	-.030	-.035	-.114	-.018	.260	-.145	-.042	.026	.093
	EOU6a	.024	-.223	.114	.240	-.306	-.272	.792(a)	-.791	-.035	.041	.019	-.034	-.117	.201	-.247	-.020	-.057	.032	-.022
	EU4a	.004	-.125	-.026	.214	.042	-.288	-.791	.798(a)	.002	-.025	.003	.089	.202	-.357	.131	.114	.082	-.032	-.071
	SN1a	-.057	.044	.038	-.035	.029	.038	-.035	.002	.532(a)	-.985	-.010	.009	.008	.047	-.261	-.030	.026	-.027	.007

Table 4: Anti-image Matrices (UTAUT – OLS Data Set)

SN2a	.026	-.038	-.022	.027	-.010	-.024	.041	-.025	-.985	.538(a)	-.037	-.024	-.018	-.011	.247	.035	-.045	.019	.027
SF2a	.120	.013	-.041	.105	-.169	-.030	.019	.003	-.010	-.037	.789(a)	-.209	-.032	-.158	.134	-.102	-.018	.100	-.144
SF4a	-.256	-.172	.129	.052	-.007	-.035	-.034	.089	.009	-.024	-.209	.558(a)	.104	.006	-.058	.186	.238	-.115	-.125
PBC2a	-.101	-.111	.104	.130	-.022	-.114	-.117	.202	.008	-.018	-.032	.104	.234(a)	-.077	-.221	.267	.139	-.083	-.082
PBC3a	.008	.082	-.011	-.215	.424	-.018	.201	-.357	.047	-.011	-.158	.006	-.077	.646(a)	-.335	-.076	-.079	.015	.080
PBC5a	.109	.359	-.374	-.245	-.085	.260	-.247	.131	-.261	.247	.134	-.058	-.221	-.335	.259(a)	-.183	-.126	.126	.052
FC3a	-.222	-.174	.154	.186	-.042	-.145	-.020	.114	-.030	.035	-.102	.186	.267	-.076	-.183	.120(a)	.340	-.271	-.073
B11a	-.225	-.100	.092	.038	.019	-.042	-.057	.082	.026	-.045	-.018	.238	.139	-.079	-.126	.340	.825(a)	-.642	-.380
B12a	.104	.053	-.061	.012	-.074	.026	.032	-.032	-.027	.019	.100	-.115	-.083	.015	.126	-.271	-.642	.840(a)	-.427
B13a	.085	.109	-.038	-.196	.089	.093	-.022	-.071	.007	.027	-.144	-.125	-.082	.080	.052	-.073	-.380	-.427	.894(a)

a Measures of Sampling Adequacy(MSA)

Table 5: Anti-image Matrices (OBT Data Set)

		U6b	RA1b	RA5b	OE7b	EOU3b	EOU5b	EOU6b	EU4b	SN1b	SN2b	SF2b	SF4b	PBC2b	PBC3b	PBC5b	FC3b	B11b	B12b	B13b
Anti-image Covariance	**U6b**	.265	-.052	-.053	.029	-.020	-.021	.003	.008	-.005	.002	.042	-.096	-.022	-.035	.023	-.064	-.016	-.001	.001
	RA1b	-.052	.090	-.075	-.072	.039	.035	-.007	-.013	.006	-.005	.002	-.033	-.020	.060	.028	-.033	-.005	-.001	.005
	RA5b	-.053	-.075	.167	.017	-.032	-.009	.001	.007	-.003	.004	-.009	.050	.023	-.038	-.050	.038	.007	-.001	-.002
	OE7b	.029	-.072	.017	.143	-.055	-.058	.015	.015	-.005	.004	.034	-.002	.034	-.081	-.032	.052	.003	.004	-.014
	EOU3b	-.020	.039	-.032	-.055	.173	.004	-.019	-.004	.004	-.002	-.054	-.009	-.008	.141	-.078	-.016	-.001	-.007	.010
	EOU5b	-.021	.035	-.009	-.058	.004	.055	-.010	-.012	.003	-.002	-.007	.005	-.018	.007	.033	-.023	-.001	.000	.003
	EOU6b	.003	-.007	.001	.015	-.019	-.010	.024	-.018	-.002	.002	.005	-.004	-.018	.010	-.016	-.004	-.002	.001	-.002
	EU4b	.008	-.013	.007	.015	-.004	-.012	-.018	.024	.000	.000	-.002	.008	.028	-.036	.014	.015	.003	.000	-.001
	SN1b	-.005	.006	-.003	-.005	.004	.003	-.002	.000	.026	-.025	.002	-.002	7.61E-005	.007	-.031	-.009	.000	.000	.001
	SN2b	.002	-.005	.004	.004	-.002	-.002	.002	.000	-.025	.026	-.009	.000	-.001	-.004	.029	.011	-.001	.000	.001
	SF2b	.042	.002	-.009	.034	-.054	-.007	.005	-.002	.002	-.009	.728	-.155	-.023	-.045	.067	-.082	.005	.018	-.030
	SF4b	-.096	-.033	.050	-.002	-.009	.005	-.004	.008	-.002	.000	-.155	.753	.051	-.015	.024	.098	.039	.001	-.011
	PBC2b	-.022	-.020	.023	.034	-.008	-.018	-.018	.028	7.61E-005	-.001	-.023	.051	.865	-.043	-.137	.198	.021	-.003	-.007
	PBC3b	-.035	.060	-.038	-.081	.141	.007	.010	-.036	.007	-.004	-.045	-.015	-.043	.350	-.177	-.048	-.013	-.003	.009
	PBC5b	.023	.028	-.050	-.032	-.078	.033	-.016	.014	-.031	.029	.067	.024	-.137	-.177	.605	-.066	-.009	.012	-.001
	FC3b	-.064	-.033	.038	.052	-.016	-.023	-.004	.015	-.009	.011	-.082	.098	.198	-.048	-.066	.863	.046	-.023	.009
	B11b	-.016	-.005	.007	.003	-.001	-.001	-.002	.003	.000	-.001	.005	.039	.021	-.013	-.009	.046	.121	-.026	-.015
	B12b	-.001	-.001	-.001	.004	-.007	.000	.001	.000	.000	.000	.018	.001	-.003	-.003	.012	-.023	-.026	.044	-.036
	B13b	.001	.005	-.002	-.014	.010	.003	-.002	-.001	.001	.001	-.030	-.011	-.007	.009	-.001	.009	-.015	-.036	.046
Anti-image Correlation	**U6b**	.886(a)	-.333	-.250	.151	-.095	-.172	.035	.106	-.059	.021	.095	-.215	-.047	-.114	.058	-.134	-.088	-.013	.009
	RA1b	-.333	.667(a)	-.607	-.637	.314	.495	-.147	-.271	.125	-.114	.007	-.126	-.071	.339	.120	-.117	-.048	-.009	.079
	RA5b	-.250	-.607	.829(a)	.108	-.189	-.095	.019	.104	-.052	.065	-.024	.140	.060	-.157	-.156	.101	.049	-.006	-.021
	OE7b	.151	-.637	.108	.716(a)	-.351	-.652	.255	.249	-.076	.066	.105	-.007	.096	-.361	-.108	.148	.023	.045	-.179
	EOU3b	-.095	.314	-.189	-.351	.799(a)	.036	-.291	-.063	.058	-.036	-.152	-.026	-.021	.575	-.242	-.042	-.008	-.085	.112
	EOU5b	-.172	.495	-.095	-.652	.036	.803(a)	-.287	-.321	.073	-.058	-.034	.025	-.081	.048	.179	-.104	-.012	.002	.066
	EOU6b	.035	-.147	.019	.255	-.291	-.287	.822(a)	-.739	-.063	.063	.037	-.031	-.124	.114	-.134	-.025	-.035	.019	-.051
	EU4b	.106	-.271	.104	.249	-.063	-.321	-.739	.792(a)	-.007	-.014	-.016	.063	.193	-.394	.118	.102	.053	.004	-.043
	SN1b	-.059	.125	-.052	-.076	.058	.073	-.063	-.007	.525(a)	-.984	.016	-.014	.001	.072	-.250	-.061	.007	-.012	.016

Table 5: Anti-image Matrices (OBT Data Set)

SN2b	.021	-.114	.065	.066	-.036	-.058	.063	-.014	-.984	.532(a)	-.064	-.001	-.010	-.040	.234	.071	-.025	-.008	.018
SF2b	.095	.007	-.024	.105	-.152	-.034	.037	-.016	.016	-.064	.813(a)	-.209	-.029	-.089	.101	-.104	.018	.102	-.164
SF4b	-.215	-.126	.140	-.007	-.026	.025	-.031	.063	-.014	-.001	-.209	.707(a)	.064	-.029	.036	.122	.130	.003	-.057
PBC2b	-.047	-.071	.060	.096	-.021	-.081	-.124	.193	.001	-.010	-.029	.064	.332(a)	-.078	-.189	.229	.065	-.015	-.036
PBC3b	-.114	.339	-.157	-.361	.575	.048	.114	-.394	.072	-.040	-.089	-.029	-.078	.544(a)	-.385	-.088	-.062	-.027	.068
PBC5b	.058	.120	-.156	-.108	-.242	.179	-.134	.118	-.250	.234	.101	.036	-.189	-.385	.352(a)	-.091	-.032	.071	-.009
FC3b	-.134	-.117	.101	.148	-.042	-.104	-.025	.102	-.061	.071	-.104	.122	.229	-.088	-.091	.238(a)	.142	-.117	.043
B11b	-.088	-.048	.049	.023	-.008	-.012	-.035	.053	.007	-.025	.018	.130	.065	-.062	-.032	.142	.940(a)	-.351	-.207
B12b	-.013	-.009	-.006	.045	-.085	.002	.019	.004	-.012	-.008	.102	.003	-.015	-.027	.071	-.117	-.351	.826(a)	-.798
B13b	.009	.079	-.021	-.179	.112	.066	-.051	-.043	.016	.018	-.164	-.057	-.036	.068	-.009	.043	-.207	-.798	.832(a)

a Measures of Sampling Adequacy(MSA)

Table 6: Anti-image Matrices

		U6c	RA1c	RA5c	OE7c	EOU3c	EOU5c	EOU6c	EU4c	SN1c	SN2c	SF2c	SF4c	PBC2c	PBC3c	PBC5c	FC3c	B11c	B12c	B13c
Anti-image Covariance	**U6c**	.327	-.010	-.054	-.046	.045	.020	-.009	-.004	-.001	3.78E-005	.005	-.054	.007	.030	-.059	-.068	-.017	.012	-.003
	RA1c	-.010	.100	-.093	-.074	.034	.057	-.024	-.008	.003	-.003	.026	-.016	.034	.053	.003	.020	-.002	.002	.001
	RA5c	-.054	-.093	.154	.051	-.062	-.053	.023	.009	-.001	.001	-.016	.027	-.039	-.077	.015	-.032	.001	-4.72E-005	-.004
	OE7c	-.046	-.074	.051	.142	-.055	-.070	.019	.019	-.002	.002	.018	-.017	-.027	-.059	.025	.011	-.002	.002	-.013
	EOU3c	.045	.034	-.062	-.055	.272	.024	-.024	-.011	.001	.000	-.093	.004	.051	.138	-.160	.057	.008	-.007	-.008
	EOU5c	.020	.057	-.053	-.070	.024	.060	-.020	-.011	.002	-.001	.010	.010	.018	.014	.009	-.030	.000	.000	.004
	EOU6c	-.009	-.024	.023	.019	-.024	-.020	.034	-.027	-.004	.004	-.018	.003	-.026	.021	-.019	.004	.000	.000	.000
	EU4c	-.004	-.008	.009	.019	-.011	-.011	-.027	.042	.005	-.005	.013	.003	.017	-.057	.038	.004	.000	.000	-.004
	SN1c	-.001	.003	-.001	-.002	.001	.002	-.004	.005	.010	-.010	.007	.001	-.005	-.005	.003	.005	-3.79E-005	8.63E-006	-.001
	SN2c	3.78E-005	-.003	.001	.002	.000	-.001	.004	-.005	-.010	.010	-.009	-.002	.004	.007	-.003	-.004	.000	6.93E-005	.001
	SF2c	.005	.026	-.016	.018	-.093	.010	-.018	.013	.007	-.009	.730	-.230	.002	-.091	.083	-.004	-.005	.000	.012
	SF4c	-.054	-.016	.027	-.017	.004	.010	.003	.003	.001	-.002	-.230	.795	.025	-.033	.027	-.064	.020	-.012	-.028
	PBC2c	.007	.034	-.039	-.027	.051	.018	-.026	.017	-.005	.004	.002	.025	.875	.019	-.173	.017	.010	-.008	-.005
	PBC3c	.030	.053	-.077	-.059	.138	.014	.021	-.057	-.005	.007	-.091	-.033	.019	.477	-.252	.067	-.004	.005	-.002
	PBC5c	-.059	.003	.015	.025	-.160	.009	-.019	.038	.003	-.003	.083	.027	-.173	-.252	.592	.005	-.015	.014	-.003
	FC3c	-.068	.020	-.032	.011	.057	-.030	.004	.004	.005	-.004	-.004	-.064	.017	.067	.005	.821	.016	-.013	-.021
	B11c	-.017	-.002	.001	-.002	.008	.000	.000	.000	-3.79E-005	.000	-.005	.020	.010	-.004	-.015	.016	.030	-.025	-.008
	B12c	.012	.002	-4.72E-005	.002	-.007	.000	.000	.000	8.63E-006	6.93E-005	.000	-.012	-.008	.005	.014	-.013	-.025	.029	-.017
	B13c	-.003	.001	-.004	-.013	-.008	.004	.000	-.004	-.001	.001	.012	-.028	-.005	-.002	-.003	-.021	-.008	-.017	.098
Anti-image Correlation	**U6c**	.930(a)	-.056	-.243	-.213	.151	.139	-.082	-.034	-.014	.001	.010	-.107	.013	.076	-.134	-.131	-.172	.122	-.016
	RA1c	-.056	.657(a)	-.751	-.622	.207	.731	-.405	-.130	.088	-.081	.096	-.057	.115	.244	.013	.069	-.037	.036	.014
	RA5c	-.243	-.751	.727(a)	.347	-.303	-.551	.314	.117	-.030	.031	-.048	.078	-.107	-.283	.051	-.090	.009	-.001	-.031
	OE7c	-.213	-.622	.347	.735(a)	-.279	-.758	.271	.251	-.055	.050	.056	-.050	-.077	-.228	.086	.033	-.031	.029	-.107
	EOU3c	.151	.207	-.303	-.279	.823(a)	.188	-.250	-.099	.011	-.003	-.208	.009	.104	.383	-.398	.120	.087	-.083	-.047
	EOU5c	.139	.731	-.551	-.758	.188	.687(a)	-.451	-.213	.069	-.060	.045	.044	.076	.083	.050	-.136	-.011	.009	.056
	EOU6c	-.082	-.405	.314	.271	-.250	-.451	.760(a)	-.713	-.239	.240	-.115	.015	-.152	.167	-.135	.023	.008	-.008	.004
	EU4c	-.034	-.130	.117	.251	-.099	-.213	-.713	.799(a)	.222	-.235	.077	.019	.088	-.402	.241	.020	-.010	.012	-.065
	SN1c	-.014	.088	-.030	-.055	.011	.069	-.239	.222	.503(a)	-.994	.083	.009	-.051	-.074	.042	.049	-.002	.000	-.021
	SN2c	.001	-.081	.031	.050	-.003	-.060	.240	-.235	-.994	.502(a)	-.099	-.022	.042	.095	-.043	-.049	-.010	.004	.034

Table 6: Anti-image Matrices

SF2c	.010	.096	-.048	.056	-.208	.045	-.115	.077	.083	-.099	.706(a)	-.302	.002	-.154	.127	-.005	-.035	-.001	.046
SF4c	-.107	-.057	.078	-.050	.009	.044	.015	.019	.009	-.022	-.302	.624(a)	.030	-.054	.039	-.079	.130	-.082	-.102
PBC2c	.013	.115	-.107	-.077	.104	.076	-.152	.088	-.051	.042	.002	.030	.390(a)	.029	-.241	.021	.065	-.048	-.019
PBC3c	.076	.244	-.283	-.228	.383	.083	.167	-.402	-.074	.095	-.154	-.054	.029	.533(a)	-.474	.107	-.036	.040	-.009
PBC5c	-.134	.013	.051	.086	-.398	.050	-.135	.241	.042	-.043	.127	.039	-.241	-.474	.394(a)	.008	-.113	.110	-.011
FC3c	-.131	.069	-.090	.033	.120	-.136	.023	.020	.049	-.049	-.005	-.079	.021	.107	.008	.779(a)	.102	-.081	-.075
B11c	-.172	-.037	.009	-.031	.087	-.011	.008	-.010	-.002	-.010	-.035	.130	.065	-.036	-.113	.102	.838(a)	-.861	-.154
B12c	.122	.036	-.001	.029	-.083	.009	-.008	.012	.000	.004	-.001	-.082	-.048	.040	.110	-.081	-.861	.826(a)	-.312
B13c	-.016	.014	-.031	-.107	-.047	.056	.004	-.065	-.021	.034	.046	-.102	-.019	-.009	-.011	-.075	-.154	-.312	.964(a)

a Measures of Sampling Adequacy(MSA)

Table 7: Correlation Matrix (UTAUT – OLS Data Set)

		U6a	**RA1a**	**RA5a**	**OE7a**	**EOU3a**	**EOU5a**	**EOU6a**	**EU4a**	**SN1a**	**SN2a**	**SF2a**	**SF4a**	**PBC2a**	**PBC3a**	**PBC5a**	**FC3a**	**B11a**	**B12a**	**B13a**
Correlation	**U6a**	1.000	.761	.734	.591	.282	.257	.267	.260	.185	.187	.032	.328	.018	.123	.047	.085	.487	.455	.446
	RA1a	.761	1.000	.823	.686	.270	.240	.284	.279	.081	.092	.019	.297	-.016	.146	.010	.031	.464	.437	.437
	RA5a	.734	.823	1.000	.637	.354	.248	.273	.263	.038	.036	.007	.205	.008	.165	.241	.013	.418	.392	.393
	OE7a	.591	.686	.637	1.000	.443	.533	.403	.401	.007	.005	.048	.133	.007	.358	.167	-.032	.629	.605	.624
	EOU3a	.282	.270	.354	.443	1.000	.794	.830	.795	.094	.089	.291	-.020	.018	.130	.147	.050	.450	.451	.455
	EOU5a	.257	.240	.248	.533	.794	1.000	.933	.935	.087	.086	.287	-.070	.002	.423	.077	.048	.512	.504	.520
	EOU6a	.267	.284	.273	.403	.830	.933	1.000	.985	.139	.135	.309	-.053	.008	.363	.101	.050	.506	.498	.510
	EU4a	.260	.279	.263	.401	.795	.935	.985	1.000	.141	.140	.312	-.062	-.023	.415	.072	.045	.501	.493	.506
	SN1a	.185	.081	.038	.007	.094	.087	.139	.141	1.000	.987	.265	.166	.050	-.082	.000	-.031	.099	.087	.057
	SN2a	.187	.092	.036	.005	.089	.086	.135	.140	.987	1.000	.273	.174	.041	-.092	-.052	-.042	.105	.092	.063
	SF2a	.032	.019	.007	.048	.291	.287	.309	.312	.265	.273	1.000	.166	.001	.118	-.090	.061	.205	.209	.231
	SF4a	.328	.297	.205	.133	-.020	-.070	-.053	-.062	.166	.174	.166	1.000	-.031	-.085	-.074	-.055	.052	.068	.075
	PBC2a	.018	-.016	.008	.007	.018	.002	.008	-.023	.050	.041	.001	-.031	1.000	.052	.214	-.180	.015	.016	.021
	PBC3a	.123	.146	.165	.358	.130	.423	.363	.415	-.082	-.092	.118	-.085	.052	1.000	.324	.053	.263	.241	.257
	PBC5a	.047	.010	.241	.167	.147	.077	.101	.072	.000	-.052	-.090	-.074	.214	.324	1.000	.075	-.001	-.025	-.016
	FC3a	.085	.031	.013	-.032	.050	.048	.050	.045	-.031	-.042	.061	-.055	-.180	.053	.075	1.000	-.053	.002	-.017
	B11a	.487	.464	.418	.629	.450	.512	.506	.501	.099	.105	.205	.052	.015	.263	-.001	-.053	1.000	.978	.970
	B12a	.455	.437	.392	.605	.451	.504	.498	.493	.087	.092	.209	.068	.016	.241	-.025	.002	.978	1.000	.973
	B13a	.446	.437	.393	.624	.455	.520	.510	.506	.057	.063	.231	.075	.021	.257	-.016	-.017	.970	.973	1.000
Sig. (1-tailed)	**U6a**		.000	.000	.000	.000	.000	.000	.000	.000	.000	.266	.000	.365	.008	.181	.049	.000	.000	.000
	RA1a	.000		.000	.000	.000	.000	.000	.000	.056	.037	.354	.000	.381	.002	.420	.276	.000	.000	.000
	RA5a	.000	.000		.000	.000	.000	.000	.000	.231	.241	.443	.000	.441	.001	.000	.399	.000	.000	.000
	OE7a	.000	.000	.000		.000	.000	.000	.000	.449	.458	.173	.005	.445	.000	.001	.264	.000	.000	.000
	EOU3a	.000	.000	.000	.000		.000	.000	.000	.033	.042	.000	.348	.362	.006	.002	.167	.000	.000	.000
	EOU5a	.000	.000	.000	.000	.000		.000	.000	.044	.047	.000	.086	.485	.000	.067	.175	.000	.000	.000
	EOU6a	.000	.000	.000	.000	.000	.000		.000	.003	.004	.000	.152	.436	.000	.024	.164	.000	.000	.000
	EU4a	.000	.000	.000	.000	.000	.000	.000		.003	.003	.000	.113	.330	.000	.081	.192	.000	.000	.000

Table 7: Correlation Matrix (UTAUT – OLS Data Set)

SN1a	.000	.056	.231	.449	.033	.044	.003	.003		.000	.000	.001	.163	.056	.497	.275	.026	.046	.131
SN2a	.000	.037	.241	.458	.042	.047	.004	.003	.000		.000	.000	.211	.036	.154	.207	.020	.036	.111
SF2a	.266	.354	.443	.173	.000	.000	.000	.000	.000	.000		.001	.492	.011	.039	.116	.000	.000	.000
SF4a	.000	.000	.000	.005	.348	.086	.152	.113	.001	.000	.001		.271	.048	.074	.141	.154	.092	.073
PBC2a	.365	.381	.441	.445	.362	.485	.436	.330	.163	.211	.492	.271		.158	.000	.000	.383	.379	.343
PBC3a	.008	.002	.001	.000	.006	.000	.000	.000	.056	.036	.011	.048	.158		.000	.153	.000	.000	.000
PBC5a	.181	.420	.000	.001	.002	.067	.024	.081	.497	.154	.039	.074	.000	.000		.071	.493	.311	.374
FC3a	.049	.276	.399	.264	.167	.175	.164	.192	.275	.207	.116	.141	.000	.153	.071		.150	.487	.371
B11a	.000	.000	.000	.000	.000	.000	.000	.000	.026	.020	.000	.154	.383	.000	.493	.150		.000	.000
B12a	.000	.000	.000	.000	.000	.000	.000	.000	.046	.036	.000	.092	.379	.000	.311	.487	.000		.000
B13a	.000	.000	.000	.000	.000	.000	.000	.000	.131	.111	.000	.073	.343	.000	.374	.371	.000	.000	

a Determinant = 5.82E-011

Table 8: Correlation Matrix(UTAUT – OBT Data Set)

		U6b	RA1b	RA5b	OE7b	EOU3b	EOU5b	EOU6b	EU4b	SN1b	SN2b	SF2b	SF4b	PBC2b	PBC3b	PBC5b	FC3b	B11b	B12b	B13b
Correlation	U6b	1.000	.811	.790	.618	.283	.257	.265	.256	.171	.175	.029	.341	.016	.130	.034	.086	.450	.444	.436
	RA1b	.811	1.000	.887	.742	.292	.258	.297	.295	.077	.089	.003	.304	-.016	.106	.015	.029	.452	.452	.453
	RA5b	.790	.887	1.000	.695	.327	.273	.292	.284	.039	.039	-.005	.221	.007	.170	.141	.027	.418	.419	.420
	OE7b	.618	.742	.695	1.000	.443	.508	.398	.401	.004	.005	.034	.172	.006	.356	.152	-.025	.570	.581	.599
	EOU3b	.283	.292	.327	.443	1.000	.799	.833	.796	.102	.097	.297	-.010	.019	.129	.132	.045	.423	.450	.454
	EOU5b	.257	.258	.273	.508	.799	1.000	.935	.938	.086	.086	.290	-.067	.002	.463	.074	.050	.474	.497	.512
	EOU6b	.265	.297	.292	.398	.833	.935	1.000	.982	.135	.133	.313	-.049	.008	.398	.085	.051	.476	.499	.511
	EU4b	.256	.295	.284	.401	.796	.938	.982	1.000	.135	.135	.314	-.055	-.024	.455	.065	.046	.469	.491	.505
	SN1b	.171	.077	.039	.004	.102	.086	.135	.135	1.000	.985	.273	.164	.050	-.061	.002	-.028	.105	.086	.057
	SN2b	.175	.089	.039	.005	.097	.086	.133	.135	.985	1.000	.283	.173	.041	-.072	-.051	-.041	.112	.092	.063
	SF2b	.029	.003	-.005	.034	.297	.290	.313	.314	.273	.283	1.000	.170	.002	.084	-.086	.065	.189	.210	.232
	SF4b	.341	.304	.221	.172	-.010	-.067	-.049	-.055	.164	.173	.170	1.000	-.032	-.082	-.096	-.058	.050	.075	.082
	PBC2b	.016	-.016	.007	.006	.019	.002	.008	-.024	.050	.041	.002	-.032	1.000	.058	.220	-.180	.013	.016	.021
	PBC3b	.130	.106	.170	.356	.129	.463	.398	.455	-.061	-.072	.084	-.082	.058	1.000	.349	.057	.273	.266	.283
	PBC5b	.034	.015	.141	.152	.132	.074	.085	.065	.002	-.051	-.086	-.096	.220	.349	1.000	.064	-.001	-.022	-.013
	FC3b	.086	.029	.027	-.025	.045	.050	.051	.046	-.028	-.041	.065	-.058	-.180	.057	.064	1.000	-.042	.004	-.015
	B11b	.450	.452	.418	.570	.423	.474	.476	.469	.105	.112	.189	.050	.013	.273	-.001	-.042	1.000	.930	.922
	B12b	.444	.452	.419	.581	.450	.497	.499	.491	.086	.092	.210	.075	.016	.266	-.022	.004	.930	1.000	.973
	B13b	.436	.453	.420	.599	.454	.512	.511	.505	.057	.063	.232	.082	.021	.283	-.013	-.015	.922	.973	1.000
Sig. (1-tailed)	U6b		.000	.000	.000	.000	.000	.000	.000	.000	.000	.287	.000	.378	.006	.252	.047	.000	.000	.000
	RA1b	.000		.000	.000	.000	.000	.000	.000	.068	.043	.480	.000	.379	.020	.387	.285	.000	.000	.000
	RA5b	.000	.000		.000	.000	.000	.000	.000	.224	.225	.465	.000	.443	.000	.003	.303	.000	.000	.000
	OE7b	.000	.000	.000		.000	.000	.000	.000	.466	.462	.256	.000	.451	.000	.002	.318	.000	.000	.000
	EOU3b	.000	.000	.000	.000		.000	.000	.000	.024	.030	.000	.422	.355	.006	.005	.193	.000	.000	.000
	EOU5b	.000	.000	.000	.000	.000		.000	.000	.049	.048	.000	.099	.486	.000	.076	.166	.000	.000	.000
	EOU6b	.000	.000	.000	.000	.000	.000		.000	.004	.005	.000	.172	.439	.000	.051	.160	.000	.000	.000
	EU4b	.000	.000	.000	.000	.000	.000	.000		.004	.004	.000	.143	.324	.000	.103	.186	.000	.000	.000
	SN1b	.000	.068	.224	.466	.024	.049	.004	.004		.000	.000	.001	.169	.120	.485	.297	.021	.048	.136
	SN2b	.000	.043	.225	.462	.030	.048	.005	.004	.000		.000	.000	.216	.081	.163	.217	.015	.037	.111

Table 8: Correlation Matrix(UTAUT – OBT Data Set)

	SF2b	.287	.480	.465	.256	.000	.000	.000	.000	.000	.000		.000	.488	.053	.047	.104	.000	.000	.000
	SF4b	.000	.000	.000	.000	.422	.099	.172	.143	.001	.000	.000		.268	.057	.032	.132	.169	.074	.057
	PBC2b	.378	.379	.443	.451	.355	.486	.439	.324	.169	.216	.488	.268		.131	.000	.000	.401	.380	.344
	PBC3b	.006	.020	.000	.000	.006	.000	.000	.000	.120	.081	.053	.057	.131		.000	.134	.000	.000	.000
	PBC5b	.252	.387	.003	.002	.005	.076	.051	.103	.485	.163	.047	.032	.000	.000		.107	.492	.333	.399
	FC3b	.047	.285	.303	.318	.193	.166	.160	.186	.297	.217	.104	.132	.000	.134	.107		.211	.468	.389
	B11b	.000	.000	.000	.000	.000	.000	.000	.000	.021	.015	.000	.169	.401	.000	.492	.211		.000	.000
	B12b	.000	.000	.000	.000	.000	.000	.000	.000	.048	.037	.000	.074	.380	.000	.333	.468	.000		.000
	B13b	.000	.000	.000	.000	.000	.000	.000	.000	.136	.111	.000	.057	.344	.000	.399	.389	.000	.000	

a Determinant = 1.61E-010

Table 9: Correlation Matrix(UTAUT – SSK Data Set)

		U6c	RA1c	RA5c	OE7c	EOU3c	EOU5c	EOU6c	EU4c	SN1c	SN2c	SF2c	SF4c	PBC2c	PBC3c	PBC5c	FC3c	B11c	B12c	B13c
Correlation	U6c	1.000	.733	.715	.663	.408	.393	.428	.400	.133	.133	.082	.174	.025	.183	.153	.223	.617	.580	.606
	RA1c	.733	1.000	.827	.691	.489	.354	.485	.447	.048	.050	.043	.129	-.023	.109	.077	.101	.568	.539	.575
	RA5c	.715	.827	1.000	.712	.505	.494	.450	.428	-.020	-.018	.069	.070	.028	.282	.139	.208	.550	.524	.564
	OE7c	.663	.691	.712	1.000	.537	.671	.521	.490	-.010	-.012	.058	.093	.018	.300	.094	.219	.619	.597	.640
	EOU3c	.408	.489	.505	.537	1.000	.652	.752	.709	.049	.049	.294	.018	.031	.147	.248	.062	.506	.507	.533
	EOU5c	.393	.354	.494	.671	.652	1.000	.866	.861	.010	.011	.200	-.056	.012	.388	.033	.250	.485	.479	.509
	EOU6c	.428	.485	.450	.521	.752	.866	1.000	.970	.099	.099	.270	-.024	.030	.298	.072	.138	.512	.506	.532
	EU4c	.400	.447	.428	.490	.709	.861	.970	1.000	.099	.104	.263	-.028	-.010	.360	.034	.138	.501	.495	.522
	SN1c	.133	.048	-.020	-.010	.049	.010	.099	.099	1.000	.994	.197	.166	.056	-.140	-.049	.014	.100	.087	.047
	SN2c	.133	.050	-.018	-.012	.049	.011	.099	.104	.994	1.000	.205	.169	.046	-.142	-.055	.020	.098	.085	.044
	SF2c	.082	.043	.069	.058	.294	.200	.270	.263	.197	.205	1.000	.295	-.006	.121	-.002	.038	.167	.173	.157
	SF4c	.174	.129	.070	.093	.018	-.056	-.024	-.028	.166	.169	.295	1.000	-.040	-.005	-.043	.101	.111	.126	.140
	PBC2c	.025	-.023	.028	.018	.031	.012	.030	-.010	.056	.046	-.006	-.040	1.000	.077	.279	-.028	-.003	-.002	.004
	PBC3c	.183	.109	.282	.300	.147	.388	.298	.360	-.140	-.142	.121	-.005	.077	1.000	.362	.021	.221	.200	.231
	PBC5c	.153	.077	.139	.094	.248	.033	.072	.034	-.049	-.055	-.002	-.043	.279	.362	1.000	-.079	.122	.096	.115
	FC3c	.223	.101	.208	.219	.062	.250	.138	.138	.014	.020	.038	.101	-.028	.021	-.079	1.000	.180	.195	.211
	B11c	.617	.568	.550	.619	.506	.485	.512	.501	.100	.098	.167	.111	-.003	.221	.122	.180	1.000	.982	.936
	B12c	.580	.539	.524	.597	.507	.479	.506	.495	.087	.085	.173	.126	-.002	.200	.096	.195	.982	1.000	.940
	B13c	.606	.575	.564	.640	.533	.509	.532	.522	.047	.044	.157	.140	.004	.231	.115	.211	.936	.940	1.000
Sig. (1-tailec)	U6c		.000	.000	.000	.000	.000	.000	.000	.010	.010	.076	.001	.333	.001	.004	.000	.000	.000	.000
	RA1c	.000		.000	.000	.000	.000	.000	.000	.202	.190	.226	.012	.347	.028	.091	.039	.000	.000	.000
	RA5c	.000	.000		.000	.000	.000	.000	.000	.366	.377	.113	.111	.311	.000	.008	.000	.000	.000	.000
	OE7c	.000	.000	.000		.000	.000	.000	.000	.432	.414	.156	.052	.378	.000	.050	.000	.000	.000	.000
	EOU3c	.000	.000	.000	.000		.000	.000	.000	.196	.197	.000	.376	.295	.005	.000	.139	.000	.000	.000
	EOU5c	.000	.000	.000	.000	.000		.000	.000	.434	.424	.000	.162	.414	.000	.281	.000	.000	.000	.000
	EOU6c	.000	.000	.000	.000	.000	.000		.000	.041	.042	.000	.337	.303	.000	.106	.008	.000	.000	.000
	EU4c	.000	.000	.000	.000	.000	.000	.000		.042	.034	.000	.314	.433	.000	.276	.008	.000	.000	.000
	SN1c	.010	.202	.366	.432	.196	.434	.041	.042		.000	.000	.002	.163	.007	.196	.403	.040	.064	.208

Table 9: Correlation Matrix(UTAUT – SSK Data Set)

SN2c	.010	.190	.377	.414	.197	.424	.042	.034	.000		.000	.001	.213	.007	.167	.365	.044	.069	.220
SF2c	.076	.226	.113	.156	.000	.000	.000	.000	.000	.000		.000	.456	.017	.486	.254	.002	.001	.003
SF4c	.001	.012	.111	.052	.376	.162	.337	.314	.002	.001	.000		.244	.462	.227	.039	.027	.014	.007
PBC2c	.333	.347	.311	.378	.295	.414	.303	.433	.163	.213	.456	.244		.091	.000	.314	.479	.488	.471
PBC3c	.001	.028	.000	.000	.005	.000	.000	.000	.007	.007	.017	.462	.091		.000	.356	.000	.000	.000
PBC5c	.004	.091	.008	.050	.000	.281	.106	.276	.196	.167	.486	.227	.000	.000		.084	.016	.047	.022
FC3c	.000	.039	.000	.000	.139	.000	.008	.008	.403	.365	.254	.039	.314	.356	.084		.001	.000	.000
B11c	.000	.000	.000	.000	.000	.000	.000	.000	.040	.044	.002	.027	.479	.000	.016	.001		.000	.000
B12c	.000	.000	.000	.000	.000	.000	.000	.000	.064	.069	.001	.014	.488	.000	.047	.000	.000		.000
B13c	.000	.000	.000	.000	.000	.000	.000	.000	.208	.220	.003	.007	.471	.000	.022	.000	.000	.000	

a Determinant = 1.87E-010

Table 10: Reproduced Correlations (UTAUT – OLS Data Set)

		U6a	RA1a	RA5a	OE7a	EOU3a	EOU5a	EOU6a	EU4a	SN1a	SN2a	SF2a	SF4a	PBC2a	PBC3a	PBC5a	FC3a	B11a	B12a	B13a
Reproduced Correlation	**U6a**	.785(b)	.797	.738	.623	.264	.222	.228	.220	.181	.183	.103	.286	-.050	.136	.095	.042	.465	.453	.452
	RA1a	.797	.823(b)	.765	.662	.253	.214	.212	.203	.093	.095	.067	.272	-.045	.148	.099	.033	.505	.490	.490
	RA5a	.738	.765	.754(b)	.656	.262	.248	.241	.232	.052	.043	.032	.209	.020	.215	.232	.035	.439	.420	.422
	OE7a	.623	.662	.656	.706(b)	.413	.470	.450	.445	-.025	-.031	.085	.123	.064	.291	.190	-.002	.647	.618	.631
	EOU3a	.264	.253	.262	.413	.567(b)	.703	.706	.712	.157	.154	.268	-.002	-.009	.304	.116	.069	.505	.500	.511
	EOU5a	.222	.214	.248	.470	.703	.896(b)	.893	.901	.110	.103	.306	-.071	.005	.405	.174	.086	.596	.589	.604
	EOU6a	.228	.212	.241	.450	.706	.893	.896(b)	.904	.177	.171	.330	-.052	.000	.390	.164	.090	.575	.570	.584
	EU4a	.220	.203	.232	.445	.712	.901	.904	.913(b)	.168	.161	.333	-.058	-.010	.392	.160	.096	.574	.571	.584
	SN1a	.181	.093	.052	-.025	.157	.110	.177	.168	.776(b)	.793	.303	.236	.094	-.072	-.049	-.049	.023	.020	.010
	SN2a	.183	.095	.043	-.031	.154	.103	.171	.161	.793	.813(b)	.313	.248	.088	-.089	-.080	-.055	.036	.033	.024
	SF2a	.103	.067	.032	.085	.268	.306	.330	.333	.303	.313	.229(b)	.070	-.045	.051	-.075	.030	.199	.204	.204
	SF4a	.286	.272	.209	.123	-.002	-.071	-.052	-.058	.236	.248	.070	.192(b)	-.026	-.080	-.093	-.021	.107	.105	.100
	PBC2a	-.050	-.045	.020	.064	-.009	.005	.000	-.010	.094	.088	-.045	-.026	.311(b)	.067	.191	-.157	.056	.016	.027
	PBC3a	.136	.148	.215	.291	.304	.405	.390	.392	-.072	-.089	.051	-.080	.067	.269(b)	.257	.045	.229	.219	.227
	PBC5a	.095	.099	.232	.190	.116	.174	.164	.160	-.049	-.080	-.075	-.093	.191	.257	.471(b)	.024	-.070	-.086	-.085
	FC3a	.042	.033	.035	-.002	.069	.086	.090	.096	-.049	-.055	.030	-.021	-.157	.045	.024	.126(b)	-.073	-.049	-.057
	B11a	.465	.505	.439	.647	.505	.596	.575	.574	.023	.036	.199	.107	.056	.229	-.070	-.073	.871(b)	.837	.860
	B12a	.453	.490	.420	.618	.500	.589	.570	.571	.020	.033	.204	.105	.016	.219	-.086	-.049	.837	.808(b)	.830
	B13a	.452	.490	.422	.631	.511	.604	.584	.584	.010	.024	.204	.100	.027	.227	-.085	-.057	.860	.830	.852(b)
Residual(a)	**U6a**		-.036	-.004	-.032	.018	.035	.038	.040	.004	.004	-.071	.043	.067	-.013	-.048	.043	.022	.002	-.006
	RA1a	-.036		.058	.023	.017	.026	.072	.076	-.012	-.003	-.048	.025	.029	-.003	-.089	-.003	-.041	-.053	-.054
	RA5a	-.004	.058		-.019	.092	.000	.032	.031	-.014	-.007	-.025	-.004	-.012	-.050	.009	-.022	-.021	-.028	-.029
	OE7a	-.032	.023	-.019		.030	.062	-.047	-.044	.031	.036	-.037	.010	-.057	.067	-.024	-.030	-.018	-.013	-.007
	EOU3a	.018	.017	.092	.030		.091	.123	.083	-.063	-.066	.023	-.018	.028	-.174	.031	-.019	-.055	-.049	-.055
	EOU5a	.035	.026	.000	.062	.091		.040	.034	-.023	-.017	-.019	.001	-.003	.018	-.097	-.039	-.084	-.085	-.084
	EOU6a	.038	.072	.032	-.047	.123	.040		.081	-.038	-.035	-.022	-.001	.008	-.027	-.063	-.039	-.069	-.072	-.074
	EU4a	.040	.076	.031	-.044	.083	.034	.081		-.026	-.021	-.021	-.004	-.013	.022	-.088	-.051	-.074	-.078	-.079
	SN1a	.004	-.012	-.014	.031	-.063	-.023	-.038	-.026		.194	-.038	-.070	-.044	-.009	.049	.018	.076	.067	.047
	SN2a	.004	-.003	-.007	.036	-.066	-.017	-.035	-.021	.194		-.041	-.074	-.046	-.003	.027	.013	.069	.059	.039

Table 10: Reproduced Correlations (UTAUT – OLS Data Set)

SF2a	-.071	-.048	-.025	-.037	.023	-.019	-.022	-.021	-.038	-.041		.096	.046	.067	-.016	.031	.006	.005	.027
SF4a	.043	.025	-.004	.010	-.018	.001	-.001	-.004	-.070	-.074	.096		-.006	-.006	.019	-.034	-.055	-.037	-.025
PBC2a	.067	.029	-.012	-.057	.028	-.003	.008	-.013	-.044	-.046	.046	-.006		-.016	.024	-.023	-.040	-.001	-.007
PBC3a	-.013	-.003	-.050	.067	-.174	.018	-.027	.022	-.009	-.003	.067	-.006	-.016		.067	.008	.034	.022	.030
PBC5a	-.048	-.089	.009	-.024	.031	-.097	-.063	-.088	.049	.027	-.016	.019	.024	.067		.051	.069	.061	.068
FC3a	.043	-.003	-.022	-.030	-.019	-.039	-.039	-.051	.018	.013	.031	-.034	-.023	.008	.051		.020	.051	.040
B11a	.022	-.041	-.021	-.018	-.055	-.084	-.069	-.074	.076	.069	.006	-.055	-.040	.034	.069	.020		.142	.109
B12a	.002	-.053	-.028	-.013	-.049	-.085	-.072	-.078	.067	.059	.005	-.037	-.001	.022	.061	.051	.142		.144
B13a	-.006	-.054	-.029	-.007	-.055	-.084	-.074	-.079	.047	.039	.027	-.025	-.007	.030	.068	.040	.109	.144	

Extraction Method: Alpha Factoring.

a Residuals are computed between observed and reproduced correlations. There are 53 (30.0%) nonredundant residuals with absolute values greater than 0.05.

b Reproduced communalities

Table 11: Reproduced Correlations Matrix (UTAUT – OBT Data Set)

		U6b	RA1b	RA5b	OE7b	EOU3b	EOU5b	EOU6b	EU4b	SN1b	SN2b	SF2b	SF4b	PBC2b	PBC3b	PBC5b	FC3b	B11b	B12b	B13b
Reproduced Correlation	**U6b**	.828(b)	.852	.789	.670	.262	.229	.233	.228	.176	.179	.088	.294	-.052	.142	.071	.046	.426	.441	.439
	RA1b	.852	.893(b)	.829	.722	.257	.226	.222	.217	.088	.091	.054	.288	-.045	.152	.064	.033	.484	.499	.500
	RA5b	.789	.829	.793(b)	.704	.266	.262	.252	.248	.046	.041	.025	.228	-.002	.212	.159	.038	.441	.450	.453
	OE7b	.670	.722	.704	.724(b)	.396	.451	.434	.432	-.009	-.014	.068	.147	.059	.298	.169	.005	.590	.601	.613
	EOU3b	.262	.257	.266	.396	.565(b)	.700	.705	.709	.165	.164	.271	.006	-.015	.315	.096	.068	.485	.509	.519
	EOU5b	.229	.226	.262	.451	.700	.895(b)	.893	.900	.116	.109	.301	-.065	-.002	.435	.178	.093	.562	.589	.604
	EOU6b	.233	.222	.252	.434	.705	.893	.896(b)	.903	.176	.171	.328	-.046	-.008	.417	.157	.093	.554	.583	.596
	EU4b	.228	.217	.248	.432	.709	.900	.903	.910(b)	.165	.160	.328	-.052	-.016	.421	.159	.100	.550	.579	.592
	SN1b	.176	.088	.046	-.009	.165	.116	.176	.165	.772(b)	.791	.315	.228	.098	-.063	-.036	-.045	.022	.016	.006
	SN2b	.179	.091	.041	-.014	.164	.109	.171	.160	.791	.814(b)	.328	.242	.093	-.082	-.067	-.052	.035	.030	.021
	SF2b	.088	.054	.025	.068	.271	.301	.328	.328	.315	.328	.247(b)	.075	-.051	.042	-.088	.029	.187	.203	.203
	SF4b	.294	.288	.228	.147	.006	-.065	-.046	-.052	.228	.242	.075	.195(b)	-.024	-.090	-.108	-.024	.108	.111	.107
	PBC2b	-.052	-.045	-.002	.059	-.015	-.002	-.008	-.016	.098	.093	-.051	-.024	.316(b)	.085	.196	-.153	.060	.026	.038
	PBC3b	.142	.152	.212	.298	.315	.435	.417	.421	-.063	-.082	.042	-.090	.085	.318(b)	.280	.045	.227	.229	.237
	PBC5b	.071	.064	.159	.169	.096	.178	.157	.159	-.036	-.067	-.088	-.108	.196	.280	.434(b)	.017	-.056	-.077	-.076
	FC3b	.046	.033	.038	.005	.068	.093	.093	.100	-.045	-.052	.029	-.024	-.153	.045	.017	.117(b)	-.064	-.047	-.055
	B11b	.426	.484	.441	.590	.485	.562	.554	.550	.022	.035	.187	.108	.060	.227	-.056	-.064	.761(b)	.778	.802
	B12b	.441	.499	.450	.601	.509	.589	.583	.579	.016	.030	.203	.111	.026	.229	-.077	-.047	.778	.800(b)	.824
	B13b	.439	.500	.453	.613	.519	.604	.596	.592	.006	.021	.203	.107	.038	.237	-.076	-.055	.802	.824	.849(b)
Residual(a)	**U6b**		-.041	.000	-.051	.021	.027	.032	.028	-.005	-.004	-.059	.047	.068	-.012	-.036	.040	.024	.003	-.003
	RA1b	-.041		.058	.020	.034	.032	.075	.078	-.011	-.002	-.051	.016	.029	-.046	-.049	-.003	-.032	-.047	-.047
	RA5b	.000	.058		-.009	.061	.011	.041	.036	-.007	-.002	-.030	-.007	.010	-.042	-.018	-.011	-.022	-.032	-.032
	OE7b	-.051	.020	-.009		.047	.056	-.037	-.031	.013	.019	-.034	.025	-.052	.058	-.018	-.030	-.020	-.020	-.014
	EOU3b	.021	.034	.061	.047		.099	.128	.087	-.063	-.067	.026	-.017	.034	-.187	.036	-.023	-.063	-.059	-.066
	EOU5b	.027	.032	.011	.056	.099		.043	.038	-.031	-.023	-.011	-.002	.004	.028	-.104	-.043	-.088	-.093	-.091
	EOU6b	.032	.075	.041	-.037	.128	.043		.079	-.040	-.038	-.016	-.003	.016	-.019	-.072	-.042	-.078	-.084	-.085
	EU4b	.028	.078	.036	-.031	.087	.038	.079		-.031	-.025	-.014	-.003	-.008	.034	-.094	-.053	-.081	-.088	-.087
	SN1b	-.005	-.011	-.007	.013	-.063	-.031	-.040	-.031		.194	-.042	-.064	-.049	.002	.038	.018	.083	.070	.051
	SN2b	-.004	-.002	-.002	.019	-.067	-.023	-.038	-.025	.194		-.045	-.069	-.052	.010	.016	.011	.076	.062	.042

Table 11: Reproduced Correlations Matrix (UTAUT – OBT Data Set)

SF2b	-.059	-.051	-.030	-.034	.026	-.011	-.016	-.014	-.042	-.045		.095	.052	.042	.001	.036	.002	.007	.029
SF4b	.047	.016	-.007	.025	-.017	-.002	-.003	-.003	-.064	-.069	.095		-.008	.008	.012	-.034	-.059	-.037	-.026
PBC2b	.068	.029	.010	-.052	.034	.004	.016	-.008	-.049	-.052	.052	-.008		-.027	.024	-.027	-.047	-.011	-.017
PBC3b	-.012	-.046	-.042	.058	-.187	.028	-.019	.034	.002	.010	.042	.008	-.027		.069	.012	.046	.037	.046
PBC5b	-.036	-.049	-.018	-.018	.036	-.104	-.072	-.094	.038	.016	.001	.012	.024	.069		.047	.055	.055	.063
FC3b	.040	-.003	-.011	-.030	-.023	-.043	-.042	-.053	.018	.011	.036	-.034	-.027	.012	.047		.022	.051	.040
B11b	.024	-.032	-.022	-.020	-.063	-.088	-.078	-.081	.083	.076	.002	-.059	-.047	.046	.055	.022		.152	.120
B12b	.003	-.047	-.032	-.020	-.059	-.093	-.084	-.088	.070	.062	.007	-.037	-.011	.037	.055	.051	.152		.149
B13b	-.003	-.047	-.032	-.014	-.066	-.091	-.085	-.087	.051	.042	.029	-.026	-.017	.046	.063	.040	.120	.149	

Extraction Method: Alpha Factoring.

a Residuals are computed between observed and reproduced correlations. There are 54 (31.0%) nonredundant residuals with absolute values greater than 0.05.

b Reproduced communalities

Table 12: Reproduced Correlations Matrix (UTAUT – SSK Data Set)

		U6c	RA1c	RA5c	OE7c	EOU3c	EOU5c	EOU6c	EU4c	SN1c	SN2c	SF2c	SF4c	PBC2c	PBC3c	PBC5c	FC3c	B11c	B12c	B13c
Reproduced Correlation	**U6c**	.726(b)	.717	.697	.674	.441	.389	.405	.377	.150	.148	.016	.138	.060	.151	.152	.202	.718	.698	.710
	RA1c	.717	.736(b)	.716	.697	.453	.435	.439	.412	.078	.076	-.072	.033	.011	.122	.087	.213	.695	.675	.692
	RA5c	.697	.716	.720(b)	.707	.492	.481	.478	.451	-.020	-.022	-.053	.009	.055	.221	.173	.191	.692	.672	.695
	OE7c	.674	.697	.707	.719(b)	.559	.578	.577	.555	-.028	-.029	.033	.023	.007	.250	.127	.216	.705	.690	.714
	EOU3c	.441	.453	.492	.559	.666(b)	.734	.765	.757	.088	.088	.263	-.024	.062	.363	.162	.134	.536	.526	.547
	EOU5c	.389	.435	.481	.578	.734	.869(b)	.890	.888	-.006	-.004	.258	-.121	-.040	.361	.045	.166	.507	.502	.529
	EOU6c	.405	.439	.478	.577	.765	.890	.928(b)	.925	.120	.122	.309	-.097	-.008	.356	.060	.157	.522	.515	.538
	EU4c	.377	.412	.451	.555	.757	.888	.925	.924(b)	.109	.111	.324	-.092	-.025	.352	.040	.158	.502	.497	.519
	SN1c	.150	.078	-.020	-.028	.088	-.006	.120	.109	.967(b)	.967	.236	.186	.129	-.238	-.064	-.021	.090	.079	.038
	SN2c	.148	.076	-.022	-.029	.088	-.004	.122	.111	.967	.967(b)	.241	.190	.122	-.241	-.073	-.018	.090	.080	.039
	SF2c	.016	-.072	-.053	.033	.263	.258	.309	.324	.236	.241	.671(b)	.470	-.041	.219	.032	.097	.218	.235	.221
	SF4c	.138	.033	.009	.023	-.024	-.121	-.097	-.092	.186	.190	.470	.628(b)	-.096	.017	-.026	.146	.270	.285	.263
	PBC2c	.060	.011	.055	.007	.062	-.040	-.008	-.025	.129	.122	-.041	-.096	.450(b)	.258	.525	-.203	-.008	-.030	-.024
	PBC3c	.151	.122	.221	.250	.363	.361	.356	.352	-.238	-.241	.219	.017	.258	.515(b)	.468	-.041	.246	.239	.265
	PBC5c	.152	.087	.173	.127	.162	.045	.060	.040	-.064	-.073	.032	-.026	.525	.468	.715(b)	-.192	.130	.107	.125
	FC3c	.202	.213	.191	.216	.134	.166	.157	.158	-.021	-.018	.097	.146	-.203	-.041	-.192	.174(b)	.258	.264	.265
	B11c	.718	.695	.692	.705	.536	.507	.522	.502	.090	.090	.218	.270	-.008	.246	.130	.258	.793(b)	.782	.796
	B12c	.698	.675	.672	.690	.526	.502	.515	.497	.079	.080	.235	.285	-.030	.239	.107	.264	.782	.773(b)	.786
	B13c	.710	.692	.695	.714	.547	.529	.538	.519	.038	.039	.221	.263	-.024	.265	.125	.265	.796	.786	.802(b)
Residual(a)	**U6c**		.016	.018	-.011	-.033	.004	.023	.024	-.017	-.016	.066	.036	-.035	.033	.001	.021	-.101	-.119	-.105
	RA1c	.016		.112	-.006	.035	-.081	.046	.035	-.030	-.026	.115	.096	-.033	-.013	-.011	-.112	-.127	-.136	-.117
	RA5c	.018	.112		.005	.012	.013	-.028	-.023	.001	.004	.122	.061	-.026	.061	-.034	.017	-.142	-.148	-.132
	OE7c	-.011	-.006	.005		-.022	.093	-.056	-.065	.018	.016	.025	.071	.011	.049	-.033	.003	-.087	-.092	-.074
	EOU3c	-.033	.035	.012	-.022		-.082	-.014	-.048	-.038	-.039	.031	.042	-.031	-.216	.086	-.072	-.030	-.019	-.015
	EOU5c	.004	-.081	.013	.093	-.082		-.023	-.026	.016	.015	-.058	.064	.053	.028	-.012	.085	-.023	-.023	-.020
	EOU6c	.023	.046	-.028	-.056	-.014	-.023		.045	-.021	-.023	-.039	.073	.037	-.058	.012	-.019	-.010	-.009	-.006
	EU4c	.024	.035	-.023	-.065	-.048	-.026	.045		-.010	-.007	-.061	.064	.015	.008	-.006	-.020	.000	-.001	.003
	SN1c	-.017	-.030	.001	.018	-.038	.016	-.021	-.010		.027	-.039	-.020	-.073	.099	.015	.036	.010	.008	.009
	SN2c	-.016	-.026	.004	.016	-.039	.015	-.023	-.007	.027		-.036	-.021	-.076	.099	.017	.038	.008	.005	.006
	SF2c	.066	.115	.122	.025	.031	-.058	-.039	-.061	-.039	-.036		-.174	.035	-.099	-.034	-.059	-.051	-.061	-.064
	SF4c	.036	.096	.061	.071	.042	.064	.073	.064	-.020	-.021	-.174		.056	-.022	-.017	-.045	-.159	-.159	-.123
	PBC2c	-.035	-.033	-.026	.011	-.031	.053	.037	.015	-.073	-.076	.035	.056		-.182	-.246	.175	.005	.028	.028

Table 12: Reproduced Correlations Matrix (UTAUT – SSK Data Set)

	PBC3c	.033	-.013	.061	.049	-.216	.028	-.058	.008	.099	.099	-.099	-.022	-.182		-.106	.062	-.024	-.039	-.034
	PBC5c	.001	-.011	-.034	-.033	.086	-.012	.012	-.006	.015	.017	-.034	-.017	-.246	-.106		.113	-.007	-.012	-.010
	FC3c	.021	-.112	.017	.003	-.072	.085	-.019	-.020	.036	.038	-.059	-.045	.175	.062	.113		-.077	-.069	-.054
	BI1c	-.101	-.127	-.142	-.087	-.030	-.023	-.010	.000	.010	.008	-.051	-.159	.005	-.024	-.007	-.077		.200	.140
	BI2c	-.119	-.136	-.148	-.092	-.019	-.023	-.009	-.001	.008	.005	-.061	-.159	.028	-.039	-.012	-.069	.200		.154
	BI3c	-.105	-.117	-.132	-.074	-.015	-.020	-.006	.003	.009	.006	-.064	-.123	.028	-.034	-.010	-.054	.140	.154	

Extraction Method: Principal Component Analysis.

a Residuals are computed between observe and reprocuced correlations. There are 63 (36.0%) nonredundant residuals with absolute values greater than 0.05.

b Reprocuced communalities

Appendix E

Table 1: Descriptive Statistics – ISSAAC

	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Q1	1	5	4.67	0.75	-2.53	0.17	6.23	0.34
Q2	2	5	4.55	0.74	-1.81	0.17	3.08	0.34
Q3	1	5	4.71	0.74	-3.28	0.17	11.62	0.34
Q4	1	5	4.67	0.59	-2.34	0.17	8.32	0.34
Q5	1	5	4.60	0.75	-2.50	0.17	7.30	0.34
Q6	1	5	4.65	0.83	-2.78	0.17	7.52	0.34
Q7	2	5	4.77	0.56	-3.02	0.17	10.73	0.34
Q8	2	5	4.88	0.47	-4.89	0.17	25.70	0.34
Q9	1	5	3.89	0.78	-1.67	0.17	3.50	0.34
Q10	1	5	4.51	0.74	-1.96	0.17	5.11	0.34
Q11	3	5	4.57	0.60	-1.05	0.17	0.11	0.34
Q12	2	5	4.05	0.63	-1.35	0.17	4.21	0.34
Q13	1	5	3.85	0.70	-1.72	0.17	4.02	0.34
Q14	2	5	4.86	0.46	-4.19	0.17	20.72	0.34
Q15	2	5	4.23	0.52	0.04	0.17	1.14	0.34
Q16	3	5	4.89	0.33	-2.95	0.17	8.24	0.34
Q17	4	5	4.88	0.32	-2.37	0.17	3.67	0.34
Q18	1	5	4.00	0.62	-1.78	0.17	6.41	0.34
Q19	1	5	2.68	1.02	0.93	0.17	-0.75	0.34
Q20	1	5	2.44	0.97	1.15	0.17	0.45	0.34
Q21	1	5	4.54	0.73	-2.04	0.17	5.11	0.34
Q22	1	5	2.53	0.91	1.15	0.17	0.14	0.34
Q23	1	5	4.72	0.70	-3.04	0.17	9.63	0.34
Q24	1	5	2.38	1.00	1.29	0.17	0.93	0.34
Q25	2	5	4.19	0.51	-0.17	0.17	2.78	0.34

	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Q26	2	5	4.02	0.50	-0.93	0.17	5.24	0.34
Q27	2	5	4.62	0.64	-1.94	0.17	4.31	0.34
Q28	1	5	4.78	0.57	-3.59	0.17	16.29	0.34
Q29	3	5	4.81	0.43	-2.11	0.17	3.77	0.34
Q30	3	5	4.90	0.33	-3.50	0.17	12.62	0.34
Q31	3	5	4.79	0.43	-1.82	0.17	2.31	0.34
Q32	3	5	4.75	0.45	-1.32	0.17	0.20	0.34
Q33	2	5	4.64	0.62	-1.89	0.17	4.00	0.34
N 202								

Table 2: Descriptive Statistics – UTAUT (OLS Data Set)

	Minimum	**Maximum**	**Mean**	**Std. Deviation**	**Skewness**		**Kurtosis**	
	Statistic	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
U6a	1	7	6.73	0.88	-4.44	0.13	21.65	0.25
RA1a	1	7	6.56	0.98	-3.20	0.13	11.57	0.25
RA5a	1	7	6.50	0.99	-3.17	0.13	11.80	0.25
OE7a	1	7	6.50	1.03	-2.94	0.13	9.64	0.25
EOU3a	2	7	6.59	0.86	-3.20	0.13	12.57	0.25
EOU5a	2	7	6.45	1.05	-2.76	0.13	8.21	0.25
EOU6a	2	7	6.51	0.94	-2.90	0.13	9.62	0.25
EU4a	2	7	6.49	0.97	-2.99	0.13	10.15	0.25
SN1a	1	7	3.73	2.59	0.15	0.13	-1.78	0.25
SN2a	1	7	3.80	2.64	0.11	0.13	-1.82	0.25
SF2a	1	8	6.44	1.20	-2.54	0.13	6.40	0.25
SF4a	1	7	6.40	1.45	-2.57	0.13	5.79	0.25
PBC2a	4	7	6.98	0.18	-12.85	0.13	189.79	0.25
PBC3a	2	7	6.78	0.68	-4.92	0.13	29.22	0.25
PBC5a	6	7	6.94	0.24	-3.71	0.13	11.80	0.25
FC3a	1	7	1.61	1.33	2.52	0.13	6.07	0.25
B11a	1	7	6.69	0.80	-3.98	0.13	20.38	0.25
B12a	1	7	6.70	0.82	-4.11	0.13	20.82	0.25
B13a	1	7	6.73	0.78	-4.36	0.13	23.67	0.25
N 381								

Table 3: Descriptive Statistics – UTAUT (OBT Data Set)

	Minimum	**Maximum**	**Mean**	**Std. Deviation**	**Skewness**		**Kurtosis**	
	Statistic	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
U6b	1	7	6.71	0.90	-4.28	0.13	19.82	0.25
RA1b	1	7	6.56	0.98	-3.26	0.13	12.11	0.25
RA5b	1	7	6.49	0.98	-3.09	0.13	11.50	0.25
OE7b	1	7	6.49	1.04	-2.82	0.13	8.81	0.25
EOU3b	2	7	6.59	0.86	-3.26	0.13	12.91	0.25
EOU5b	2	7	6.45	1.05	-2.79	0.13	8.39	0.25
EOU6b	2	7	6.50	0.95	-2.89	0.13	9.53	0.25
EU4b	2	7	6.49	0.98	-2.96	0.13	9.99	0.25
SN1b	1	7	3.71	2.59	0.17	0.13	-1.78	0.25
SN2b	1	7	3.79	2.64	0.12	0.13	-1.83	0.25
SF2b	1	8	6.44	1.21	-2.53	0.13	6.33	0.25
SF4b	1	7	6.39	1.46	-2.54	0.13	5.67	0.25
PBC2b	4	7	6.98	0.19	-12.78	0.13	187.78	0.25
PBC3b	2	7	6.78	0.68	-4.95	0.13	29.45	0.25
PBC5b	6	7	6.94	0.23	-3.78	0.13	12.38	0.25
FC3b	1	7	1.62	1.34	2.47	0.13	5.81	0.25
B11b	1	7	6.68	0.83	-3.94	0.13	19.29	0.25
B12b	1	7	6.70	0.82	-4.12	0.13	20.97	0.25
B13b	1	7	6.73	0.78	-4.39	0.13	23.97	0.25
N 377								

Table 4: Descriptive Statistics – UTAUT (SSK Data Set)

	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	Std. Error
U6d	1	7	6.77	0.73	-5.04	0.14	31.89	0.28
RA1d	1	7	6.58	0.95	-3.12	0.14	11.31	0.28
RA5d	1	7	6.49	1.02	-2.68	0.14	8.15	0.28
OE7d	1	7	6.53	1.06	-3.02	0.14	9.61	0.28
EOU3d	2	7	6.59	0.84	-3.03	0.14	10.94	0.28
EOU5d	2	7	6.48	1.01	-2.77	0.14	8.41	0.28
EOU6d	2	7	6.57	0.81	-2.86	0.14	10.52	0.28
EU4d	2	7	6.56	0.84	-2.97	0.14	11.02	0.28
SN1d	1	7	3.83	2.61	0.10	0.14	-1.81	0.28
SN2d	1	7	3.84	2.63	0.10	0.14	-1.83	0.28
SF2d	1	8	6.43	1.17	-2.62	0.14	7.31	0.28
SF4d	1	7	6.42	1.41	-2.57	0.14	5.86	0.28
PBC2d	4	7	6.97	0.21	-10.63	0.14	132.69	0.28
PBC3d	2	7	6.77	0.64	-4.58	0.14	27.16	0.28
PBC5d	6	7	6.93	0.25	-3.54	0.14	10.61	0.28
FC3d	1	7	5.99	1.72	-1.96	0.14	2.82	0.28
B11d	1	7	6.59	1.01	-3.42	0.14	12.96	0.28
B12d	1	7	6.60	1.03	-3.47	0.14	12.97	0.28
B13d	1	7	6.66	0.93	-3.77	0.14	16.12	0.28
N 307								

Table 6: Kolmogorov – Smirnov and Shapiro Wilk Tests – ISSAAC

	Kolmogorov-Smirnov(a)		**Shapiro-Wilk**	
	Statistic	**Sig.**	**Statistic**	**Sig.**
Q1	0.46	0.00	0.51	0.00
Q2	0.39	0.00	0.64	0.00
Q3	0.46	0.00	0.44	0.00
Q4	0.42	0.00	0.58	0.00
Q5	0.40	0.00	0.57	0.00
Q6	0.46	0.00	0.48	0.00
Q7	0.47	0.00	0.46	0.00
Q8	0.52	0.00	0.27	0.00
Q9	0.44	0.00	0.63	0.00
Q10	0.36	0.00	0.66	0.00
Q11	0.39	0.00	0.68	0.00
Q12	0.40	0.00	0.61	0.00
Q13	0.44	0.00	0.62	0.00
Q14	0.51	0.00	0.34	0.00
Q15	0.40	0.00	0.67	0.00
Q16	0.53	0.00	0.36	0.00
Q17	0.52	0.00	0.38	0.00
Q18	0.43	0.00	0.56	0.00
Q19	0.41	0.00	0.67	0.00
Q20	0.41	0.00	0.72	0.00
Q21	0.37	0.00	0.63	0.00
Q22	0.41	0.00	0.69	0.00
Q23	0.47	0.00	0.46	0.00
Q24	0.41	0.00	0.71	0.00

	Kolmogorov-Smirnov(a)		**Shapiro-Wilk**	
Q25	0.42	0.00	0.63	0.00
Q26	0.41	0.00	0.59	0.00
Q27	0.41	0.00	0.61	0.00
Q28	0.47	0.00	0.43	0.00
Q29	0.49	0.00	0.48	0.00
Q30	0.53	0.00	0.32	0.00
Q31	0.49	0.00	0.50	0.00
Q32	0.47	0.00	0.55	0.00
Q33	0.42	0.00	0.61	0.00
df	**202.00**			

Table 7: Kolmogorov – Smirnov and Shapiro Wilk Tests – UTAUT (OLS, OBT and SSK Data Sets)

	Kolmogorov-Smirnov(a)			**Shapiro-Wilk**		
Data Set	**OLS**	**OBT**	**SSK**	**OLS**	**OBT**	**SSK**
	Statistic	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Statistic**
U6	0.48	0.47	0.48	0.35	0.35	0.35
R1	0.41	0.41	0.42	0.50	0.50	0.51
R5	0.37	0.36	0.39	0.54	0.55	0.57
OE7	0.39	0.39	0.41	0.54	0.54	0.50
EOU3	0.40	0.40	0.40	0.52	0.51	0.53
EOU5	0.36	0.35	0.37	0.56	0.56	0.56
EOU6	0.37	0.37	0.39	0.55	0.56	0.57
EU4	0.36	0.36	0.38	0.54	0.55	0.55
SN1	0.24	0.24	0.25	0.77	0.77	0.77
SN2	0.24	0.25	0.25	0.76	0.76	0.77
SF2	0.42	0.42	0.39	0.54	0.54	0.56
SF4	0.47	0.47	0.48	0.47	0.47	0.47
PBC2	0.53	0.53	0.53	0.08	0.08	0.10
PBC3	0.47	0.47	0.47	0.35	0.35	0.39
PBC5	0.54	0.54	0.54	0.25	0.25	0.27
FC3	0.43	0.43	0.31	0.52	0.52	0.63
B11	0.46	0.45	0.43	0.44	0.44	0.46
B12	0.46	0.46	0.44	0.41	0.41	0.44
B13	0.47	0.47	0.46	0.39	0.39	0.42
df	**381**	**376**	**306**			
Sig.	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Appendix F

Table 1: KMO and Bartletts Test of Sphericity

The KMO statistic shows the appropriateness of factor analysis for a study and is significant at values >.05. Bartletts Test conversely is significant at values <.05, and tests whether correlations are present within the sample.

Model	**Statistics**			
	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
		Approx. Chi-Square	df	Sig.
ISSAAC	.793	3358.370	528	.000
UTAUT (OLS)	.754	8786.31	171	.000
UTAUT (OBT)	.761	8294.50	171	.000
UTAUT (SSK)	.751	6670.76	171	.000

Table 2: Communalities – ISSAAC

The extraction values show the proportion of variance accounted for in the item by underlying factors, they are significant at values >.05

Question	**Initial**	**Extraction**
Q1	0.71	0.73
Q2	0.62	0.57
Q3	0.71	0.63
Q4	0.72	0.75
Q5	0.57	0.52
Q6	0.72	0.66
Q7	0.65	0.60
Q8	0.56	0.62
Q9	0.67	0.63
Q10	0.72	0.82
Q11	0.63	0.58
Q12	0.37	0.43
Q13	0.50	0.46
Q14	0.52	0.57
Q15	0.43	0.32
Q16	0.63	0.77
Q17	0.51	0.50
Q18	0.53	0.46
Q19	0.65	0.59
Q20	0.60	0.68
Q21	0.48	0.43
Q22	0.53	0.69
Q23	0.44	0.36
Q24	0.30	0.23

Question	Initial	Extraction
Q25	0.49	0.46
Q26	0.55	0.68
Q27	0.71	0.62
Q28	0.68	0.59
Q29	0.61	0.68
Q30	0.69	0.67
Q31	0.44	0.46
Q32	0.50	0.51
Q33	0.60	0.62

Table 3: Communalities – UTAUT (OLS, OBT and SSK Data Sets)

	Initial			**Extraction**		
	OLS	**OBT**	**SSK**	**OLS**	**OBT**	**SSK**
U6	0.69	0.74	0.67	0.78	0.83	0.67
RA1	0.86	0.91	0.90	0.82	0.89	0.90
RA5	0.79	0.83	0.85	0.75	0.79	0.85
OE7	0.85	0.86	0.86	0.71	0.72	0.86
EOU3	0.80	0.83	0.73	0.57	0.57	0.73
EOU5	0.95	0.94	0.94	0.90	0.89	0.94
EOU6	0.98	0.98	0.97	0.90	0.90	0.97
EU4	0.98	0.98	0.96	0.91	0.91	0.96
SN1	0.98	0.97	0.99	0.78	0.77	0.99
SN2	0.98	0.97	0.99	0.81	0.81	0.99
SF2	0.27	0.27	0.27	0.23	0.25	0.27
SF4	0.27	0.25	0.20	0.19	0.20	0.20
PBC2	0.16	0.13	0.13	0.31	0.32	0.13
PBC3	0.54	0.65	0.52	0.27	0.32	0.52
PBC5	0.49	0.39	0.41	0.47	0.43	0.41
FC3	0.24	0.14	0.18	0.13	0.12	0.18
B11	0.97	0.88	0.97	0.87	0.76	0.97
B12	0.97	0.96	0.97	0.81	0.80	0.97
B13	0.96	0.95	0.90	0.85	0.85	0.90

Table 4: Total Variance Explained - ISSAAC

Shows the eigenvalues associated with each linear component. Column i shows the values before extraction (where the amount of variables is equal to the number of factors), column ii shows the same results after extraction (only items with eigenvalues >.1 are displayed) and column iii shows the optimised factor structure by presenting the extraction values according to relative importance after rotation.

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.25	24.99	24.99	7.85	23.79	23.79	5.90
2	2.93	8.88	33.87	2.32	7.02	30.81	4.97
3	2.74	8.30	42.17	2.47	7.47	38.28	3.01
4	1.98	5.99	48.16	1.57	4.77	43.05	4.15
5	1.67	5.05	53.21	1.29	3.90	46.94	2.10
6	1.56	4.72	57.93	1.14	3.45	50.39	3.89
7	1.29	3.90	61.83	0.85	2.56	52.95	4.77
8	1.22	3.69	65.52	0.81	2.47	55.42	3.44
9	1.01	3.07	68.59	0.59	1.78	57.21	3.26
10	0.95	2.88	71.47				
11	0.84	2.55	74.02				
12	0.80	2.44	76.46				
13	0.75	2.28	78.73				
14	0.68	2.05	80.78				
15	0.67	2.03	82.82				
16	0.56	1.71	84.53				
17	0.54	1.62	86.15				
18	0.48	1.45	87.60				

Factor	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings(a)**
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**
19	0.45	1.36	88.96				
20	0.40	1.21	90.17				
21	0.38	1.15	91.32				
22	0.36	1.08	92.40				
23	0.34	1.03	93.43				
24	0.32	0.98	94.41				
25	0.30	0.90	95.30				
26	0.28	0.86	96.17				
27	0.24	0.72	96.89				
28	0.22	0.68	97.56				
29	0.21	0.64	98.20				
30	0.18	0.56	98.76				
31	0.15	0.47	99.23				
32	0.14	0.43	99.65				
33	0.11	0.35	100.00				

Table 5: Total Variance Explained (a) – UTAUT (OLS, OBT and SSK Data Sets)

Factor	**Initial Eigenvalues**								
	Total			**% of Variance**			**Cumulative %**		
	OLS	**OBT**	**SSK**	**OLS**	**OBT**	**SSK**	**OLS**	**OBT**	**SSK**
1	6.64	6.64	7.20	34.93	34.94	37.89	34.93	34.94	37.89
2	2.40	2.48	2.22	12.62	13.05	11.66	47.55	47.99	49.56
3	2.19	2.19	1.74	11.54	11.52	9.16	59.09	59.52	58.72
4	1.49	1.46	1.42	7.87	7.70	7.46	66.96	67.22	66.18
5	1.29	1.32	1.17	6.80	6.96	6.16	73.76	74.18	72.34
6	1.04	1.07	1.03	5.49	5.64	5.44	79.25	79.81	77.78
7	0.93	0.91	0.98	4.88	4.79	5.14	84.14	84.61	82.92
8	0.82	0.82	0.84	4.29	4.30	4.41	88.43	88.90	87.33
9	0.64	0.62	0.66	3.38	3.25	3.49	91.81	92.16	90.83
10	0.59	0.57	0.57	3.10	3.00	3.02	94.91	95.16	93.85
11	0.35	0.33	0.37	1.82	1.73	1.96	96.73	96.88	95.81
12	0.24	0.20	0.29	1.26	1.07	1.54	97.99	97.95	97.35
13	0.17	0.13	0.19	0.88	0.71	1.02	98.87	98.66	98.37
14	0.12	0.09	0.17	0.62	0.49	0.88	99.49	99.15	99.25
15	0.03	0.08	0.07	0.17	0.43	0.37	99.66	99.58	99.62
16	0.03	0.03	0.03	0.13	0.15	0.15	99.79	99.73	99.78
17	0.02	0.02	0.02	0.09	0.13	0.12	99.88	99.86	99.89
18	0.01	0.01	0.02	0.06	0.07	0.08	99.94	99.93	99.97
19	0.01	0.01	0.01	0.06	0.07	0.03	100.00	100.00	100.00

Table 6: Total Variance Explained (b) – UTAUT (OLS, OBT and SSK Data Sets)

Factor	**Extraction Sums**									**Rotation Sums**		
	Total			**% of Variance**			**Cumulative %**			**Total**		
	OLS	**OBT**	**SSK**	**OLS**	**OBT**	**SSK**	**OLS**	**OBT**	**SSK**	**OLS**	**OBT**	**SSK**
1	6.40	6.41	7.20	33.69	33.73	37.89	33.69	33.73	37.89	5.88	5.86	6.39
2	1.94	2.03	2.22	10.22	10.66	11.66	43.91	44.39	49.56	4.78	4.69	5.39
3	1.95	1.95	1.74	10.25	10.28	9.16	54.17	54.67	58.72	1.87	1.83	2.12
4	0.63	0.66	1.42	3.33	3.50	7.46	57.49	58.17	66.18	2.15	1.58	1.69
5	1.14	1.08	1.17	5.97	5.66	6.16	63.47	63.83	72.34	3.04	2.44	1.96

Table 7: EFA Pattern Matrix – ISSAAC

Item	Factor								
	1	2	3	4	5	6	7	8	9
codep ne	.741				.104			.233	
multi sk	.711						.142		-.194
comm foc	.669							.159	
ict core	.646			.277	-.182	-.224	-.178		.180
ind change	.611			-.217		.409	-.160		
outsourc	.541	.133		-.114		.148	.132	-.140	
role exc	.506				.331				.278
shar sys	.347	.293	-.134	-.115			.109	.200	-.187
special		.892		-.104			-.119		
less lea		.777	.107	-.106					.283
custom p		.726		.200	.104		-.139	-.224	
trust re		.367			.107	-.103	.178		.356
mang cha	.121	.107	.889		-.151				
rule cha	-.233		.796			.149			.200
restruc	.137		.561		.160	-.176		-.128	-.207
shar s a			.422	.217			.105		-.226
rich med				.746		-.214	-.350	.153	
ict conn				.659	-.130	.118	.244		
ict net			.159	.630			-.191		-.106
ict intd	.387			.492		-.186	.108	-.133	
ios	-.167	.142		.396	-.159	.219	.129	.201	
mutual a					.677				
mutual d		.138	.106		.656			.193	-.298
alt task	.119	-.118		.227	.583				.199
shar str		.221	-.197	.201	.288		.244		
tech dev				-.107		.901	-.185		
ext fac	.444	-.109				.662	-.117		
act take	.356		.129			.372	.320		
comp adv		-.126	.138	-.181		-.153	.947		

Item	**Factor**								
know and			-.143	-.287	.138	-.105	.810		.141
indvid k			.118					.738	.244
social k	.102	-.151						.736	-.172
job role		.137							.730

Table 8: Labelling of Factors – ISSAAC

Construct	**Question Number**	**Description**
Cybernization	7	codep ne
	5	multi sk
	6	comm foc
	14	ict core
	3	ind change
	21	outsourc
	9	role exc
	23	shar sys
	4	tech dev
	1	ext fac
	2	act take
Special Product	31	special
	30	less lea
	29	custom p
	28	trust re
Anchoring	20	mang cha
	22	rule cha
	19	restruc
	24	shar s a
Aggregation	12	rich med
	15	ict conn
	10	ict net
	13	ict intd

Construct	**Question Number**	**Description**
	11	ios
Interoperability	25	mutual a
	26	mutual d
	18	alt task
	27	shar str
Switching	32	comp adv
	33	know and
	16	indvid k
	17	social k
	8	job role

Table 9: Labelling of Factors – UTAUT (OLS, OBT and SSK Data Sets)

Construct	**Question Number**	**Description**
Behavioural Intention	17	BI1
	18	BI2
	19	BI3
Performance Expectancy	1	U6
	2	RA1
	3	RA5
	4	OE7
Effort Expectancy	5	EOU3
	6	EOU5
	7	EOU6
	8	EU4
Social Influence	9	SN1
	10	SN2
	11	SF2
	12	SF4
Facilitating Conditions	13	PBC2
	14	PBC3
	15	PBC5
	16	FC3

Table 10: Frequency Analysis (Facilitating Conditions) – UTAUT (OLS, OBT and SSK Data Sets)

		OLS Data Set		**OBT Data Set**		**SSK Data Set**	
PBC2		**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
	Strongly Disagree	0	0	0	0	0	0
	Slightly Disagree	0	0	0	0	0	0
	Disagree	0	0	0	0	0	0
	Neither	1	0.25	1	0.25	0	0
	Slightly Agree	0	0	0	0	1	0.25
	Agree	4	1	4	1	5	1.25
	Strongly Agree	376	94	372	93	301	75.25
PBC3							
	Strongly Disagree	0	0	0	0	0	0
	Slightly Disagree	4	1	4	1	2	0.5
	Disagree	2	0.5	2	0.5	2	0.5
	Slightly Agree	2	0.5	2	0.5	3	0.75
	Agree	53	13.25	51	12.75	46	11.5
	Strongly Agree	320	80	318	79.5	254	63.5
PBC5							
	Strongly Disagree	0	0	0	0	0	0
	Slightly Disagree	0	0	0	0	0	0
	Disagree	0	0	0	0	0	0
	Neither	0	0	0	0	0	0
	Slightly Agree	0	0	0	0	0	0
	Agree	23	5.75	22	5.5	20	5
	Strongly Agree	358	89.5	355	88.75	287	71.75
FC3							

		OLS Data Set		OBT Data Set		SSK Data Set	
	Strongly Disagree	285	71.25	281	70.25	22	5.5
	Slightly Disagree	45	11.25	44	11	4	1
	Disagree	1	0.25	1	0.25	1	0.25
	Neither	36	9	37	9.25	23	5.75
	Slightly Agree	2	0.5	2	0.5	8	2
	Agree	2	0.5	2	0.5	69	17.25
	Strongly Agree	10	2.5	10	2.5	180	45

Highlighted cells represent the most common customer response

Appendix G

Table 1: Latent Variables and associated Manifest Variables for ISSAAC

Latent Variable	Associated Indicators		
	Item	**Description**	**Additional Information**
Cybernization η_1	7	Having a common focus and common goals makes it easier to share roles and responsibilities (both internally and externally)	y_1
	5	IT has allowed the workforce to become more multi skilled	y_2
	6	Staff within departments, teams and alliances have common focus and goals	y_3
	14	Most of the airline's core operations (such as checking customers in) predominately depends on IT	y_4
	3	Industry changes have resulted in an increased reliance on IT	y_5
	21	Outsourcing occurs within the airline in order to get the most out of IT (e.g. IT support comes from a third party)	y_6
	9	Pre-assigned roles are swapped in order to achieve an end goal	y_7
	23	Similar IT software and standards are used across the airline (e.g. all staff use the same check in software)	y_8
	4	Technological developments in society as a whole has made alliances easier to develop	y_9
	1	External factors (such as fuel prices and stand charges) cause changes to the day-to-day operation and running of the airline	y_{10}
	2	Action has been taken within the airline to counteract these external factors	y_{11}
Aggregation η_2	12	Communication amongst team members both within the airline and within alliances is primarily dependant upon IT and rich media forms (e.g. e-mail)	y_{12}
	15	The airline frequently uses IT to interact with 3rd parties (e.g. e-mail, video conferences, fax etc)	y_{13}

Latent Variable	**Associated Indicators**		
	Item	**Description**	**Additional Information**
	10	IT is used to connect staff who are separated by time and space (e.g. staff at different airports use video conferencing to conduct a meeting)	y_{14}
	13	IT helps to create a sense of team spirit between airline staff and the staff of alliances such as OneWorld, Star or SkyTeam (i.e. staffs become dependant upon one another)	y_{15}
	11	Interorganisational Systems (IOS) exist within the airline and amongst external partners	y_{16}
Interoperability η_3	25	Mutual dependency exists between staff (i.e. staff are reliant upon one another for completion of goals or tasks)	y_{17}
	26	Mutual dependency exists between the airline and its external partners	y_{18}
	18	Staff are able to alternate their membership of teams in order to complete task due to shared IT standards (e.g. a ticket desk agent may go on check in if it is a busy shift)	y_{19}
	27	Alliance members (e.g. OneWorld, Star or SkyTeam) share common strategic goals, standards and schedules	y_{20}
Switching η_4	32	An airline stays in an alliance such as OneWorld, Star or SkyTeam due to a gain in competitive advantage	y_{21}
	33	An airline stays in an alliance such as OneWorld, Star or SkyTeam due to technological benefits	y_{22}
	16	Individual knowledge exists within the airline (e.g. information that is given through formal manuals and training which is then learnt by staff as they carry out tasks)	y_{23}
	17	Social knowledge exists within the airline (e.g. staff know certain members of staff have a greater level of experience than others)	y_{24}
	8	Job specific roles exist within the airline (e.g. check in agent or ticket sales agent)	y_{25}

Latent Variable	**Associated Indicators**		
	Item	**Description**	**Additional Information**
Special Product η_5	31	Being part of an alliance (such as OneWorld, Star or SkyTeam) allows the airline to offer unique products and services (such as a greater range of routes	y_{26}
	30	The methods by which products and services are produced are different from the methods used by the airline 10 years ago (e.g. the way customers are checked in)	y_{27}
	29	The products and services produced by the airline are different to those produced before the introduction and increased use of IT	y_{28}
	28	Staff trust the information they receive from others and build trusting relationships (e.g. management or colleagues) is true and accurate	y_{29}
Anchoring η_6	20	Management technique has changed to accommodate the introduction IT	y_{30}
	22	Rules and procedures within the airline are manipulated in order to accommodate the introduction of IT	y_{31}
	19	Re-structuring (e.g. acquisition or loss of staff) has taken place within the airline in order to accommodate IT (e.g. online or self service facilities)	y_{32}
	24	Airlines within alliances like systems to create an overall support system for IT (e.g. everyone uses the same system and procedure to report delays on flights)	y_{33}

All items are scored as 1=strongly agree 2=disagree 3=neither 4=agree 5=strongly agree

Table 2: Latent Variables and associated Manifest Variables for UTAUT

Latent Variable	**Associated Indicators**		
	Item	**Description**	**Additional Information (mathematical notation)**
Behavioural Intention η_1 (Behave)	BI1	I intend to use the system in the next <n> months.	y_1
	BI2	I predict I would use the system in the next <n> months.	y_2
	BI3	I plan to use the system in the next <n> months.	y_3
Performance Expectancy ξ_1 (Perform)	U6	I would find the system useful	x_1
	RA1	Using the system enables me to accomplish tasks more quickly.	x_2
	RA5	Using the system increases my productivity.	x_3
	OE7	If I use the system I will receive additional benefits	x_4
Effort Expectancy ξ_2 (Effort)	EOU3	My interaction with the system would be clear and understandable.	x_5
	EOU5	It would be easy for me to become skilful at using the system.	x_6
	EOU6	I would find the system easy to use.	x_7
	EU4	Learning to operate the system is easy for me.	x_8
Social Influence ξ_2 (Social)	SN1	People who influence my behaviour think that I should use the system.	x_9
	SN2	People who are important to me think that I should use the system.	x_{10}
	SF2	The senior management of this business has been helpful in the use of the system.	x_{11}
	SF4	In general, the organization has supported the use of the system.	x_{12}
Facilitating Conditions ξ_4	PBC2	I have the resources necessary to use the system.	x_{13}

Latent Variable	**Associated Indicators**		
	Item	**Description**	**Additional Information (mathematical notation)**
(Facil)			
	PBC3	I have the knowledge necessary to use the system.	x_{14}
	PBC5	The system is not compatible with other systems I use.	x_{15}
	FC3	A specific person (or group) is available for assistance with system difficulties.	x_{16}

All items are scored as: 1=strongly agree 2=disagree 3=neither 4=agree 5=strongly agree

Appendix H

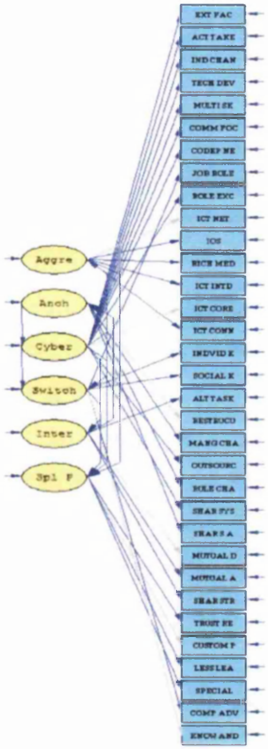


Figure 1: Conceptual Path Diagram - ISSAAC V1 (Complete Data Set)

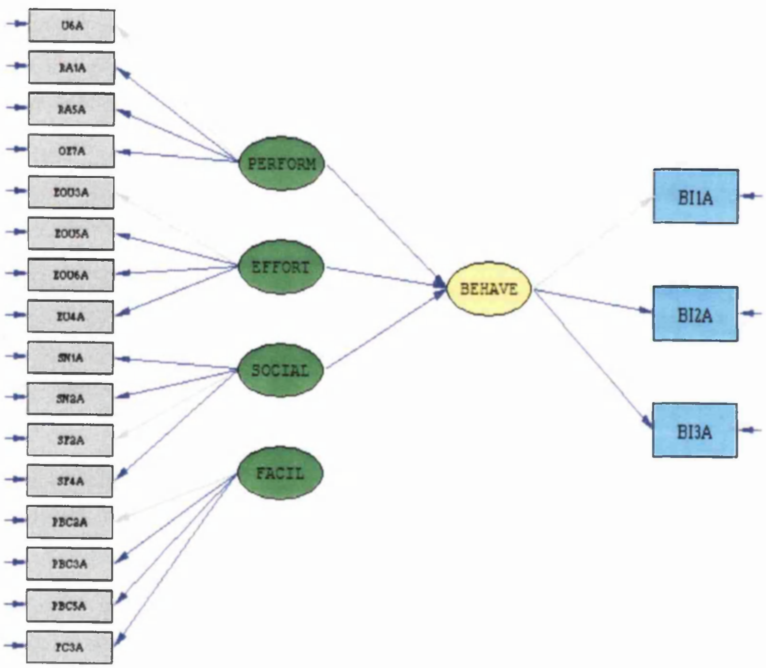


Figure 2: Conceptual Path Diagram – UTAUT (OLS Data Set)

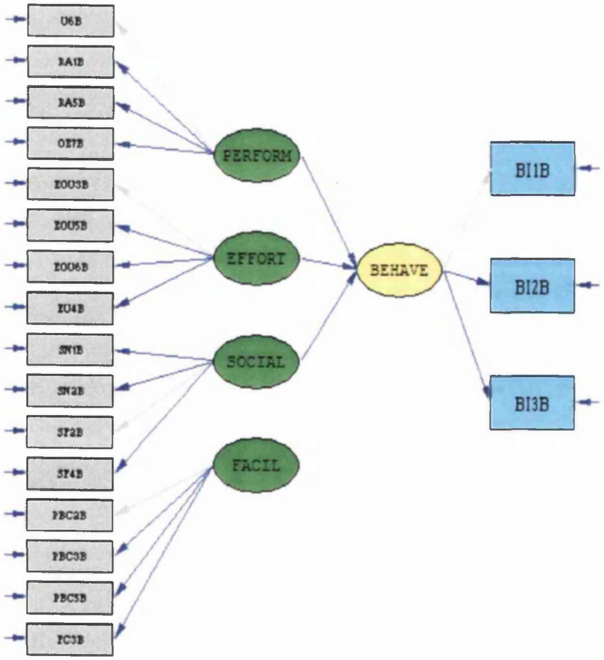


Figure 3: Conceptual Path Diagram – UTAUT (OBT Data Set)

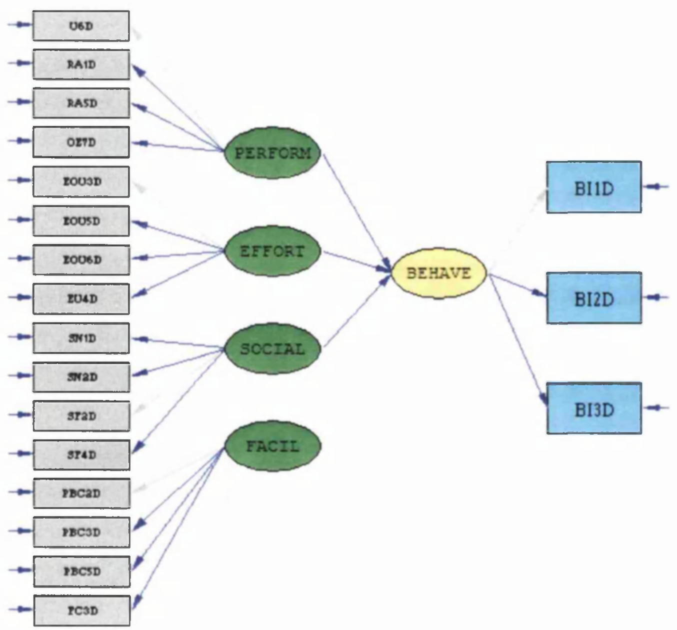


Figure 4: Conceptual Path Diagram – UTAUT (SSK Data Set)

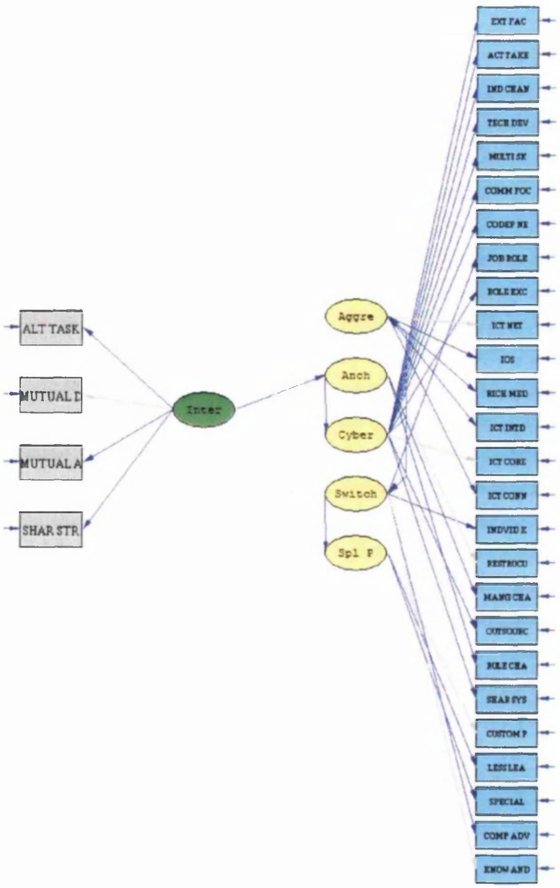


Figure 5: Modified ISSAAC Model (M^4)

Appendix I

Table 1: LISREL Notation

Sign	Description	Additional Information
η (read as: eta)	An *endogenous* latent (unobservable) variable	Positioned in a circle
ξ (read as: ksi)	An *exogenous* latent (unobservable) variable	Positioned in a circle
y	A *manifest* (observable) variable used as an indicator of a latent endogenous variable	Positioned a box
x	A *manifest* (observable) variable used as an indicator of a latent exogenous variable	Positioned a box
ζ (read as: zeta)	*Error* (residual) term for a latent *endogenous* variable	Represent 'error in equations' such as random disturbances
ε (read as: epsilon)	*Error* (residual) term for an *indicator y* of a latent *endogenous* variable	Represent 'errors in measurement'
δ (read as: delta)	*Error* (residual) term for an *indicator x* of a latent *exogenous* variable	Represent 'errors in measurement'
→	*Directional* (causal) *relationship* between two variables	The arrow commences at the hypothesised 'cause' and points to the hypothesised 'effect'
Each hypothesised relationships is referenced by a Greek letter (see below) and two subscripts. The first representing the target of the arrow (the 'effect') and the second denotes the origin of the arrow (the 'cause'). Note: no one-way arrow can point to an exogenous variable.		
β (read as: beta)	A *directional* (causal) *relationship* between two *endogenous latent* variables.	
γ (read as: gamma)	A *directional* (causal) *relationship* between an *exogenous* and *endogenous latent* variable	
λ (read as: lambda)	The relationships between *latent variables* and their *reflective indicators* (the manifest variables)	Represented by a one-way straight arrow

		originating from the latent variables
	The influence of *residual terms* is represented by a one-way arrow originating from for the error variable (ζ, ε or δ) and pointing to the corresponding latent or manifest variables (η, *y* or *x*)	
Φ → (read as: phi)	A *non-directional* (non casual) relationship between two *exogenous* variables	Depicted by a curved line with double arrows
The above relationships are only permissible between *exogenous latent variables* (ξ)		
Ψ (read as: psi)	A *non-directional* (non casual) relationship between error terms	
The above relationships are only permissible between the error terms of *endogenous latent variables* (ζ)		
The *measurement model* for the *exogenous latent variables,* stipulating the relationships between the *exogenous latent* variables (ξ) and the corresponding manifest variables (*x*) is always on the ***left side*** of the path diagram		
The *measurement model* for the *endogenous latent variables,* stipulating the relationships between the *endogenous latent* variables (η) and the corresponding manifest variables (*y*) is always on the ***right side*** of the path diagram		
The *structural model,* stipulating the relationships between the *exogenous* (ξ) and *endogenous* (η) latent variables is always in the ***centre*** of the path diagram		

Table 2: Estimation Methods of the LISREL program (Adapted from Diamantopoulos and Siguaw (2000)).

Estimation Method	**Description**	**Additional Information**
Instrumental Values (IV)	- Non- iterative approach - Limited information technique (each parameter equation is estimated separately) - Relatively robust against misspecification - Statistically less efficient (compared to full-information techniques)	- Primarily used to compute starting values for other estimation methods such as ML
Two-Stage Least Squares (TSLS)		
Unweighted Least Squares (ULS)	- Iterative approach (final parameter estimates are *"obtained via a numerical search process which minimizes the value of the fitting function by successively improving the estimates"* (Diamantopoulos and Siguaw, 2000. P.56). - Iterations cease when convergence between the implied and sample covariance matrices - Full-information technique - Susceptible to specification errors	- Only scale-dependant method (that is changes in the scale of the observed variables will result in a change in the estimate which are not directly comparable) - Only justified when all observed variables are measured using like units
Generally Weighted Least Squares (WLS)	- More statistically efficient	- Make no assumptions with regards to the distribution of the observed variables - Require very large sample sizes (of approximately 1000 plus) - Conceptually very demanding
Diagonally Weighted Least Squares (DWLS)		
Generalised Least Squares (GLS)		- Scale-free method (change in parameter estimates is directly relational to the changes in scale)
Maximum Likelihood (ML)		

Appendix J

Figure 1: SIMPLIS Syntax for ISSAAC

```
!ISSAAC
Observed Variables: 'EXT FAC' 'ACT TAKE' 'IND CHAN' 'TECH DEV'
'STRUC CH' 'MULTI SK' 'COMM FOC' 'UNIQ FOC' 'CODEP NE' 'JOB ROLE'
'ROLE EXC' 'ICT NET' IOS 'RICH MED' 'ICT INTD' 'ICT CORE' 'ICT CONN' 'SELF MAN'  'SELF M A' 'INDVID K' 'SOCIAL K'
'UNIQ AND' 'ALT TASK' RESTRUCU 'MANG CHA' OUTSOURC 'RULE CHA' 'SHAR SYS' 'SHAR S A'
'MUTUAL D' 'MUTUAL A' 'EXT ACT' 'SHAR STR' 'EXP TRUS' 'TRUST RE' 'DIFF TRU' 'DIFF T A' 'TRUST EF'
'CUSTOM P' 'LESS LEA' SPECIAL 'TECH ADV' 'SHAR DIS' 'SHAR MAR' 'COMP ADV' 'KNOW AND' 'GEOG LOC'
'AFFIL ST' 'COMM TRU' 'PURP TRU'
Covariance Matrix from File UMOV1.COV
Sample Size: 202
Latent Variables: Aggre Anch Cyber Switch Inter 'Spl P'
Relationships:
Inter = Cyber
Switch = Aggre Cyber
'Spl P' = Switch Aggre Cyber
Anch = Inter
Aggre = Cyber
Cyber = Anch
'ICT CORE' = 1*Cyber
'EXT FAC' = Cyber
'CODEP NE' = Cyber
'MULTI SK' = Cyber
'TECH DEV' = Cyber
OUTSOURC = Cyber
'IND CHANGE' = Cyber
'ACT TAKE' = Cyber
'COMM FOC' = Cyber
'SHAR SYS' = Cyber
'ROLE EXC' = Cyber
'CUSTOM P' = 1* 'Spl P'
'LESS LEA' - SPECIAL = 'Spl P'
'TRUST RE' = 'Spl P'
RESTRUCU = 1*Anch
'MANG CHA' = Anch
'RULE CHA' = Anch
'SHAR S A' = Anch
'ICT NET' = 1*Aggre
'IOS' = Aggre
```

Figure 2: SIMPLIS Syntax for UTAUT

```
!UTAUT
Observed Variables: U6 RA1 RA5 OE7 EOU3 EOU5 EOU6 EU4 SN1 SN2 SF2
SF4 PBC2
PBC3 PBC5 FC3 BI1 BI2 BI3
Covariance Matrix from File CUSA.cov
Sample Size: 381
Latent Variables: PERFORM EFFORT SOCIAL FACIL BEHAVE
Relationships:
BEHAVE = PERFORM EFFORT SOCIAL
U6 = 1* PERFORM
RA1 - OE7 = PERFORM
EOU3 = 1*EFFORT
EOU5 - EU4 = EFFORT
SF2 = 1* SOCIAL
SF4 = SOCIAL
SN1 = SOCIAL
SN2 = SOCIAL
PBC2 = 1* FACIL
PBC3 -FC3 = FACIL
BI1 = 1* BEHAVE
BI2 = BEHAVE
BI3 = BEHAVE
Options: ND=3
LISREL output: RS MI SS SC EF
Path Diagram
End of Problem
```

Appendix K

ISSAAC V1 (Complete Data Set)

```
Covariance Matrix

            EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
           --------   --------   --------   --------   --------   --------
  EXT FAC      3.44
 ACT TAKE      2.40      12.13
 IND CHAN      2.44       3.35      11.41
 TECH DEV      4.38       6.36       7.74      32.21
 MULTI SK      1.47       2.44       2.61       3.40       6.05
 COMM FOC      1.44       3.19       2.78       2.38       2.03       6.14
 CODEP NE      9.02      13.85      18.62      20.95      13.71      14.04
 JOB ROLE      0.33       1.31       1.37       0.25       1.09       1.75
 ROLE EXC      0.61       1.26       1.09       1.20       0.78       1.32
  ICT NET      1.85       3.98       3.49       4.65       2.57       3.07
      IOS      0.48       1.02       0.74       1.43       0.53       0.61
 RICH MED     -1.28      -2.14      -3.27      -8.33       1.14       0.39
 ICT INTD      0.25       0.75       0.43      -0.18       0.67       0.60
 ICT CORE      0.49       0.88       1.41       0.46       0.96       1.13
 ICT CONN      0.53       0.50       0.27       0.35       0.17       0.44
 INDVID K      0.37       1.08       0.95       1.28       0.62       0.93
 SOCIAL K      0.62       0.77       1.12       2.02       0.85       0.90
 ALT TASK      0.28       0.34       0.42       0.51       0.10       0.48
 RESTRUCU     -0.08      -0.24      -0.13      -0.41      -0.11      -0.13
 MANG CHA     -0.04       0.04      -0.02      -0.11      -0.08       0.04
 OUTSOURC      0.89       1.70       1.67       2.35       1.05       1.34
 RULE CHA     -0.11      -0.24      -0.20      -0.35      -0.25      -0.20
 SHAR SYS      0.71       1.62       1.14       2.09       1.03       1.27
 SHAR S A     -0.01       0.01      -0.04      -0.04       0.04       0.00
 MUTUAL D     -0.31      -0.73      -0.51      -2.32      -0.47      -0.03
 MUTUAL A      0.13       0.38      -0.33       0.44       0.25       0.36
```

```
 SHAR STR       1.30       3.67       2.56       4.66       2.37       2.95
 TRUST RE      -0.06       0.07       0.06      -0.68       0.03       0.07
 CUSTOM P       0.42       0.87       0.99       1.00       0.47       0.78
 LESS LEA       0.42       0.82       1.41       0.85       0.58       1.01
  SPECIAL       0.11       0.39       0.53       0.30       0.11       0.41
 COMP ADV       0.09       0.53       0.19       0.07       0.24       0.23
 KNOW AND       0.40       1.66       0.37       0.18       0.87       1.07

Covariance Matrix

           CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
           --------   --------   --------   --------   --------   --------
 CODEP NE    228.10
 JOB ROLE      8.09       4.77
 ROLE EXC      6.74       0.81       2.54
  ICT NET     14.22       2.31       1.02      14.94
      IOS      3.58       0.52       0.26       1.70       1.21
 RICH MED      7.08       3.49       0.71       6.75       1.70     284.06
 ICT INTD      3.80       0.06       0.61       1.54       0.29       4.46
 ICT CORE      6.83       0.89       0.49       1.82       0.42       4.42
 ICT CONN      2.70      -0.05       0.19       1.67       0.21       7.16
 INDVID K      5.62       0.73       0.56       1.22       0.38       2.28
 SOCIAL K      5.36       0.19       0.28       1.17       0.42       2.94
 ALT TASK      3.40       0.79       0.65       0.41       0.08       2.15
 RESTRUCU     -0.82      -0.21      -0.02      -0.38      -0.15       0.18
 MANG CHA      0.36      -0.10       0.11      -0.15      -0.10       0.28
 OUTSOURC      6.47       0.46       0.55       1.88       0.44      -0.41
 RULE CHA     -0.81      -0.15       0.00      -0.40      -0.11      -0.44
 SHAR SYS      7.83       0.54       0.47       1.70       0.49       0.42
 SHAR S A      0.69      -0.27       0.02       0.07      -0.01       0.58
 MUTUAL D      2.09       0.05       0.70      -0.76      -0.20       4.30
 MUTUAL A      3.46      -0.17       0.60       0.03       0.18       4.75
 SHAR STR     13.95       2.46       1.63       5.10       1.62       4.99
 TRUST RE      1.06      -0.01       0.15      -0.03      -0.10       1.38
 CUSTOM P      4.52       0.48       0.37       1.11       0.32      -0.27
 LESS LEA      5.81       0.97       0.45       1.50       0.39       1.94
```

```
 SPECIAL       1.55        0.38        0.19        0.84        0.21        1.88
COMP ADV       1.60        0.30        0.10        0.66        0.14       -0.99
KNOW AND       5.66        1.52        0.24        2.27        0.49       -4.14

Covariance Matrix

            ICT INTD    ICT CORE    ICT CONN    INDVID K    SOCIAL K    ALT TASK
            --------    --------    --------    --------    --------    --------
ICT INTD       2.36
ICT CORE       0.59        2.14
ICT CONN       0.49        0.30        3.44
INDVID K       0.22        0.28        0.04        1.15
SOCIAL K       0.25        0.17        0.12        0.61        2.00
ALT TASK       0.32        0.13        0.32        0.17        0.19        2.10
RESTRUCU       0.04       -0.10        0.05       -0.12       -0.11        0.01
MANG CHA       0.09       -0.03        0.12        0.00       -0.06        0.00
OUTSOURC       0.48        0.58       -0.03        0.50        0.24        0.25
RULE CHA      -0.05       -0.11        0.00       -0.04       -0.11        0.01
SHAR SYS       0.28        0.56        0.08        0.61        0.58        0.08
SHAR S A       0.03       -0.08        0.12       -0.04        0.02        0.06
MUTUAL D       0.30       -0.17        0.44        0.05       -0.12        1.05
MUTUAL A       0.46       -0.23        0.65        0.29        0.49        0.70
SHAR STR       1.08        1.19        0.11        1.21        1.15        1.25
TRUST RE       0.12        0.08        0.15       -0.07       -0.16        0.08
CUSTOM P       0.20        0.30        0.05        0.40        0.31        0.26
LESS LEA       0.30        0.52        0.04        0.55        0.40        0.28
 SPECIAL       0.17        0.26        0.27        0.16        0.06        0.18
COMP ADV       0.16        0.12       -0.02        0.14        0.11        0.07
KNOW AND       0.22        0.25       -0.21        0.81        0.58        0.43

Covariance Matrix

            RESTRUCU    MANG CHA    OUTSOURC    RULE CHA    SHAR SYS    SHAR S A
            --------    --------    --------    --------    --------    --------
RESTRUCU       0.22
MANG CHA       0.10        0.44
```

```
 OUTSOURC      -0.08       -0.02        3.44
 RULE CHA       0.08        0.11       -0.12        0.31
 SHAR SYS      -0.16       -0.10        0.90       -0.19        2.95
 SHAR S A       0.04        0.06       -0.04        0.07       -0.04        0.46
 MUTUAL D       0.22       -0.03       -0.35        0.13        0.12        0.02
 MUTUAL A       0.14        0.07       -0.15        0.13        0.42        0.23
 SHAR STR      -0.36       -0.39        1.60       -0.43        2.10        0.04
 TRUST RE       0.09        0.10       -0.07        0.05       -0.16        0.09
 CUSTOM P      -0.08       -0.01        0.46       -0.04        0.53        0.02
 LESS LEA      -0.08        0.03        0.56       -0.05        0.66       -0.11
  SPECIAL      -0.04       -0.02        0.22       -0.08        0.33        0.00
 COMP ADV      -0.03       -0.02        0.21       -0.05        0.20        0.00
 KNOW AND      -0.30       -0.30        0.77       -0.31        1.12       -0.09

Covariance Matrix

           MUTUAL D    MUTUAL A    SHAR STR    TRUST RE    CUSTOM P    LESS LEA
           --------    --------    --------    --------    --------    --------
 MUTUAL D     10.10
 MUTUAL A      2.18        5.32
 SHAR STR      1.24        2.28       15.63
 TRUST RE      0.25        0.15       -0.17        0.54
 CUSTOM P      0.10        0.47        1.35       -0.05        1.28
 LESS LEA      0.46        0.53        1.31        0.03        0.74        2.07
  SPECIAL      0.23        0.44        1.05        0.03        0.38        0.52
 COMP ADV      0.17        0.19        0.59        0.01        0.07        0.24
 KNOW AND      1.17        0.79        2.46       -0.29        0.61        1.00

Covariance Matrix

            SPECIAL    COMP ADV    KNOW AND
           --------    --------    --------
  SPECIAL      0.91
 COMP ADV      0.08        0.56
 KNOW AND      0.34        0.87        8.90
```

```
Parameter Specifications

         LAMBDA-Y

                  Aggre       Anch      Cyber     Switch      Inter      Spl P
                --------   --------   --------   --------   --------   --------
   EXT FAC           0          0          1          0          0          0
  ACT TAKE           0          0          2          0          0          0
  IND CHAN           0          0          3          0          0          0
  TECH DEV           0          0          4          0          0          0
  MULTI SK           0          0          5          0          0          0
  COMM FOC           0          0          6          0          0          0
  CODEP NE           0          0          7          0          0          0
  JOB ROLE           0          0          0          8          0          0
  ROLE EXC           0          0          9          0          0          0
   ICT NET           0          0          0          0          0          0
       IOS          10          0          0          0          0          0
  RICH MED          11          0          0          0          0          0
  ICT INTD          12          0          0          0          0          0
  ICT CORE           0          0          0          0          0          0
  ICT CONN          13          0          0          0          0          0
  INDVID K           0          0          0         14          0          0
  SOCIAL K           0          0          0         15          0          0
  ALT TASK           0          0          0          0         16          0
  RESTRUCU           0          0          0          0          0          0
  MANG CHA           0         17          0          0          0          0
  OUTSOURC           0          0         18          0          0          0
  RULE CHA           0         19          0          0          0          0
  SHAR SYS           0          0         20          0          0          0
  SHAR S A           0         21          0          0          0          0
  MUTUAL D           0          0          0          0          0          0
  MUTUAL A           0          0          0          0         22          0
  SHAR STR           0          0          0          0         23          0
  TRUST RE           0          0          0          0          0         24
  CUSTOM P           0          0          0          0          0          0
```

```
LESS LEA        0          0          0          0          0         25
 SPECIAL        0          0          0          0          0         26
COMP ADV        0          0          0         27          0          0
KNOW AND        0          0          0          0          0          0

        BETA

              Aggre       Anch      Cyber     Switch      Inter      Spl P
           --------   --------   --------   --------   --------   --------
   Aggre        0          0         28          0          0          0
    Anch        0          0          0          0         29          0
   Cyber        0         30          0          0          0          0
  Switch       31          0         32          0          0          0
   Inter        0          0         33          0          0          0
   Spl P       34          0         35         36          0          0

        PSI

              Aggre       Anch      Cyber     Switch      Inter      Spl P
           --------   --------   --------   --------   --------   --------
                 37         38         39         40         41         42

        THETA-EPS

            EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
           --------   --------   --------   --------   --------   --------
                 43         44         45         46         47         48

        THETA-EPS

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
           --------   --------   --------   --------   --------   --------
                 49         50         51         52         53         54

        THETA-EPS
```

```
            ICT INTD   ICT CORE   ICT CONN   INDVID K   SOCIAL K   ALT TASK
            --------   --------   --------   --------   --------   --------
                  55         56         57         58         59         60

         THETA-EPS

            RESTRUCU   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   SHAR S A
            --------   --------   --------   --------   --------   --------
                  61         62         63         64         65         66

         THETA-EPS

            MUTUAL D   MUTUAL A   SHAR STR   TRUST RE   CUSTOM P   LESS LEA
            --------   --------   --------   --------   --------   --------
                  67         68         69         70         71         72

         THETA-EPS

             SPECIAL   COMP ADV   KNOW AND
            --------   --------   --------
                  73         74         75

 Number of Iterations = 63

LISREL Estimates (Maximum Likelihood)

         LAMBDA-Y

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
  EXT FAC        - -        - -       1.49        - -        - -        - -
                                    (0.29)
                                      5.12
```

ACT TAKE	- -	- -	2.85 (0.55) 5.19	- -	- -	- -
IND CHAN	- -	- -	2.82 (0.54) 5.24	- -	- -	- -
TECH DEV	- -	- -	3.75 (0.82) 4.57	- -	- -	- -
MULTI SK	- -	- -	1.96 (0.38) 5.11	- -	- -	- -
COMM FOC	- -	- -	2.32 (0.42) 5.54	- -	- -	- -
CODEP NE	- -	- -	13.35 (2.48) 5.39	- -	- -	- -
JOB ROLE	- -	- -	- -	0.85 (0.21) 4.04	- -	- -
ROLE EXC	- -	- -	1.03 (0.23) 4.52	- -	- -	- -
ICT NET	1.00	- -	- -	- -	- -	- -

IOS	0.24 (0.04) 6.27	- -	- -	- -	- -	- -
RICH MED	0.99 (0.51) 1.93	- -	- -	- -	- -	- -
ICT INTD	0.20 (0.05) 4.15	- -	- -	- -	- -	- -
ICT CORE	- -	- -	1.00	- -	- -	- -
ICT CONN	0.16 (0.06) 2.89	- -	- -	- -	- -	- -
INDVID K	- -	- -	- -	0.62 (0.13) 4.69	- -	- -
SOCIAL K	- -	- -	- -	0.55 (0.14) 4.04	- -	- -
ALT TASK	- -	- -	- -	- -	0.96 (0.62) 1.55	- -
RESTRUCU	- -	1.00	- -	- -	- -	- -
MANG CHA	- -	1.16 (0.28)	- -	- -	- -	- -

```
                        4.09

OUTSOURC     - -        - -       1.30       - -       - -       - -
                                 (0.27)
                                  4.74

RULE CHA     - -       1.12       - -        - -       - -       - -
                      (0.27)
                       4.20

SHAR SYS     - -        - -       1.31       - -       - -       - -
                                 (0.26)
                                  4.98

SHAR S A     - -       0.59       - -        - -       - -       - -
                      (0.23)
                       2.51

MUTUAL D     - -        - -       - -        - -      1.00       - -

MUTUAL A     - -        - -       - -        - -      1.57       - -
                                                     (1.01)
                                                      1.55

SHAR STR     - -        - -       - -        - -      7.77       - -
                                                     (4.86)
                                                      1.60

TRUST RE     - -        - -       - -        - -       - -      -0.02
                                                               (0.08)
                                                               -0.28

CUSTOM P     - -        - -       - -        - -       - -       1.00
```

```
 LESS LEA       - -        - -        - -        - -        - -       1.39
                                                                    (0.21)
                                                                      6.75

  SPECIAL       - -        - -        - -        - -        - -       0.65
                                                                    (0.12)
                                                                      5.54

 COMP ADV       - -        - -        - -       0.22        - -        - -
                                               (0.06)
                                                 3.44

 KNOW AND       - -        - -        - -       1.00        - -        - -


         BETA

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
    Aggre       - -        - -       3.00        - -        - -        - -
                                    (0.59)
                                      5.07

     Anch       - -        - -        - -        - -      -0.12        - -
                                                          (0.12)
                                                          -1.01

    Cyber       - -      -0.56        - -        - -        - -        - -
                        (0.33)
                         -1.69

   Switch      0.12        - -       1.00        - -        - -        - -
             (0.08)                 (0.36)
               1.56                   2.76
```

```
 Inter        - -         - -         0.36        - -         - -         - -
                                     (0.24)
                                      1.53

 Spl P       0.03         - -         0.17        0.30        - -         - -
            (0.05)                   (0.23)      (0.15)
             0.66                     0.77        2.07


      Covariance Matrix of ETA

               Aggre        Anch       Cyber      Switch       Inter       Spl P
            --------    --------    --------    --------    --------    --------
 Aggre         7.47
  Anch        -0.19        0.08
 Cyber         1.32       -0.06        0.44
Switch         2.22       -0.08        0.60        1.40
 Inter         0.50       -0.04        0.17        0.23        0.19
 Spl P         1.14       -0.04        0.30        0.60        0.11        0.55

      PSI
      Note: This matrix is diagonal.

               Aggre        Anch       Cyber      Switch       Inter       Spl P
            --------    --------    --------    --------    --------    --------
                3.51        0.07        0.40        0.53        0.12        0.28
              (1.10)      (0.02)      (0.13)      (0.25)      (0.15)      (0.08)
                3.20        3.10        3.09        2.17        0.85        3.51


      Squared Multiple Correlations for Structural Equations

               Aggre        Anch       Cyber      Switch       Inter       Spl P
            --------    --------    --------    --------    --------    --------
```

```
         0.53       0.08       0.10       0.62       0.33       0.49

 THETA-EPS

      EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
     --------   --------   --------   --------   --------   --------
         2.46       8.54       7.90      26.02       4.36       3.76
       (0.26)     (0.92)     (0.86)     (2.71)     (0.47)     (0.42)
         9.32       9.28       9.23       9.60       9.33       8.90


 THETA-EPS

     CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
     --------   --------   --------   --------   --------   --------
       149.59       3.75       2.07       7.47       0.78     276.76
      (16.46)     (0.41)     (0.22)     (1.23)     (0.10)    (27.87)
         9.09       9.14       9.62       6.05       7.96       9.93


 THETA-EPS

     ICT INTD   ICT CORE   ICT CONN   INDVID K   SOCIAL K   ALT TASK
     --------   --------   --------   --------   --------   --------
         2.06       1.69       3.23       0.60       1.57       1.93
       (0.22)     (0.18)     (0.33)     (0.09)     (0.17)     (0.20)
         9.49       9.56       9.80       6.80       9.15       9.63


 THETA-EPS

     RESTRUCU   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   SHAR S A
     --------   --------   --------   --------   --------   --------
         0.14       0.33       2.70       0.21       2.19       0.44
       (0.02)     (0.04)     (0.28)     (0.03)     (0.23)     (0.05)
```

```
      6.13       7.82       9.54       6.69       9.41       9.61


 THETA-EPS

   MUTUAL D   MUTUAL A   SHAR STR   TRUST RE   CUSTOM P   LESS LEA
   --------   --------   --------   --------   --------   --------
      9.92       4.86       4.31       0.54       0.72       0.99
    (1.00)     (0.51)     (2.95)     (0.05)     (0.10)     (0.17)
      9.96       9.60       1.46      10.02       7.15       5.98


 THETA-EPS

    SPECIAL   COMP ADV   KNOW AND
   --------   --------   --------
      0.68       0.49       7.50
    (0.08)     (0.05)     (0.80)
      8.80       9.58       9.43


 Squared Multiple Correlations for Y - Variables

    EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
   --------   --------   --------   --------   --------   --------
      0.28       0.30       0.31       0.19       0.28       0.39

 Squared Multiple Correlations for Y - Variables

   CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
   --------   --------   --------   --------   --------   --------
      0.34       0.21       0.19       0.50       0.35       0.03

 Squared Multiple Correlations for Y - Variables
```

```
   ICT INTD   ICT CORE   ICT CONN   INDVID K   SOCIAL K   ALT TASK
   --------   --------   --------   --------   --------   --------
       0.13       0.21       0.06       0.48       0.21       0.08

 Squared Multiple Correlations for Y - Variables

   RESTRUCU   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   SHAR S A
   --------   --------   --------   --------   --------   --------
       0.36       0.24       0.22       0.32       0.26       0.06

 Squared Multiple Correlations for Y - Variables

   MUTUAL D   MUTUAL A   SHAR STR   TRUST RE   CUSTOM P   LESS LEA
   --------   --------   --------   --------   --------   --------
       0.02       0.09       0.72       0.00       0.43       0.52

 Squared Multiple Correlations for Y - Variables

    SPECIAL   COMP ADV   KNOW AND
   --------   --------   --------
       0.25       0.12       0.16


                           Goodness of Fit Statistics

                             Degrees of Freedom = 486
                Minimum Fit Function Chi-Square = 556.63 (P = 0.014)
        Normal Theory Weighted Least Squares Chi-Square = 629.39 (P = 0.00)
                 Estimated Non-centrality Parameter (NCP) = 143.39
           90 Percent Confidence Interval for NCP = (82.76 ; 212.15)

                        Minimum Fit Function Value = 2.77
                 Population Discrepancy Function Value (F0) = 0.71
               90 Percent Confidence Interval for F0 = (0.41 ; 1.06)
              Root Mean Square Error of Approximation (RMSEA) = 0.038
             90 Percent Confidence Interval for RMSEA = (0.029 ; 0.047)
```

```
          P-Value for Test of Close Fit (RMSEA < 0.05) = 0.99

             Expected Cross-Validation Index (ECVI) = 3.88
        90 Percent Confidence Interval for ECVI = (3.58 ; 4.22)
                   ECVI for Saturated Model = 5.58
                 ECVI for Independence Model = 17.54

Chi-Square for Independence Model with 528 Degrees of Freedom = 3460.05
                       Independence AIC = 3526.05
                           Model AIC = 779.39
                         Saturated AIC = 1122.00
                      Independence CAIC = 3668.22
                          Model CAIC = 1102.51
                        Saturated CAIC = 3538.94

                      Normed Fit Index (NFI) = 0.84
                    Non-Normed Fit Index (NNFI) = 0.97
                 Parsimony Normed Fit Index (PNFI) = 0.77
                    Comparative Fit Index (CFI) = 0.98
                    Incremental Fit Index (IFI) = 0.98
                     Relative Fit Index (RFI) = 0.83

                         Critical N (CN) = 203.74


                 Root Mean Square Residual (RMR) = 1.09
                        Standardized RMR = 0.071
                    Goodness of Fit Index (GFI) = 0.84
               Adjusted Goodness of Fit Index (AGFI) = 0.82
              Parsimony Goodness of Fit Index (PGFI) = 0.73

    Fitted Covariance Matrix

        EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
```

```
            --------  --------  --------  --------  --------  --------
  EXT FAC       3.44
 ACT TAKE       1.87     12.13
 IND CHAN       1.85      3.55     11.41
 TECH DEV       2.45      4.71      4.66     32.21
 MULTI SK       1.28      2.46      2.44      3.23      6.05
 COMM FOC       1.52      2.92      2.89      3.83      2.00      6.14
 CODEP NE       8.74     16.79     16.59     22.04     11.52     13.66
 JOB ROLE       0.76      1.46      1.45      1.92      1.00      1.19
 ROLE EXC       0.68      1.30      1.28      1.71      0.89      1.06
  ICT NET       1.96      3.77      3.72      4.95      2.59      3.07
      IOS       0.47      0.90      0.89      1.18      0.62      0.73
 RICH MED       1.94      3.73      3.68      4.89      2.56      3.03
 ICT INTD       0.39      0.76      0.75      0.99      0.52      0.62
 ICT CORE       0.65      1.26      1.24      1.65      0.86      1.02
 ICT CONN       0.32      0.62      0.61      0.81      0.43      0.50
 INDVID K       0.56      1.07      1.06      1.40      0.73      0.87
 SOCIAL K       0.49      0.95      0.93      1.24      0.65      0.77
 ALT TASK       0.24      0.46      0.45      0.60      0.31      0.37
 RESTRUCU      -0.09     -0.18     -0.18     -0.23     -0.12     -0.14
 MANG CHA      -0.11     -0.20     -0.20     -0.27     -0.14     -0.17
 OUTSOURC       0.85      1.63      1.61      2.14      1.12      1.33
 RULE CHA      -0.10     -0.20     -0.20     -0.26     -0.14     -0.16
 SHAR SYS       0.86      1.64      1.63      2.16      1.13      1.34
 SHAR S A      -0.05     -0.10     -0.10     -0.14     -0.07     -0.09
 MUTUAL D       0.25      0.48      0.47      0.62      0.33      0.39
 MUTUAL A       0.39      0.75      0.74      0.98      0.51      0.61
 SHAR STR       1.92      3.69      3.65      4.85      2.53      3.00
 TRUST RE      -0.01     -0.02     -0.02     -0.03     -0.01     -0.02
 CUSTOM P       0.45      0.86      0.85      1.13      0.59      0.70
 LESS LEA       0.62      1.20      1.18      1.57      0.82      0.97
  SPECIAL       0.29      0.56      0.55      0.73      0.38      0.45
 COMP ADV       0.20      0.38      0.37      0.49      0.26      0.31
 KNOW AND       0.89      1.71      1.69      2.25      1.18      1.39
```

Fitted Covariance Matrix

```
            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
 CODEP NE     228.10
 JOB ROLE       6.84       4.77
 ROLE EXC       6.08       0.53       2.54
  ICT NET      17.62       1.90       1.36      14.94
      IOS       4.19       0.45       0.32       1.78       1.21
 RICH MED      17.42       1.88       1.35       7.39       1.76     284.06
 ICT INTD       3.54       0.38       0.27       1.50       0.36       1.49
 ICT CORE       5.88       0.51       0.46       1.32       0.31       1.31
 ICT CONN       2.90       0.31       0.22       1.23       0.29       1.21
 INDVID K       5.00       0.75       0.39       1.39       0.33       1.37
 SOCIAL K       4.42       0.66       0.34       1.23       0.29       1.21
 ALT TASK       2.13       0.19       0.17       0.48       0.11       0.47
 RESTRUCU      -0.83      -0.07      -0.06      -0.19      -0.04      -0.18
 MANG CHA      -0.96      -0.08      -0.07      -0.22      -0.05      -0.21
 OUTSOURC       7.62       0.66       0.59       1.71       0.41       1.69
 RULE CHA      -0.92      -0.08      -0.07      -0.21      -0.05      -0.21
 SHAR SYS       7.69       0.67       0.60       1.73       0.41       1.71
 SHAR S A      -0.49      -0.04      -0.04      -0.11      -0.03      -0.11
 MUTUAL D       2.22       0.19       0.17       0.50       0.12       0.49
 MUTUAL A       3.49       0.30       0.27       0.78       0.19       0.77
 SHAR STR      17.26       1.50       1.34       3.88       0.92       3.83
 TRUST RE      -0.09      -0.01      -0.01      -0.03      -0.01      -0.03
 CUSTOM P       4.01       0.51       0.31       1.14       0.27       1.13
 LESS LEA       5.59       0.71       0.43       1.59       0.38       1.58
  SPECIAL       2.60       0.33       0.20       0.74       0.18       0.73
 COMP ADV       1.76       0.26       0.14       0.49       0.12       0.48
 KNOW AND       8.02       1.20       0.62       2.22       0.53       2.20

        Fitted Covariance Matrix

            ICT INTD   ICT CORE   ICT CONN   INDVID K   SOCIAL K   ALT TASK
            --------   --------   --------   --------   --------   --------
 ICT INTD       2.36
```

```
 ICT CORE       0.27       2.14
 ICT CONN       0.25       0.22       3.44
 INDVID K       0.28       0.37       0.23       1.15
 SOCIAL K       0.25       0.33       0.20       0.48       2.00
 ALT TASK       0.10       0.16       0.08       0.14       0.12       2.10
 RESTRUCU      -0.04      -0.06      -0.03      -0.05      -0.05      -0.04
 MANG CHA      -0.04      -0.07      -0.04      -0.06      -0.05      -0.04
 OUTSOURC       0.34       0.57       0.28       0.49       0.43       0.21
 RULE CHA      -0.04      -0.07      -0.03      -0.06      -0.05      -0.04
 SHAR SYS       0.35       0.58       0.28       0.49       0.43       0.21
 SHAR S A      -0.02      -0.04      -0.02      -0.03      -0.03      -0.02
 MUTUAL D       0.10       0.17       0.08       0.14       0.13       0.18
 MUTUAL A       0.16       0.26       0.13       0.22       0.20       0.28
 SHAR STR       0.78       1.29       0.64       1.10       0.97       1.40
 TRUST RE      -0.01      -0.01       0.00      -0.01      -0.01       0.00
 CUSTOM P       0.23       0.30       0.19       0.37       0.33       0.11
 LESS LEA       0.32       0.42       0.26       0.52       0.46       0.15
  SPECIAL       0.15       0.19       0.12       0.24       0.21       0.07
 COMP ADV       0.10       0.13       0.08       0.19       0.17       0.05
 KNOW AND       0.45       0.60       0.37       0.87       0.77       0.22

         Fitted Covariance Matrix

            RESTRUCU   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   SHAR S A
            --------   --------   --------   --------   --------   --------
 RESTRUCU       0.22
 MANG CHA       0.09       0.44
 OUTSOURC      -0.08      -0.09       3.44
 RULE CHA       0.09       0.10      -0.09       0.31
 SHAR SYS      -0.08      -0.09       0.75      -0.09       2.95
 SHAR S A       0.05       0.05      -0.05       0.05      -0.05       0.46
 MUTUAL D      -0.04      -0.04       0.22      -0.04       0.22      -0.02
 MUTUAL A      -0.06      -0.07       0.34      -0.07       0.34      -0.03
 SHAR STR      -0.29      -0.33       1.68      -0.32       1.69      -0.17
 TRUST RE       0.00       0.00      -0.01       0.00      -0.01       0.00
 CUSTOM P      -0.04      -0.05       0.39      -0.05       0.39      -0.03
```

```
LESS LEA      -0.06      -0.07       0.54      -0.07       0.55      -0.03
 SPECIAL      -0.03      -0.03       0.25      -0.03       0.25      -0.02
COMP ADV      -0.02      -0.02       0.17      -0.02       0.17      -0.01
KNOW AND      -0.08      -0.10       0.78      -0.09       0.79      -0.05

        Fitted Covariance Matrix

            MUTUAL D   MUTUAL A   SHAR STR   TRUST RE   CUSTOM P   LESS LEA
            --------   --------   --------   --------   --------   --------
MUTUAL D      10.10
MUTUAL A       0.29       5.32
SHAR STR       1.46       2.29      15.63
TRUST RE       0.00       0.00      -0.02       0.54
CUSTOM P       0.11       0.18       0.88      -0.01       1.28
LESS LEA       0.16       0.25       1.23      -0.02       0.77       2.07
 SPECIAL       0.07       0.12       0.57      -0.01       0.36       0.50
COMP ADV       0.05       0.08       0.39       0.00       0.13       0.18
KNOW AND       0.23       0.36       1.76      -0.01       0.60       0.84

        Fitted Covariance Matrix

             SPECIAL   COMP ADV   KNOW AND
            --------   --------   --------
 SPECIAL       0.91
COMP ADV       0.09       0.56
KNOW AND       0.39       0.31       8.91

        Fitted Residuals

             EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
            --------   --------   --------   --------   --------   --------
 EXT FAC       0.00
ACT TAKE       0.53       0.00
IND CHAN       0.60      -0.19       0.00
TECH DEV       1.93       1.65       3.08       0.00
MULTI SK       0.18      -0.03       0.17       0.16       0.00
```

```
COMM FOC     -0.08      0.27     -0.11     -1.46      0.03      0.00
CODEP NE      0.29     -2.94      2.02     -1.09      2.18      0.38
JOB ROLE     -0.43     -0.16     -0.07     -1.67      0.08      0.56
ROLE EXC     -0.07     -0.04     -0.20     -0.51     -0.12      0.27
 ICT NET     -0.11      0.22     -0.24     -0.29     -0.01      0.01
     IOS      0.01      0.12     -0.15      0.25     -0.09     -0.12
RICH MED     -3.22     -5.87     -6.95    -13.22     -1.42     -2.64
ICT INTD     -0.14     -0.01     -0.32     -1.17      0.15     -0.02
ICT CORE     -0.16     -0.38      0.17     -1.19      0.10      0.11
ICT CONN      0.20     -0.12     -0.34     -0.47     -0.25     -0.07
INDVID K     -0.18      0.01     -0.11     -0.13     -0.11      0.06
SOCIAL K      0.13     -0.18      0.18      0.78      0.20      0.14
ALT TASK      0.04     -0.12     -0.03     -0.09     -0.22      0.11
RESTRUCU      0.01     -0.06      0.04     -0.17      0.02      0.02
MANG CHA      0.07      0.24      0.19      0.16      0.06      0.21
OUTSOURC      0.04      0.07      0.06      0.21     -0.07      0.02
RULE CHA     -0.01     -0.05      0.00     -0.09     -0.11     -0.04
SHAR SYS     -0.15     -0.02     -0.49     -0.07     -0.10     -0.06
SHAR S A      0.05      0.12      0.06      0.10      0.11      0.08
MUTUAL D     -0.56     -1.20     -0.98     -2.94     -0.80     -0.41
MUTUAL A     -0.26     -0.37     -1.07     -0.54     -0.26     -0.25
SHAR STR     -0.62     -0.02     -1.09     -0.19     -0.16     -0.05
TRUST RE     -0.05      0.09      0.08     -0.65      0.05      0.08
CUSTOM P     -0.03      0.01      0.14     -0.12     -0.12      0.08
LESS LEA     -0.20     -0.38      0.23     -0.72     -0.24      0.04
 SPECIAL     -0.18     -0.16     -0.02     -0.43     -0.27     -0.04
COMP ADV     -0.11      0.15     -0.18     -0.43     -0.02     -0.08
KNOW AND     -0.50     -0.06     -1.33     -2.07     -0.31     -0.32

        Fitted Residuals

            CODEP NE  JOB ROLE  ROLE EXC   ICT NET       IOS  RICH MED
            --------  --------  --------  --------  --------  --------
CODEP NE      0.00
JOB ROLE      1.25      0.00
ROLE EXC      0.66      0.28      0.00
```

```
   ICT NET     -3.41        0.41       -0.34        0.00
       IOS     -0.61        0.07       -0.07       -0.08        0.00
  RICH MED    -10.34        1.61       -0.64       -0.63       -0.06        0.00
  ICT INTD      0.26       -0.32        0.34        0.03       -0.07        2.97
  ICT CORE      0.95        0.37        0.03        0.50        0.10        3.11
  ICT CONN     -0.20       -0.37       -0.04        0.45       -0.08        5.95
  INDVID K      0.61       -0.02        0.17       -0.16        0.05        0.91
  SOCIAL K      0.94       -0.47       -0.07       -0.05        0.13        1.73
  ALT TASK      1.27        0.60        0.48       -0.07       -0.04        1.67
  RESTRUCU      0.01       -0.13        0.04       -0.20       -0.11        0.37
  MANG CHA      1.32       -0.02        0.18        0.06       -0.05        0.50
  OUTSOURC     -1.16       -0.20       -0.04        0.17        0.03       -2.10
  RULE CHA      0.11       -0.07        0.07       -0.19       -0.06       -0.24
  SHAR SYS      0.14       -0.13       -0.12       -0.02        0.08       -1.29
  SHAR S A      1.18       -0.23        0.06        0.18        0.02        0.68
  MUTUAL D     -0.13       -0.15        0.53       -1.26       -0.31        3.81
  MUTUAL A     -0.03       -0.48        0.33       -0.76       -0.01        3.98
  SHAR STR     -3.32        0.95        0.29        1.22        0.70        1.16
  TRUST RE      1.15        0.00        0.16       -0.01       -0.09        1.41
  CUSTOM P      0.51       -0.03        0.06       -0.04        0.05       -1.40
  LESS LEA      0.22        0.26        0.02       -0.09        0.01        0.37
   SPECIAL     -1.05        0.05       -0.02        0.10        0.03        1.14
  COMP ADV     -0.16        0.03       -0.04        0.17        0.02       -1.47
  KNOW AND     -2.36        0.33       -0.38        0.05       -0.04       -6.34

         Fitted Residuals

            ICT INTD    ICT CORE    ICT CONN    INDVID K    SOCIAL K    ALT TASK
            --------    --------    --------    --------    --------    --------
  ICT INTD      0.00
  ICT CORE      0.32        0.00
  ICT CONN      0.24        0.08        0.00
  INDVID K     -0.06       -0.09       -0.18        0.00
  SOCIAL K      0.01       -0.16       -0.08        0.13        0.00
  ALT TASK      0.22       -0.03        0.24        0.03        0.07        0.00
  RESTRUCU      0.08       -0.04        0.09       -0.06       -0.06        0.04
```

```
MANG CHA      0.13       0.04       0.16       0.07      -0.01       0.04
OUTSOURC      0.13       0.01      -0.31       0.01      -0.18       0.05
RULE CHA     -0.01      -0.04       0.04       0.02      -0.05       0.05
SHAR SYS     -0.06      -0.02      -0.20       0.12       0.15      -0.13
SHAR S A      0.05      -0.04       0.14      -0.01       0.05       0.08
MUTUAL D      0.20      -0.34       0.35      -0.10      -0.25       0.87
MUTUAL A      0.31      -0.49       0.52       0.07       0.29       0.41
SHAR STR      0.30      -0.10      -0.53       0.11       0.18      -0.15
TRUST RE      0.12       0.09       0.16      -0.06      -0.15       0.08
CUSTOM P     -0.03       0.00      -0.14       0.02      -0.02       0.15
LESS LEA     -0.02       0.10      -0.22       0.02      -0.06       0.13
 SPECIAL      0.03       0.07       0.15      -0.08      -0.16       0.11
COMP ADV      0.06      -0.01      -0.10      -0.05      -0.06       0.03
KNOW AND     -0.23      -0.36      -0.58      -0.07      -0.20       0.21

        Fitted Residuals

           RESTRUCU   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   SHAR S A
           --------   --------   --------   --------   --------   --------
RESTRUCU      0.00
MANG CHA      0.01       0.00
OUTSOURC      0.00       0.08       0.00
RULE CHA     -0.01       0.00      -0.03       0.00
SHAR SYS     -0.08      -0.01       0.15      -0.10       0.00
SHAR S A      0.00       0.01       0.00       0.01       0.01       0.00
MUTUAL D      0.26       0.01      -0.57       0.17      -0.10       0.05
MUTUAL A      0.19       0.14      -0.49       0.19       0.07       0.27
SHAR STR     -0.07      -0.06      -0.08      -0.10       0.41       0.21
TRUST RE      0.09       0.10      -0.06       0.04      -0.15       0.09
CUSTOM P     -0.04       0.04       0.07       0.01       0.14       0.05
LESS LEA     -0.02       0.10       0.02       0.02       0.11      -0.07
 SPECIAL     -0.02       0.01      -0.04      -0.05       0.08       0.02
COMP ADV     -0.01       0.01       0.04      -0.03       0.03       0.01
KNOW AND     -0.22      -0.20       0.00      -0.22       0.33      -0.04

        Fitted Residuals
```

```
              MUTUAL D   MUTUAL A   SHAR STR   TRUST RE   CUSTOM P   LESS LEA
              --------   --------   --------   --------   --------   --------
 MUTUAL D       0.00
 MUTUAL A       1.89       0.00
 SHAR STR      -0.21       0.00       0.00
 TRUST RE       0.26       0.15      -0.15       0.00
 CUSTOM P      -0.01       0.29       0.47      -0.04       0.00
 LESS LEA       0.31       0.28       0.08       0.05      -0.03       0.00
  SPECIAL       0.16       0.32       0.48       0.04       0.02       0.03
 COMP ADV       0.12       0.11       0.20       0.01      -0.06       0.05
 KNOW AND       0.95       0.43       0.70      -0.28       0.01       0.16

         Fitted Residuals

               SPECIAL   COMP ADV   KNOW AND
              --------   --------   --------
  SPECIAL       0.00
 COMP ADV      -0.01       0.00
 KNOW AND      -0.05       0.56       0.00

 Summary Statistics for Fitted Residuals

 Smallest Fitted Residual =  -13.22
   Median Fitted Residual =    0.00
  Largest Fitted Residual =    5.95

 Stemleaf Plot

 -13|2
 -12|
 -11|
 -10|3
 - 9|
 - 8|
 - 7|0
```

```
 - 6|3
 - 5|9
 - 4|
 - 3|432
 - 2|996411
 - 1|75544333222211100
 - 0|88776666666555555555544444444443333333333333332222222222222222222222222+92
   0|11111111111111111111111111111111111111111111111111111111111111111111111+99
   1|00122223334677799
   2|02
   3|0118
   4|0
   5|9

        Standardized Residuals

                EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
                --------  --------   --------   --------   --------   --------
  EXT FAC          - -
 ACT TAKE         1.78       - -
 IND CHAN         2.09      -0.36       - -
 TECH DEV         3.64       1.68       3.26       - -
 MULTI SK         0.86      -0.07       0.45       0.23       - -
 COMM FOC        -0.43       0.74      -0.31      -2.28       0.10       - -
 CODEP NE         0.23      -1.29       0.93      -0.27       1.34       0.26
 JOB ROLE        -1.90      -0.37      -0.18      -2.28       0.27       1.98
 ROLE EXC        -0.45      -0.15      -0.74      -1.03      -0.59       1.47
  ICT NET        -0.32       0.34      -0.38      -0.26      -0.03       0.02
      IOS         0.10       0.61      -0.79       0.73      -0.62      -0.93
 RICH MED        -1.65      -1.62      -1.99      -2.13      -0.55      -1.07
 ICT INTD        -0.83      -0.03      -1.05      -2.16       0.69      -0.09
 ICT CORE        -1.20      -1.50       0.70      -2.67       0.54       0.68
 ICT CONN         0.96      -0.31      -0.90      -0.70      -0.90      -0.26
 INDVID K        -1.93       0.04      -0.64      -0.41      -0.90       0.51
 SOCIAL K         0.87      -0.65       0.69       1.64       1.03       0.74
 ALT TASK         0.25      -0.39      -0.10      -0.17      -0.99       0.51
```

```
RESTRUCU      0.21      -0.63       0.47      -1.03       0.22       0.26
MANG CHA      0.93       1.68       1.33       0.64       0.55       2.07
OUTSOURC      0.26       0.21       0.19       0.37      -0.30       0.09
RULE CHA     -0.09      -0.40      -0.02      -0.45      -1.35      -0.51
SHAR SYS     -0.97      -0.08      -1.79      -0.13      -0.51      -0.35
SHAR S A      0.55       0.73       0.41       0.36       0.99       0.73
MUTUAL D     -1.46      -1.68      -1.42      -2.44      -1.56      -0.84
MUTUAL A     -1.00      -0.75      -2.25      -0.64      -0.74      -0.74
SHAR STR     -1.74      -0.03      -1.73      -0.16      -0.35      -0.12
TRUST RE     -0.53       0.52       0.52      -2.33       0.41       0.71
CUSTOM P     -0.27       0.06       0.70      -0.33      -0.81       0.59
LESS LEA     -1.47      -1.48       0.92      -1.59      -1.31       0.21
 SPECIAL     -1.72      -0.83      -0.08      -1.28      -1.92      -0.30
COMP ADV     -1.34       0.99      -1.23      -1.63      -0.21      -0.76
KNOW AND     -1.55      -0.10      -2.31      -2.02      -0.73      -0.81

        Standardized Residuals

           CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
           --------   --------   --------   --------   --------   --------
CODEP NE       - -
JOB ROLE      0.70       - -
ROLE EXC      0.57       1.34       - -
 ICT NET     -1.29       1.01      -1.07       - -
     IOS     -0.74       0.55      -0.70      -1.06       - -
RICH MED     -0.67       0.68      -0.36      -0.25      -0.06       - -
ICT INTD      0.20      -1.57       2.22       0.17      -0.87       1.82
ICT CORE      0.92       2.00       0.24       1.72       1.14       1.96
ICT CONN     -0.12      -1.42      -0.19       1.68      -0.84       2.87
INDVID K      0.84      -0.26       1.92      -1.15       1.01       0.87
SOCIAL K      0.82      -3.07      -0.50      -0.21       1.52       1.12
ALT TASK      0.97       2.85       3.24      -0.20      -0.35       0.99
RESTRUCU      0.02      -1.97       0.92      -1.79      -3.25       0.67
MANG CHA      2.15      -0.16       2.63       0.39      -0.99       0.64
OUTSOURC     -0.89      -0.85      -0.28       0.46       0.25      -1.05
RULE CHA      0.23      -0.87       1.21      -1.43      -1.47      -0.37
```

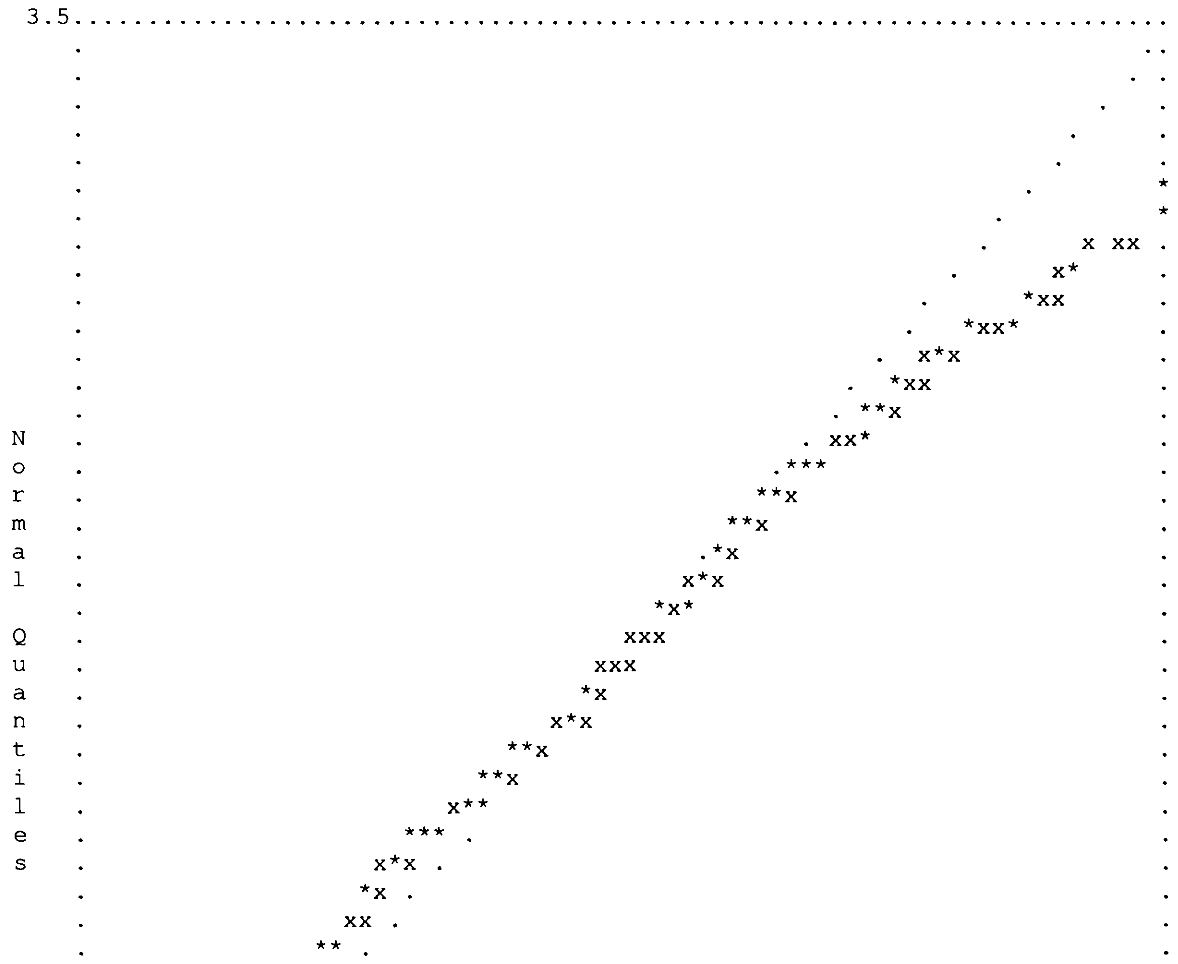
```
SHAR SYS      0.12      -0.59      -0.86      -0.07       0.84      -0.71
SHAR S A      1.72      -2.21       0.77       1.00       0.31       0.85
MUTUAL D     -0.04      -0.31       1.57      -1.56      -1.35       1.01
MUTUAL A     -0.01      -1.43       1.37      -1.37      -0.04       1.47
SHAR STR     -1.22       1.92       0.88       1.61       2.99       0.27
TRUST RE      1.62       0.02       2.06      -0.03      -1.70       1.62
CUSTOM P      0.59      -0.24       0.55      -0.21       0.85      -1.17
LESS LEA      0.20       1.69       0.17      -0.46       0.15       0.25
 SPECIAL     -1.27       0.41      -0.16       0.53       0.56       1.08
COMP ADV     -0.25       0.37      -0.52       1.13       0.47      -1.75
KNOW AND     -0.94       0.96      -1.31       0.08      -0.20      -1.91

        Standardized Residuals

            ICT INTD   ICT CORE   ICT CONN   INDVID K   SOCIAL K   ALT TASK
            --------   --------   --------   --------   --------   --------
ICT INTD       - -
ICT CORE      2.31        - -
ICT CONN      1.39       0.46        - -
INDVID K     -0.72      -1.16      -1.65        - -
SOCIAL K      0.04      -1.31      -0.48       2.66        - -
ALT TASK      1.45      -0.25       1.28       0.34       0.53        - -
RESTRUCU      1.59      -0.86       1.43      -2.12      -1.36       0.98
MANG CHA      1.92       0.60       1.87       1.45      -0.16       0.64
OUTSOURC      0.75       0.10      -1.44       0.13      -1.21       0.27
RULE CHA     -0.10      -0.76       0.52       0.61      -1.06       1.03
SHAR SYS     -0.40      -0.15      -1.03       1.33       1.08      -0.86
SHAR S A      0.72      -0.58       1.55      -0.20       0.74       1.20
MUTUAL D      0.60      -1.09       0.86      -0.43      -0.81       2.90
MUTUAL A      1.27      -2.28       1.77       0.44       1.34       2.03
SHAR STR      0.83      -0.35      -1.16       0.54       0.56      -2.40
TRUST RE      1.61       1.22       1.64      -1.27      -2.27       1.09
CUSTOM P     -0.25       0.02      -1.07       0.51      -0.30       1.44
LESS LEA     -0.19       0.90      -1.41       0.47      -0.63       0.94
 SPECIAL      0.28       0.81       1.32      -1.72      -2.01       1.16
COMP ADV      0.78      -0.22      -1.11      -1.71      -1.08       0.37
```

```
KNOW AND      -0.78      -1.35      -1.60      -0.59      -0.89       0.72

        Standardized Residuals

             RESTRUCU   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   SHAR S A
             --------   --------   --------   --------   --------   --------
RESTRUCU        - -
MANG CHA        0.93       - -
OUTSOURC        0.01       0.98       - -
RULE CHA       -1.86       0.25      -0.51       - -
SHAR SYS       -1.55      -0.08       0.93      -1.67       - -
SHAR S A       -0.26       0.45       0.04       0.76       0.15       - -
MUTUAL D        2.54       0.09      -1.45       1.42      -0.28       0.31
MUTUAL A        2.73       1.37      -1.79       2.29       0.30       2.45
SHAR STR       -0.99      -0.42      -0.21      -1.09       1.22       1.26
TRUST RE        3.70       2.92      -0.72       1.58      -1.79       2.51
CUSTOM P       -1.21       0.76       0.59       0.21       1.33       0.90
LESS LEA       -0.54       1.59       0.11       0.33       0.87      -1.12
 SPECIAL       -0.54       0.35      -0.33      -1.30       0.79       0.40
COMP ADV       -0.53       0.16       0.43      -1.05       0.38       0.42
KNOW AND       -2.34      -1.49      -0.01      -1.97       1.10      -0.30

        Standardized Residuals

             MUTUAL D   MUTUAL A   SHAR STR   TRUST RE   CUSTOM P   LESS LEA
             --------   --------   --------   --------   --------   --------
MUTUAL D        - -
MUTUAL A        3.95       - -
SHAR STR       -1.13      -0.05       - -
TRUST RE        1.56       1.27      -0.76       - -
CUSTOM P       -0.05       1.73       1.89      -1.05       - -
LESS LEA        1.00       1.33       0.26       1.16      -1.25       - -
 SPECIAL        0.75       2.17       2.13       1.07       0.51       0.74
COMP ADV        0.74       0.96       1.12       0.38      -1.29       0.94
KNOW AND        1.45       0.93       1.01      -1.91       0.04       0.75
```

```
        Standardized Residuals

            SPECIAL   COMP ADV   KNOW AND
           --------   --------   --------
 SPECIAL        - -
COMP ADV      -0.22        - -
KNOW AND      -0.28       4.41        - -

Summary Statistics for Standardized Residuals

Smallest Standardized Residual =   -3.25
  Median Standardized Residual =    0.00
 Largest Standardized Residual =    4.41

Stemleaf Plot

- 3|21
- 2|7
- 2|4433333333221100000
- 1|999999888877777777777666666666555555
- 1|44444444444333333333333222222222211111111111100000000000
- 0|999999999999888888888888877777777777766666666665555555555555
- 0|444444444444444333333333333333333333333222222222222222222221111111111111+55
  0|1111111111112222222222222222333333333333333333444444444444444
  0|555555555555555555566666666666666677777777777777777777888888888888899999+14
  1|00000000000000000111111111222222333333333333444444
  1|555555666666666666777777788899999
  2|00001111222334
  2|556779999
  3|023
  3|67
  4|04
Largest Negative Standardized Residuals
Residual for ICT CORE and TECH DEV  -2.67
Residual for SOCIAL K and JOB ROLE  -3.07
Residual for RESTRUCU and      IOS  -3.25
```

```
Largest Positive Standardized Residuals
Residual for TECH DEV and  EXT FAC   3.64
Residual for TECH DEV and IND CHAN   3.26
Residual for ICT CONN and RICH MED   2.87
Residual for SOCIAL K and INDVID K   2.66
Residual for ALT TASK and JOB ROLE   2.85
Residual for ALT TASK and ROLE EXC   3.24
Residual for MANG CHA and ROLE EXC   2.63
Residual for MUTUAL D and ALT TASK   2.90
Residual for MUTUAL A and RESTRUCU   2.73
Residual for MUTUAL A and MUTUAL D   3.95
Residual for SHAR STR and      IOS   2.99
Residual for TRUST RE and RESTRUCU   3.70
Residual for TRUST RE and MANG CHA   2.92
Residual for KNOW AND and COMP ADV   4.41
```

Qplot of Standardized Residuals



```
    .              xx*.                                                       .
    .            *   .                                                        .
    .           x*.                                                           .
    .          x*                                                             .
    .        x x                                                              .
    .  xx        .                                                            .
    .      .                                                                  .
    .     .                                                                   .
    .   .                                                                     .
    . .                                                                       .
-3.5...........................................................................
  -3.5                                                                         3.5
                            Standardized Residuals


Modification Indices and Expected Change

        Modification Indices for LAMBDA-Y

                Aggre       Anch      Cyber     Switch      Inter      Spl P
             --------   --------   --------   --------   --------   --------
  EXT FAC        0.80       0.44        - -       7.40       3.38       3.68
 ACT TAKE        0.02       0.08        - -       0.15       0.08       1.24
 IND CHAN        1.74       0.98        - -       1.13       4.17       0.35
 TECH DEV        1.04       0.19        - -       3.38       0.13       2.89
 MULTI SK        0.37       0.01        - -       0.90       0.38       3.41
 COMM FOC        0.22       0.83        - -       0.66       0.06       0.16
 CODEP NE        1.40       1.95        - -       0.24       1.20       0.00
 JOB ROLE        0.48       2.70       0.84        - -       2.58       1.47
 ROLE EXC        0.17       4.38        - -       0.91       1.82       0.17
  ICT NET         - -       0.92       0.03       0.01       0.10       0.06
      IOS         - -       7.94       1.67       4.84       5.63       1.38
 RICH MED         - -       0.57       3.70       0.18       0.01       0.08
 ICT INTD         - -       3.41       0.01       0.72       0.35       0.09
 ICT CORE        6.05       0.41        - -       0.06       0.43       0.63
 ICT CONN         - -       4.99       2.50       6.94       1.56       2.09
```

```
 INDVID K      0.72       0.31       0.00        - -       0.19       0.02
 SOCIAL K      0.74       0.72       1.48        - -       0.11       1.26
 ALT TASK      0.12       1.85       0.65       1.56        - -       1.65
 RESTRUCU      4.45        - -       2.09       6.94       0.18       3.11
 MANG CHA      3.52        - -       6.11       4.18       0.14       4.01
 OUTSOURC      0.06       0.03        - -       0.12       0.22       0.04
 RULE CHA      1.59        - -       1.67       0.40       0.43       0.08
 SHAR SYS      0.15       3.03        - -       3.04       1.30       2.65
 SHAR S A      1.70        - -       1.20       0.14       2.69       0.02
 MUTUAL D      2.57       4.78       3.44       0.65        - -       0.01
 MUTUAL A      0.58      12.50       2.04       0.01        - -       2.01
 SHAR STR      9.15      18.62       4.36       3.79        - -       1.88
 TRUST RE      0.08      14.83       0.02       2.21       0.27        - -
 CUSTOM P      0.08       0.00       1.71       0.09       2.26        - -
 LESS LEA      0.36       0.80       0.26       1.48       0.87        - -
  SPECIAL      0.14       0.41       0.82       2.83       2.63        - -
 COMP ADV      0.41       0.13       0.30        - -       0.64       0.02
 KNOW AND      1.21       5.59       3.62        - -       0.44       0.07

         Expected Change for LAMBDA-Y

                  Aggre       Anch      Cyber     Switch      Inter      Spl P
               --------   --------   --------   --------   --------   --------
  EXT FAC     -0.09       0.38        - -      -0.67      -0.77      -0.52
 ACT TAKE      0.03       0.30        - -      -0.18      -0.22      -0.56
 IND CHAN     -0.23       1.03        - -      -0.47      -1.54       0.29
 TECH DEV     -0.32      -0.80        - -      -1.42      -0.48      -1.45
 MULTI SK     -0.08      -0.09        - -      -0.31      -0.34      -0.66
 COMM FOC     -0.06       0.67        - -       0.26      -0.13       0.14
 CODEP NE     -0.92       6.41        - -       0.96      -3.62       0.03
 JOB ROLE      0.09      -1.14       0.52        - -       0.75       0.52
 ROLE EXC     -0.04       1.10        - -       0.21       0.51       0.10
  ICT NET      - -       -1.08       0.24      -0.07       0.25      -0.18
      IOS      - -       -0.94       0.43       0.39       0.54       0.22
 RICH MED      - -        4.31      -7.31      -0.92       0.35      -0.76
 ICT INTD      - -        0.93       0.04      -0.17       0.20      -0.07
```

```
 ICT CORE      0.20     -0.30       - -     -0.05     -0.22      0.17
 ICT CONN       - -      1.39     -0.67     -0.63     -0.51     -0.42
 INDVID K     -0.06      0.17     -0.01       - -     -0.09     -0.04
 SOCIAL K      0.07     -0.38      0.45       - -      0.10     -0.31
 ALT TASK      0.02      0.70      0.22      0.17       - -      0.24
 RESTRUCU     -0.03       - -     -0.10     -0.10     -0.05     -0.09
 MANG CHA      0.04       - -      0.21      0.10      0.05      0.15
 OUTSOURC      0.02      0.11       - -     -0.09     -0.20      0.05
 RULE CHA     -0.02       - -     -0.10     -0.03     -0.08     -0.02
 SHAR SYS      0.04     -0.95       - -      0.40      0.45      0.41
 SHAR S A      0.03       - -      0.10      0.02      0.23      0.01
 MUTUAL D     -0.19      2.45     -0.96     -0.22       - -      0.04
 MUTUAL A     -0.07      2.90     -0.64      0.02       - -      0.43
 SHAR STR      0.59    -12.84      5.83      0.94       - -      0.75
 TRUST RE     -0.01      0.95     -0.02     -0.13     -0.08       - -
 CUSTOM P      0.02     -0.02      0.29      0.05      0.32       - -
 LESS LEA     -0.04      0.36     -0.16      0.29     -0.25       - -
  SPECIAL      0.02     -0.19     -0.15     -0.20      0.30       - -
 COMP ADV      0.03     -0.09     -0.10       - -      0.13     -0.02
 KNOW AND     -0.19     -2.29     -1.44       - -      0.43      0.15

         Standardized Expected Change for LAMBDA-Y

                  Aggre      Anch     Cyber    Switch     Inter     Spl P
               --------  --------  --------  --------  --------  --------
  EXT FAC     -0.24      0.11       - -     -0.79     -0.33     -0.38
 ACT TAKE      0.08      0.08       - -     -0.21     -0.09     -0.42
 IND CHAN     -0.63      0.29       - -     -0.56     -0.67      0.21
 TECH DEV     -0.86     -0.23       - -     -1.69     -0.21     -1.08
 MULTI SK     -0.22     -0.03       - -     -0.37     -0.15     -0.49
 COMM FOC     -0.16      0.19       - -      0.30     -0.06      0.10
 CODEP NE     -2.51      1.81       - -      1.14     -1.57      0.03
 JOB ROLE      0.24     -0.32      0.34       - -      0.32      0.38
 ROLE EXC     -0.10      0.31       - -      0.25      0.22      0.07
  ICT NET       - -     -0.30      0.16     -0.08      0.11     -0.14
      IOS       - -     -0.27      0.28      0.46      0.23      0.17
```

```
 RICH MED        - -       1.22      -4.85      -1.09       0.15      -0.57
 ICT INTD        - -       0.26       0.03      -0.20       0.09      -0.05
 ICT CORE       0.53      -0.09        - -      -0.06      -0.10       0.13
 ICT CONN        - -       0.39      -0.44      -0.75      -0.22      -0.32
 INDVID K      -0.17       0.05      -0.01        - -      -0.04      -0.03
 SOCIAL K       0.19      -0.11       0.30        - -       0.04      -0.23
 ALT TASK       0.05       0.20       0.15       0.20        - -       0.18
 RESTRUCU      -0.09        - -      -0.06      -0.11      -0.02      -0.07
 MANG CHA       0.11        - -       0.14       0.12       0.02       0.11
 OUTSOURC       0.07       0.03        - -      -0.10      -0.09       0.04
 RULE CHA      -0.06        - -      -0.07      -0.03      -0.03      -0.01
 SHAR SYS       0.10      -0.27        - -       0.47       0.19       0.31
 SHAR S A       0.08        - -       0.06       0.02       0.10       0.01
 MUTUAL D      -0.51       0.69      -0.64      -0.26        - -       0.03
 MUTUAL A      -0.19       0.82      -0.42       0.02        - -       0.32
 SHAR STR       1.61      -3.63       3.87       1.11        - -       0.56
 TRUST RE      -0.02       0.27      -0.01      -0.16      -0.03        - -
 CUSTOM P       0.04      -0.01       0.19       0.06       0.14        - -
 LESS LEA      -0.12       0.10      -0.10       0.35      -0.11        - -
  SPECIAL       0.04      -0.05      -0.10      -0.23       0.13        - -
 COMP ADV       0.07      -0.02      -0.07        - -       0.06      -0.02
 KNOW AND      -0.51      -0.65      -0.95        - -       0.19       0.11

         Completely Standardized Expected Change for LAMBDA-Y

                Aggre       Anch      Cyber     Switch      Inter      Spl P
             --------   --------   --------   --------   --------   --------
  EXT FAC      -0.13       0.06        - -      -0.42      -0.18      -0.21
 ACT TAKE       0.02       0.02        - -      -0.06      -0.03      -0.12
 IND CHAN      -0.19       0.09        - -      -0.16      -0.20       0.06
 TECH DEV      -0.15      -0.04        - -      -0.30      -0.04      -0.19
 MULTI SK      -0.09      -0.01        - -      -0.15      -0.06      -0.20
 COMM FOC      -0.06       0.08        - -       0.12      -0.02       0.04
 CODEP NE      -0.17       0.12        - -       0.08      -0.10       0.00
 JOB ROLE       0.11      -0.15       0.16        - -       0.15       0.18
 ROLE EXC      -0.06       0.19        - -       0.15       0.14       0.05
```

```
   ICT NET        - -      -0.08       0.04      -0.02       0.03      -0.04
       IOS        - -      -0.24       0.26       0.42       0.21       0.15
  RICH MED        - -       0.07      -0.29      -0.06       0.01      -0.03
  ICT INTD        - -       0.17       0.02      -0.13       0.06      -0.04
  ICT CORE       0.36      -0.06        - -      -0.04      -0.07       0.09
  ICT CONN        - -       0.21      -0.24      -0.40      -0.12      -0.17
  INDVID K      -0.15       0.04      -0.01        - -      -0.04      -0.03
  SOCIAL K       0.14      -0.08       0.21        - -       0.03      -0.16
  ALT TASK       0.04       0.14       0.10       0.14        - -       0.12
  RESTRUCU      -0.19        - -      -0.14      -0.24      -0.04      -0.15
  MANG CHA       0.16        - -       0.22       0.18       0.03       0.17
  OUTSOURC       0.04       0.02        - -      -0.06      -0.05       0.02
  RULE CHA      -0.11        - -      -0.12      -0.06      -0.06      -0.02
  SHAR SYS       0.06      -0.16        - -       0.28       0.11       0.18
  SHAR S A       0.11        - -       0.09       0.03       0.15       0.01
  MUTUAL D      -0.16       0.22      -0.20      -0.08        - -       0.01
  MUTUAL A      -0.08       0.36      -0.18       0.01        - -       0.14
  SHAR STR       0.41      -0.92       0.98       0.28        - -       0.14
  TRUST RE      -0.03       0.36      -0.02      -0.21      -0.05        - -
  CUSTOM P       0.04       0.00       0.17       0.05       0.12        - -
  LESS LEA      -0.09       0.07      -0.07       0.24      -0.08        - -
   SPECIAL       0.04      -0.06      -0.10      -0.24       0.14        - -
  COMP ADV       0.10      -0.03      -0.09        - -       0.08      -0.02
  KNOW AND      -0.17      -0.22      -0.32        - -       0.06       0.04

         Modification Indices for BETA

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
     Aggre        - -       3.92        - -        - -       8.46        - -
      Anch       2.34        - -        - -       3.61        - -       0.08
     Cyber       3.92        - -        - -       5.44        - -       0.48
    Switch        - -       3.44        - -        - -       4.35        - -
     Inter       8.46        - -        - -       8.03        - -       6.45
     Spl P        - -       0.09        - -        - -       2.43        - -
```

```
         Expected Change for BETA

                  Aggre       Anch      Cyber     Switch      Inter      Spl P
               --------   --------   --------   --------   --------   --------
     Aggre        - -      -2.07        - -        - -       2.21        - -
      Anch      -0.03        - -        - -      -0.11        - -      -0.02
     Cyber      -0.41        - -        - -      -1.22        - -      -0.40
    Switch        - -      -0.79        - -        - -       0.64        - -
     Inter       0.08        - -        - -       0.19        - -       0.19
     Spl P        - -       0.08        - -        - -       0.31        - -

         Standardized Expected Change for BETA

                  Aggre       Anch      Cyber     Switch      Inter      Spl P
               --------   --------   --------   --------   --------   --------
     Aggre        - -      -2.68        - -        - -       1.86        - -
      Anch      -0.04        - -        - -      -0.32        - -      -0.08
     Cyber      -0.23        - -        - -      -1.55        - -      -0.82
    Switch        - -      -2.35        - -        - -       1.25        - -
     Inter       0.07        - -        - -       0.37        - -       0.59
     Spl P        - -       0.40        - -        - -       0.95        - -

         Modification Indices for PSI

                  Aggre       Anch      Cyber     Switch      Inter      Spl P
               --------   --------   --------   --------   --------   --------
     Aggre        - -
      Anch       2.34        - -
     Cyber       3.92        - -        - -
    Switch        - -       2.37       3.44        - -
     Inter       8.46        - -        - -       4.35        - -
     Spl P        - -       0.32       0.09        - -       2.43        - -

         Expected Change for PSI

                  Aggre       Anch      Cyber     Switch      Inter      Spl P
```

```
              --------   --------   --------   --------   --------   --------
    Aggre        - -
     Anch      -0.12        - -
    Cyber      -1.46        - -        - -
   Switch        - -      -0.05      -0.55        - -
    Inter       0.28        - -        - -       0.08        - -
    Spl P        - -       0.01       0.06        - -       0.04        - -

         Standardized Expected Change for PSI

                 Aggre       Anch      Cyber     Switch      Inter      Spl P
              --------   --------   --------   --------   --------   --------
    Aggre        - -
     Anch      -0.16        - -
    Cyber      -0.80        - -        - -
   Switch        - -      -0.15      -0.70        - -
    Inter       0.23        - -        - -       0.16        - -
    Spl P        - -       0.06       0.12        - -       0.12        - -

         Modification Indices for THETA-EPS

               EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
              --------   --------   --------   --------   --------   --------
  EXT FAC        - -
 ACT TAKE       3.18        - -
 IND CHAN       4.36       0.13        - -
 TECH DEV      13.23       2.81      10.64        - -
 MULTI SK       0.74       0.00       0.20       0.05        - -
 COMM FOC       0.19       0.55       0.10       5.21       0.01        - -
 CODEP NE       0.06       1.67       0.86       0.07       1.78       0.07
 JOB ROLE       3.20       0.33       0.05       5.32       0.08       3.41
 ROLE EXC       0.21       0.02       0.55       1.07       0.34       2.17
  ICT NET       0.00       0.13       0.01       0.02       0.06       0.05
      IOS       0.03       0.18       0.62       1.06       0.65       1.77
 RICH MED       1.35       1.40       2.19       3.03       0.00       0.20
 ICT INTD       0.65       0.01       1.00       4.88       0.70       0.01
```

```
ICT CORE       1.44      2.25      0.49      7.14      0.29      0.46
ICT CONN       2.65      0.02      0.13      0.07      0.21      0.13
INDVID K       1.79      0.05      0.14      0.07      0.58      0.11
SOCIAL K       1.59      0.92      0.48      3.94      1.14      0.10
ALT TASK       0.12      0.47      0.00      0.11      1.63      0.08
RESTRUCU       0.31      0.19      0.61      0.55      1.04      0.47
MANG CHA       0.06      0.81      0.01      0.01      0.17      1.00
OUTSOURC       0.07      0.05      0.04      0.14      0.09      0.01
RULE CHA       0.01      0.01      0.00      0.00      1.62      0.23
SHAR SYS       0.95      0.01      3.22      0.02      0.26      0.12
SHAR S A       0.00      0.06      0.08      0.00      0.42      0.00
MUTUAL D       0.52      1.19      0.39      4.09      0.90      0.00
MUTUAL A       0.07      0.08      2.67      0.06      0.05      0.04
SHAR STR       2.69      0.04      1.61      0.00      0.00      0.02
TRUST RE       0.32      0.41      0.44      6.21      0.24      0.87
CUSTOM P       0.09      0.10      0.05      0.05      0.22      0.01
LESS LEA       0.58      1.80      1.29      1.21      0.32      0.05
 SPECIAL       1.27      0.09      0.00      0.46      1.95      0.01
COMP ADV       0.87      1.71      1.12      1.88      0.00      0.65
KNOW AND       0.59      0.21      3.58      2.25      0.03      0.19

        Modification Indices for THETA-EPS

            CODEP NE  JOB ROLE  ROLE EXC   ICT NET       IOS  RICH MED
            --------  --------  --------  --------  --------  --------
CODEP NE       - -
JOB ROLE       0.20      - -
ROLE EXC       0.33      1.23      - -
 ICT NET       1.49      1.10      1.65      - -
     IOS       0.66      0.00      0.79      1.13      - -
RICH MED       - -       0.63      0.01      0.06      0.00      - -
ICT INTD       0.14      2.77      6.07      0.03      0.75      3.33
ICT CORE       0.84      4.43      0.06      1.21      0.10      5.66
ICT CONN       0.29      0.98      0.04      2.83      0.70      8.21
INDVID K       0.80      0.07      4.31      1.50      0.54      1.93
SOCIAL K       0.24      9.45      0.96      0.48      1.35      1.61
```

```
 ALT TASK      1.00      5.87      9.37      0.84      1.73      0.89
 RESTRUCU      0.00      0.51      0.30      0.49      5.08      0.64
 MANG CHA      0.97      0.01      2.52      0.01      1.25      0.08
 OUTSOURC      0.79      1.12      0.08      0.24      0.00      0.43
 RULE CHA      0.07      0.02      0.98      0.44      0.05      0.48
 SHAR SYS      0.02      1.54      0.74      0.10      0.41      0.06
 SHAR S A      1.61      5.77      0.01      0.63      0.06      0.38
 MUTUAL D      0.91      0.07      4.69      1.61      1.33      1.42
 MUTUAL A      0.60      4.68      2.55      3.62      0.14      2.49
 SHAR STR      2.42      1.44      0.01      1.42      5.93      0.00
 TRUST RE      3.86      0.18      5.11      0.02      3.83      2.76
 CUSTOM P      0.13      0.81      0.05      0.13      0.28      2.04
 LESS LEA      0.21      2.22      0.01      0.08      0.09      0.38
  SPECIAL      1.51      0.30      0.01      0.36      0.05      1.73
 COMP ADV      0.03      0.14      0.36      1.50      0.00      3.26
 KNOW AND      0.34      0.92      1.53      0.46      0.03      3.48

         Modification Indices for THETA-EPS

             ICT INTD  ICT CORE  ICT CONN  INDVID K  SOCIAL K  ALT TASK
             --------  --------  --------  --------  --------  --------
 ICT INTD       - -
 ICT CORE      4.35       - -
 ICT CONN      1.94      0.36       - -
 INDVID K      0.19      1.92      0.64       - -
 SOCIAL K      0.01      2.70      0.00      7.06       - -
 ALT TASK      1.70      0.14      2.33      0.25      0.00       - -
 RESTRUCU      3.98      0.12      1.36      3.09      0.07      0.44
 MANG CHA      1.61      0.01      1.20      1.06      0.21      0.02
 OUTSOURC      0.57      0.01      1.41      0.11      2.30      0.02
 RULE CHA      0.39      0.06      0.03      3.41      0.33      0.63
 SHAR SYS      0.29      0.02      0.54      0.96      0.32      2.09
 SHAR S A      0.02      1.04      1.07      0.31      0.94      0.46
 MUTUAL D      0.97      0.26      1.63      0.01      0.50      8.42
 MUTUAL A      1.89      3.89      5.01      0.18      1.76      4.13
 SHAR STR      0.00      0.00      3.19      0.11      0.20      5.75
```

```
 TRUST RE       3.16       1.92       2.92       0.76       4.35       1.67
 CUSTOM P       0.05       0.53       0.41       0.39       0.00       0.36
 LESS LEA       0.00       0.83       1.03       0.10       0.20       0.07
  SPECIAL       0.13       0.93       4.01       2.04       2.67       0.10
 COMP ADV       0.77       0.01       0.63       2.91       1.16       0.02
 KNOW AND       0.26       1.09       1.15       0.35       0.79       0.05

         Modification Indices for THETA-EPS

            RESTRUCU   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   SHAR S A
            --------   --------   --------   --------   --------   --------
 RESTRUCU       - -
 MANG CHA       0.87       - -
 OUTSOURC       0.19       0.04       - -
 RULE CHA       3.46       0.06       0.10       - -
 SHAR SYS       0.42       0.24       0.87       0.78       - -
 SHAR S A       0.07       0.20       0.21       0.58       0.00       - -
 MUTUAL D       5.07       0.75       0.81       0.58       0.10       0.06
 MUTUAL A       3.40       0.02       2.17       1.84       0.33       2.70
 SHAR STR       0.60       1.35       0.01       0.56       1.20       0.33
 TRUST RE       7.37       3.45       0.53       0.01       3.66       3.54
 CUSTOM P       0.58       0.00       0.14       0.71       0.32       1.74
 LESS LEA       0.05       0.93       0.02       0.50       0.09       4.58
  SPECIAL       0.23       0.01       0.04       1.95       0.49       0.36
 COMP ADV       0.13       0.00       0.41       0.82       0.08       0.23
 KNOW AND       0.95       2.05       0.20       1.16       1.87       0.00

         Modification Indices for THETA-EPS

            MUTUAL D   MUTUAL A   SHAR STR   TRUST RE   CUSTOM P   LESS LEA
            --------   --------   --------   --------   --------   --------
 MUTUAL D       - -
 MUTUAL A      15.63       - -
 SHAR STR       1.28       0.00       - -
 TRUST RE       2.68       2.24       1.11       - -
 CUSTOM P       0.17       0.84       0.58       1.09       - -
```

```
 LESS LEA       2.20       0.66       1.56       1.35       1.55       - -
  SPECIAL       0.37       2.21       2.50       1.14       0.26       0.55
 COMP ADV       0.80       0.61       0.48       0.45       2.62       1.60
 KNOW AND       3.01       0.60       0.22       2.88       0.01       0.55

         Modification Indices for THETA-EPS

             SPECIAL   COMP ADV   KNOW AND
            --------   --------   --------
  SPECIAL       - -
 COMP ADV       0.01       - -
 KNOW AND       0.00      19.43       - -

         Expected Change for THETA-EPS

             EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
            --------   --------   --------   --------   --------   --------
  EXT FAC       - -
 ACT TAKE       0.63       - -
 IND CHAN       0.71      -0.23       - -
 TECH DEV       2.19       1.88       3.53       - -
 MULTI SK       0.22      -0.03       0.20       0.19       - -
 COMM FOC      -0.10       0.33      -0.13      -1.74       0.03       - -
 CODEP NE       0.35      -3.60       2.49      -1.27       2.65       0.49
 JOB ROLE      -0.41      -0.25      -0.09      -1.70       0.09       0.54
 ROLE EXC      -0.08      -0.05      -0.23      -0.56      -0.13       0.32
  ICT NET       0.00       0.25       0.07       0.17       0.12       0.11
      IOS       0.02       0.09      -0.16       0.36      -0.12      -0.19
 RICH MED      -2.22      -4.22      -5.08     -10.65       0.05      -1.06
 ICT INTD      -0.14      -0.03      -0.30      -1.19       0.19      -0.02
 ICT CORE      -0.18      -0.43       0.19      -1.31       0.11       0.13
 ICT CONN       0.34       0.05      -0.13      -0.18      -0.13       0.09
 INDVID K      -0.14       0.04      -0.07       0.09      -0.10       0.04
 SOCIAL K       0.19      -0.27       0.19       0.95       0.21       0.06
 ALT TASK       0.06      -0.20      -0.01      -0.17      -0.27       0.06
 RESTRUCU       0.03      -0.04       0.07      -0.12       0.07       0.04
```

```
MANG CHA      -0.02       0.12       0.01       0.02      -0.04       0.09
OUTSOURC       0.05       0.08       0.07       0.23      -0.08       0.02
RULE CHA       0.01      -0.01       0.01       0.01      -0.10      -0.04
SHAR SYS      -0.17      -0.03      -0.57      -0.07      -0.12      -0.08
SHAR S A       0.00       0.04      -0.04       0.01       0.07       0.00
MUTUAL D      -0.26      -0.73      -0.41      -2.34      -0.45       0.01
MUTUAL A      -0.07      -0.14      -0.75      -0.21      -0.08      -0.06
SHAR STR      -0.64       0.15      -0.89       0.06      -0.02      -0.07
TRUST RE      -0.05       0.10       0.10      -0.67       0.05       0.10
CUSTOM P       0.03       0.06       0.05       0.07      -0.07       0.02
LESS LEA      -0.10      -0.34       0.28      -0.48      -0.10       0.04
 SPECIAL      -0.11      -0.05       0.01      -0.21      -0.18      -0.01
COMP ADV      -0.08       0.20      -0.15      -0.36       0.01      -0.08
KNOW AND      -0.25       0.28      -1.09      -1.54      -0.07      -0.18

        Expected Change for THETA-EPS

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
CODEP NE       - -
JOB ROLE       0.80       - -
ROLE EXC       0.77       0.23       - -
 ICT NET      -3.56       0.48      -0.43       - -
     IOS      -0.71       0.01      -0.09      -0.41       - -
RICH MED       - -        1.88       0.14      -1.02      -0.07       - -
ICT INTD       0.50      -0.35       0.37       0.07      -0.09       3.18
ICT CORE       1.12       0.40       0.03       0.33       0.03       3.72
ICT CONN       0.88      -0.25       0.04       0.76      -0.11       6.15
INDVID K       0.71      -0.04       0.19      -0.27       0.05       1.44
SOCIAL K       0.57      -0.59      -0.13      -0.21       0.10       1.94
ALT TASK       1.26       0.48       0.44      -0.29      -0.12       1.56
RESTRUCU      -0.02      -0.04       0.02      -0.07      -0.06       0.40
MANG CHA       0.55      -0.01       0.10      -0.01      -0.05       0.21
OUTSOURC      -1.36      -0.25      -0.05       0.19       0.00      -1.30
RULE CHA       0.12       0.01       0.05      -0.08       0.01      -0.41
SHAR SYS       0.17      -0.27      -0.14      -0.11       0.07      -0.45
```

```
SHAR S A        0.76      -0.23       0.01       0.12       0.01       0.48
MUTUAL D        2.71      -0.12       0.71      -0.90      -0.25       4.43
MUTUAL A        1.56      -0.68       0.37      -0.95      -0.06       4.14
SHAR STR       -4.79       0.57      -0.03       0.91       0.55       0.12
TRUST RE        1.30       0.04       0.17       0.02      -0.10       1.44
CUSTOM P        0.31      -0.12       0.02      -0.08       0.03      -1.60
LESS LEA        0.49       0.25       0.01      -0.08      -0.02       0.86
 SPECIAL       -0.96       0.07      -0.01       0.12       0.01       1.34
COMP ADV       -0.12       0.04      -0.04       0.20       0.00      -1.51
KNOW AND       -1.48       0.39      -0.36       0.43      -0.03      -6.16

        Expected Change for THETA-EPS

             ICT INTD   ICT CORE   ICT CONN   INDVID K   SOCIAL K   ALT TASK
             --------   --------   --------   --------   --------   --------
ICT INTD        - -
ICT CORE        0.29       - -
ICT CONN        0.26       0.10       - -
INDVID K       -0.04      -0.11      -0.09       - -
SOCIAL K        0.01      -0.20       0.00       0.26       - -
ALT TASK        0.19      -0.05       0.27      -0.04       0.00       - -
RESTRUCU        0.09      -0.01       0.06      -0.05      -0.01       0.03
MANG CHA        0.08       0.00       0.09       0.04      -0.03       0.01
OUTSOURC        0.13       0.02      -0.26       0.03      -0.23       0.03
RULE CHA       -0.03      -0.01      -0.01       0.06      -0.03       0.04
SHAR SYS       -0.09      -0.02      -0.14       0.09       0.08      -0.22
SHAR S A        0.01      -0.06       0.09      -0.02       0.06       0.04
MUTUAL D        0.32      -0.15       0.52      -0.02      -0.20       0.91
MUTUAL A        0.32      -0.41       0.64       0.06       0.27       0.47
SHAR STR       -0.02       0.02      -0.77      -0.07      -0.14      -1.63
TRUST RE        0.13       0.10       0.16      -0.04      -0.14       0.09
CUSTOM P       -0.02      -0.07      -0.08       0.04       0.00       0.06
LESS LEA        0.00       0.10      -0.15       0.03      -0.05       0.03
 SPECIAL        0.03       0.08       0.22      -0.08      -0.13       0.03
COMP ADV        0.06      -0.01      -0.07      -0.08      -0.07      -0.01
KNOW AND       -0.15      -0.27      -0.39      -0.12      -0.24       0.06
```

```
        Expected Change for THETA-EPS

              RESTRUCU   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   SHAR S A
              --------   --------   --------   --------   --------   --------
  RESTRUCU       - -
  MANG CHA      0.03       - -
  OUTSOURC      0.02       0.02       - -
  RULE CHA     -0.06       0.01      -0.02       - -
  SHAR SYS     -0.03      -0.03       0.17      -0.05       - -
  SHAR S A     -0.01       0.01      -0.04       0.02       0.00       - -
  MUTUAL D      0.21      -0.12      -0.34       0.09       0.11      -0.04
  MUTUAL A      0.12       0.01      -0.39       0.11       0.14       0.17
  SHAR STR     -0.09      -0.18       0.04      -0.10       0.40       0.09
  TRUST RE      0.06       0.06      -0.06       0.00      -0.15       0.07
  CUSTOM P     -0.02       0.00       0.04       0.03       0.06       0.06
  LESS LEA      0.01       0.05       0.02       0.03       0.04      -0.12
   SPECIAL      0.01       0.00      -0.02      -0.04       0.07       0.02
  COMP ADV      0.01       0.00       0.05      -0.02       0.02       0.02
  KNOW AND     -0.08      -0.17       0.15      -0.11       0.41       0.00

        Expected Change for THETA-EPS

              MUTUAL D   MUTUAL A   SHAR STR   TRUST RE   CUSTOM P   LESS LEA
              --------   --------   --------   --------   --------   --------
  MUTUAL D       - -
  MUTUAL A      1.98       - -
  SHAR STR     -1.28      -0.05       - -
  TRUST RE      0.27       0.17      -0.18       - -
  CUSTOM P     -0.09       0.14       0.17      -0.05       - -
  LESS LEA      0.39       0.15      -0.35       0.08      -0.19       - -
   SPECIAL      0.12       0.20       0.32       0.05       0.04       0.07
  COMP ADV      0.14       0.09       0.12       0.02      -0.08       0.08
  KNOW AND      1.08       0.34       0.31      -0.25      -0.02       0.18

        Expected Change for THETA-EPS
```

```
            SPECIAL   COMP ADV   KNOW AND
           --------   --------   --------
  SPECIAL      - -
 COMP ADV      0.00       - -
 KNOW AND     -0.01       0.63       - -

        Completely Standardized Expected Change for THETA-EPS

            EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
           --------   --------   --------   --------   --------   --------
  EXT FAC      - -
 ACT TAKE      0.10       - -
 IND CHAN      0.11      -0.02       - -
 TECH DEV      0.21       0.10       0.18       - -
 MULTI SK      0.05       0.00       0.02       0.01       - -
 COMM FOC     -0.02       0.04      -0.02      -0.12       0.01       - -
 CODEP NE      0.01      -0.07       0.05      -0.01       0.07       0.01
 JOB ROLE     -0.10      -0.03      -0.01      -0.14       0.02       0.10
 ROLE EXC     -0.03      -0.01      -0.04      -0.06      -0.03       0.08
  ICT NET      0.00       0.02       0.01       0.01       0.01       0.01
      IOS      0.01       0.02      -0.04       0.06      -0.04      -0.07
 RICH MED     -0.07      -0.07      -0.09      -0.11       0.00      -0.03
 ICT INTD     -0.05      -0.01      -0.06      -0.14       0.05       0.00
 ICT CORE     -0.07      -0.08       0.04      -0.16       0.03       0.04
 ICT CONN      0.10       0.01      -0.02      -0.02      -0.03       0.02
 INDVID K     -0.07       0.01      -0.02       0.01      -0.04       0.02
 SOCIAL K      0.07      -0.05       0.04       0.12       0.06       0.02
 ALT TASK      0.02      -0.04       0.00      -0.02      -0.08       0.02
 RESTRUCU      0.03      -0.02       0.04      -0.04       0.06       0.04
 MANG CHA     -0.01       0.05       0.01       0.01      -0.02       0.05
 OUTSOURC      0.01       0.01       0.01       0.02      -0.02       0.00
 RULE CHA      0.01      -0.01       0.00       0.00      -0.07      -0.03
 SHAR SYS     -0.05       0.00      -0.10      -0.01      -0.03      -0.02
 SHAR S A      0.00       0.01      -0.02       0.00       0.04       0.00
 MUTUAL D     -0.04      -0.07      -0.04      -0.13      -0.06       0.00
```

```
MUTUAL A     -0.02      -0.02      -0.10      -0.02      -0.01      -0.01
SHAR STR     -0.09       0.01      -0.07       0.00       0.00      -0.01
TRUST RE     -0.03       0.04       0.04      -0.16       0.03       0.05
CUSTOM P      0.02       0.02       0.01       0.01      -0.02       0.01
LESS LEA     -0.04      -0.07       0.06      -0.06      -0.03       0.01
 SPECIAL     -0.06      -0.02       0.00      -0.04      -0.08      -0.01
COMP ADV     -0.05       0.08      -0.06      -0.08       0.00      -0.04
KNOW AND     -0.04       0.03      -0.11      -0.09      -0.01      -0.02

        Completely Standardized Expected Change for THETA-EPS

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
CODEP NE       - -
JOB ROLE      0.02       - -
ROLE EXC      0.03       0.07       - -
 ICT NET     -0.06       0.06      -0.07       - -
     IOS     -0.04       0.00      -0.05      -0.10       - -
RICH MED       - -       0.05       0.01      -0.02       0.00       - -
ICT INTD      0.02      -0.10       0.15       0.01      -0.05       0.12
ICT CORE      0.05       0.12       0.01       0.06       0.02       0.15
ICT CONN      0.03      -0.06       0.01       0.11      -0.05       0.20
INDVID K      0.04      -0.02       0.11      -0.06       0.04       0.08
SOCIAL K      0.03      -0.19      -0.06      -0.04       0.07       0.08
ALT TASK      0.06       0.15       0.19      -0.05      -0.08       0.06
RESTRUCU      0.00      -0.04       0.03      -0.04      -0.13       0.05
MANG CHA      0.05      -0.01       0.10      -0.01      -0.06       0.02
OUTSOURC     -0.05      -0.06      -0.02       0.03       0.00      -0.04
RULE CHA      0.01       0.01       0.06      -0.04       0.01      -0.04
SHAR SYS      0.01      -0.07      -0.05      -0.02       0.04      -0.02
SHAR S A      0.07      -0.15       0.00       0.05       0.01       0.04
MUTUAL D      0.06      -0.02       0.14      -0.07      -0.07       0.08
MUTUAL A      0.04      -0.14       0.10      -0.11      -0.02       0.11
SHAR STR     -0.08       0.07       0.00       0.06       0.13       0.00
TRUST RE      0.12       0.03       0.15       0.01      -0.12       0.12
CUSTOM P      0.02      -0.05       0.01      -0.02       0.03      -0.08
```

```
 LESS LEA      0.02       0.08       0.00      -0.01      -0.02       0.04
  SPECIAL     -0.07       0.03      -0.01       0.03       0.01       0.08
 COMP ADV     -0.01       0.02      -0.04       0.07       0.00      -0.12
 KNOW AND     -0.03       0.06      -0.08       0.04      -0.01      -0.12

         Completely Standardized Expected Change for THETA-EPS

            ICT INTD   ICT CORE   ICT CONN   INDVID K   SOCIAL K   ALT TASK
            --------   --------   --------   --------   --------   --------
 ICT INTD       - -
 ICT CORE      0.13        - -
 ICT CONN      0.09       0.04        - -
 INDVID K     -0.02      -0.07      -0.05        - -
 SOCIAL K      0.01      -0.10       0.00       0.17        - -
 ALT TASK      0.08      -0.02       0.10      -0.03       0.00        - -
 RESTRUCU      0.12      -0.02       0.07      -0.09      -0.02       0.04
 MANG CHA      0.08       0.00       0.07       0.06      -0.03       0.01
 OUTSOURC      0.05       0.01      -0.07       0.02      -0.09       0.01
 RULE CHA     -0.04      -0.01      -0.01       0.10      -0.03       0.05
 SHAR SYS     -0.03      -0.01      -0.04       0.05       0.03      -0.09
 SHAR S A      0.01      -0.06       0.07      -0.03       0.06       0.05
 MUTUAL D      0.07      -0.03       0.09      -0.01      -0.05       0.20
 MUTUAL A      0.09      -0.12       0.15       0.02       0.08       0.14
 SHAR STR      0.00       0.00      -0.10      -0.02      -0.02      -0.29
 TRUST RE      0.12       0.09       0.12      -0.05      -0.13       0.09
 CUSTOM P     -0.01      -0.04      -0.04       0.03       0.00       0.03
 LESS LEA      0.00       0.05      -0.06       0.02      -0.02       0.02
  SPECIAL      0.02       0.06       0.13      -0.08      -0.10       0.02
 COMP ADV      0.06      -0.01      -0.05      -0.10      -0.07      -0.01
 KNOW AND     -0.03      -0.06      -0.07      -0.04      -0.06       0.01

         Completely Standardized Expected Change for THETA-EPS

            RESTRUCU   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   SHAR S A
            --------   --------   --------   --------   --------   --------
 RESTRUCU       - -
```

```
MANG CHA       0.10        - -
OUTSOURC       0.02       0.01        - -
RULE CHA      -0.23       0.02      -0.02        - -
SHAR SYS      -0.04      -0.03       0.05      -0.05        - -
SHAR S A      -0.02       0.03      -0.03       0.06       0.00        - -
MUTUAL D       0.14      -0.06      -0.06       0.05       0.02      -0.02
MUTUAL A       0.11       0.01      -0.09       0.08       0.03       0.11
SHAR STR      -0.05      -0.07       0.01      -0.05       0.06       0.03
TRUST RE       0.17       0.12      -0.05      -0.01      -0.12       0.13
CUSTOM P      -0.04       0.00       0.02       0.05       0.03       0.08
LESS LEA       0.01       0.05       0.01       0.04       0.02      -0.12
 SPECIAL       0.03       0.00      -0.01      -0.08       0.04       0.04
COMP ADV       0.02       0.00       0.04      -0.06       0.02       0.03
KNOW AND      -0.06      -0.09       0.03      -0.07       0.08       0.00

        Completely Standardized Expected Change for THETA-EPS

            MUTUAL D   MUTUAL A   SHAR STR   TRUST RE   CUSTOM P   LESS LEA
            --------   --------   --------   --------   --------   --------
MUTUAL D       - -
MUTUAL A       0.27        - -
SHAR STR      -0.10      -0.01        - -
TRUST RE       0.11       0.10      -0.06        - -
CUSTOM P      -0.02       0.05       0.04      -0.06        - -
LESS LEA       0.08       0.05      -0.06       0.07      -0.12        - -
 SPECIAL       0.04       0.09       0.09       0.07       0.03       0.05
COMP ADV       0.06       0.05       0.04       0.05      -0.09       0.07
KNOW AND       0.11       0.05       0.03      -0.11      -0.01       0.04

        Completely Standardized Expected Change for THETA-EPS

             SPECIAL   COMP ADV   KNOW AND
            --------   --------   --------
 SPECIAL       - -
COMP ADV       0.00        - -
KNOW AND       0.00       0.28        - -
```

```
Maximum Modification Index is   19.43 for Element (33,32) of THETA-EPS

Standardized Solution

        LAMBDA-Y

               Aggre      Anch     Cyber    Switch     Inter     Spl P
            --------  --------  --------  --------  --------  --------
  EXT FAC       - -       - -      0.99       - -       - -       - -
 ACT TAKE       - -       - -      1.89       - -       - -       - -
 IND CHAN       - -       - -      1.87       - -       - -       - -
 TECH DEV       - -       - -      2.49       - -       - -       - -
 MULTI SK       - -       - -      1.30       - -       - -       - -
 COMM FOC       - -       - -      1.54       - -       - -       - -
 CODEP NE       - -       - -      8.86       - -       - -       - -
 JOB ROLE       - -       - -       - -      1.01       - -       - -
 ROLE EXC       - -       - -      0.69       - -       - -       - -
  ICT NET      2.73       - -       - -       - -       - -       - -
      IOS      0.65       - -       - -       - -       - -       - -
 RICH MED      2.70       - -       - -       - -       - -       - -
 ICT INTD      0.55       - -       - -       - -       - -       - -
 ICT CORE       - -       - -      0.66       - -       - -       - -
 ICT CONN      0.45       - -       - -       - -       - -       - -
 INDVID K       - -       - -       - -      0.74       - -       - -
 SOCIAL K       - -       - -       - -      0.65       - -       - -
 ALT TASK       - -       - -       - -       - -      0.42       - -
 RESTRUCU       - -      0.28       - -       - -       - -       - -
 MANG CHA       - -      0.33       - -       - -       - -       - -
 OUTSOURC       - -       - -      0.86       - -       - -       - -
 RULE CHA       - -      0.32       - -       - -       - -       - -
 SHAR SYS       - -       - -      0.87       - -       - -       - -
 SHAR S A       - -      0.17       - -       - -       - -       - -
 MUTUAL D       - -       - -       - -       - -      0.43       - -
 MUTUAL A       - -       - -       - -       - -      0.68       - -
```

```
SHAR STR        - -        - -        - -        - -       3.36        - -
TRUST RE        - -        - -        - -        - -        - -      -0.02
CUSTOM P        - -        - -        - -        - -        - -       0.74
LESS LEA        - -        - -        - -        - -        - -       1.04
 SPECIAL        - -        - -        - -        - -        - -       0.48
COMP ADV        - -        - -        - -       0.26        - -        - -
KNOW AND        - -        - -        - -       1.18        - -        - -

        BETA

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
   Aggre        - -        - -       0.73        - -        - -        - -
    Anch        - -        - -        - -        - -      -0.18        - -
   Cyber        - -      -0.24        - -        - -        - -        - -
  Switch       0.28        - -       0.56        - -        - -        - -
   Inter        - -        - -       0.55        - -        - -        - -
   Spl P       0.12        - -       0.15       0.48        - -        - -

        Correlation Matrix of ETA

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
   Aggre       1.00
    Anch      -0.24       1.00
   Cyber       0.73      -0.33       1.00
  Switch       0.69      -0.25       0.76       1.00
   Inter       0.42      -0.30       0.58       0.44       1.00
   Spl P       0.56      -0.20       0.61       0.68       0.35       1.00

        PSI
        Note: This matrix is diagonal.

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
                0.47       0.92       0.90       0.38       0.67       0.51
```

```
Completely Standardized Solution

        LAMBDA-Y

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
  EXT FAC        - -        - -       0.53        - -        - -        - -
 ACT TAKE        - -        - -       0.54        - -        - -        - -
 IND CHAN        - -        - -       0.55        - -        - -        - -
 TECH DEV        - -        - -       0.44        - -        - -        - -
 MULTI SK        - -        - -       0.53        - -        - -        - -
 COMM FOC        - -        - -       0.62        - -        - -        - -
 CODEP NE        - -        - -       0.59        - -        - -        - -
 JOB ROLE        - -        - -        - -       0.46        - -        - -
 ROLE EXC        - -        - -       0.43        - -        - -        - -
  ICT NET       0.71        - -        - -        - -        - -        - -
      IOS       0.59        - -        - -        - -        - -        - -
 RICH MED       0.16        - -        - -        - -        - -        - -
 ICT INTD       0.36        - -        - -        - -        - -        - -
 ICT CORE        - -        - -       0.45        - -        - -        - -
 ICT CONN       0.24        - -        - -        - -        - -        - -
 INDVID K        - -        - -        - -       0.69        - -        - -
 SOCIAL K        - -        - -        - -       0.46        - -        - -
 ALT TASK        - -        - -        - -        - -       0.29        - -
 RESTRUCU        - -       0.60        - -        - -        - -        - -
 MANG CHA        - -       0.49        - -        - -        - -        - -
 OUTSOURC        - -        - -       0.46        - -        - -        - -
 RULE CHA        - -       0.57        - -        - -        - -        - -
 SHAR SYS        - -        - -       0.51        - -        - -        - -
 SHAR S A        - -       0.25        - -        - -        - -        - -
 MUTUAL D        - -        - -        - -        - -       0.14        - -
 MUTUAL A        - -        - -        - -        - -       0.29        - -
 SHAR STR        - -        - -        - -        - -       0.85        - -
 TRUST RE        - -        - -        - -        - -        - -      -0.02
```

```
CUSTOM P       - -        - -        - -        - -        - -       0.66
LESS LEA       - -        - -        - -        - -        - -       0.72
 SPECIAL       - -        - -        - -        - -        - -       0.50
COMP ADV       - -        - -        - -       0.35        - -        - -
KNOW AND       - -        - -        - -       0.40        - -        - -

        BETA

              Aggre       Anch      Cyber     Switch      Inter      Spl P
           --------   --------   --------   --------   --------   --------
   Aggre       - -        - -       0.73        - -        - -        - -
    Anch       - -        - -        - -        - -      -0.18        - -
   Cyber       - -      -0.24        - -        - -        - -        - -
  Switch      0.28        - -       0.56        - -        - -        - -
   Inter       - -        - -       0.55        - -        - -        - -
   Spl P      0.12        - -       0.15       0.48        - -        - -

        Correlation Matrix of ETA

              Aggre       Anch      Cyber     Switch      Inter      Spl P
           --------   --------   --------   --------   --------   --------
   Aggre      1.00
    Anch     -0.24       1.00
   Cyber      0.73      -0.33       1.00
  Switch      0.69      -0.25       0.76       1.00
   Inter      0.42      -0.30       0.58       0.44       1.00
   Spl P      0.56      -0.20       0.61       0.68       0.35       1.00

        PSI
        Note: This matrix is diagonal.

              Aggre       Anch      Cyber     Switch      Inter      Spl P
           --------   --------   --------   --------   --------   --------
              0.47       0.92       0.90       0.38       0.67       0.51

        THETA-EPS
```

```
   EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
  --------   --------   --------   --------   --------   --------
      0.72       0.70       0.69       0.81       0.72       0.61

THETA-EPS

  CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
  --------   --------   --------   --------   --------   --------
      0.66       0.79       0.81       0.50       0.65       0.97

THETA-EPS

  ICT INTD   ICT CORE   ICT CONN   INDVID K   SOCIAL K   ALT TASK
  --------   --------   --------   --------   --------   --------
      0.87       0.79       0.94       0.52       0.79       0.92

THETA-EPS

  RESTRUCU   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   SHAR S A
  --------   --------   --------   --------   --------   --------
      0.64       0.76       0.78       0.68       0.74       0.94

THETA-EPS

  MUTUAL D   MUTUAL A   SHAR STR   TRUST RE   CUSTOM P   LESS LEA
  --------   --------   --------   --------   --------   --------
      0.98       0.91       0.28       1.00       0.57       0.48

THETA-EPS

   SPECIAL   COMP ADV   KNOW AND
  --------   --------   --------
      0.75       0.88       0.84
```

```
Total and Indirect Effects

        Total Effects of ETA on ETA

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
   Aggre        - -       -1.73       3.07        - -       0.20        - -
                         (1.01)     (0.61)                 (0.18)
                          -1.71       5.05                   1.15

    Anch        - -        0.02      -0.04        - -      -0.12        - -
                         (0.02)     (0.04)                 (0.12)
                           1.56      -1.16                  -1.00

   Cyber        - -       -0.58       0.02        - -       0.07        - -
                         (0.34)     (0.02)                 (0.06)
                          -1.69       1.56                   1.14

  Switch       0.12       -0.79       1.40        - -       0.09        - -
             (0.08)      (0.48)     (0.36)                 (0.08)
               1.56       -1.64       3.88                   1.13

   Inter        - -       -0.21       0.37        - -       0.02        - -
                         (0.17)     (0.24)                 (0.02)
                          -1.22       1.52                   1.56

   Spl P       0.07       -0.39       0.70       0.30       0.05        - -
             (0.05)      (0.23)     (0.15)     (0.15)     (0.04)
               1.44       -1.68       4.51       2.07       1.14


   Largest Eigenvalue of B*B' (Stability Index) is  10.144

        Indirect Effects of ETA on ETA
```

```
                 Aggre       Anch      Cyber     Switch      Inter      Spl P
              --------   --------   --------   --------   --------   --------
    Aggre         - -      -1.73       0.07        - -       0.20        - -
                          (1.01)     (0.05)                (0.18)
                           -1.71       1.49                  1.15

     Anch         - -       0.02      -0.04        - -       0.00        - -
                          (0.02)     (0.04)                (0.00)
                            1.56      -1.16                 -0.69

    Cyber         - -      -0.01       0.02        - -       0.07        - -
                          (0.01)     (0.02)                (0.06)
                           -1.14       1.56                  1.14

   Switch         - -      -0.79       0.39        - -       0.09        - -
                          (0.48)     (0.24)                (0.08)
                           -1.64       1.66                  1.13

    Inter         - -      -0.21       0.01        - -       0.02        - -
                          (0.17)     (0.01)                (0.02)
                           -1.22       1.04                  1.56

    Spl P        0.04      -0.39       0.53        - -       0.05        - -
               (0.03)     (0.23)     (0.21)                (0.04)
                 1.33      -1.68       2.45                  1.14

         Total Effects of ETA on Y

                 Aggre       Anch      Cyber     Switch      Inter      Spl P
              --------   --------   --------   --------   --------   --------
  EXT FAC         - -      -0.86       1.52        - -       0.10        - -
                          (0.50)     (0.30)                (0.09)
                           -1.71       5.11                  1.15
```

ACT TAKE	- -	-1.65	2.92	- -	0.19	- -
		(0.96)	(0.57)		(0.17)	
		-1.71	5.17		1.15	
IND CHAN	- -	-1.63	2.89	- -	0.19	- -
		(0.95)	(0.55)		(0.17)	
		-1.71	5.22		1.15	
TECH DEV	- -	-2.16	3.84	- -	0.25	- -
		(1.28)	(0.84)		(0.22)	
		-1.68	4.56		1.14	
MULTI SK	- -	-1.13	2.01	- -	0.13	- -
		(0.66)	(0.39)		(0.12)	
		-1.71	5.09		1.15	
COMM FOC	- -	-1.34	2.38	- -	0.16	- -
		(0.78)	(0.43)		(0.14)	
		-1.72	5.52		1.15	
CODEP NE	- -	-7.70	13.67	- -	0.90	- -
		(4.48)	(2.55)		(0.79)	
		-1.72	5.37		1.15	
JOB ROLE	0.10	-0.67	1.19	0.85	0.08	- -
	(0.06)	(0.40)	(0.28)	(0.21)	(0.07)	
	1.58	-1.67	4.25	4.04	1.14	
ROLE EXC	- -	-0.60	1.06	- -	0.07	- -
		(0.35)	(0.23)		(0.06)	
		-1.68	4.51		1.14	
ICT NET	1.00	-1.73	3.07	- -	0.20	- -

		(1.01)	(0.61)		(0.18)	
		-1.71	5.05		1.15	
IOS	0.24	-0.41	0.73	- -	0.05	- -
	(0.04)	(0.24)	(0.16)		(0.04)	
	6.27	-1.69	4.65		1.14	
RICH MED	0.99	-1.71	3.03	- -	0.20	- -
	(0.51)	(1.32)	(1.64)		(0.20)	
	1.93	-1.30	1.86		0.99	
ICT INTD	0.20	-0.35	0.62	- -	0.04	- -
	(0.05)	(0.22)	(0.17)		(0.04)	
	4.15	-1.61	3.53		1.12	
ICT CORE	- -	-0.58	1.02	- -	0.07	- -
		(0.34)	(0.02)		(0.06)	
		-1.69	65.64		1.14	
ICT CONN	0.16	-0.28	0.50	- -	0.03	- -
	(0.06)	(0.19)	(0.19)		(0.03)	
	2.89	-1.50	2.65		1.08	
INDVID K	0.08	-0.49	0.87	0.62	0.06	- -
	(0.05)	(0.29)	(0.17)	(0.13)	(0.05)	
	1.62	-1.71	5.15	4.69	1.15	
SOCIAL K	0.07	-0.43	0.77	0.55	0.05	- -
	(0.04)	(0.26)	(0.18)	(0.14)	(0.04)	
	1.58	-1.67	4.24	4.04	1.14	
ALT TASK	- -	-0.20	0.35	- -	0.98	- -
		(0.13)	(0.14)		(0.64)	
		-1.57	2.49		1.55	

```
RESTRUCU      - -      1.02     -0.04       - -      -0.12       - -
                      (0.02)    (0.04)               (0.12)
                      65.64     -1.16                -1.00

MANG CHA      - -      1.18     -0.05       - -      -0.14       - -
                      (0.29)    (0.04)               (0.14)
                       4.08     -1.15                -1.00

OUTSOURC      - -     -0.75      1.33       - -       0.09       - -
                      (0.44)    (0.28)               (0.08)
                      -1.69      4.73                 1.14

RULE CHA      - -      1.14     -0.05       - -      -0.13       - -
                      (0.27)    (0.04)               (0.13)
                       4.19     -1.15                -1.00

SHAR SYS      - -     -0.75      1.34       - -       0.09       - -
                      (0.44)    (0.27)               (0.08)
                      -1.70      4.97                 1.15

SHAR S A      - -      0.60     -0.03       - -      -0.07       - -
                      (0.24)    (0.02)               (0.07)
                       2.51     -1.08                -0.95

MUTUAL D      - -     -0.21      0.37       - -       1.02       - -
                      (0.17)    (0.24)               (0.02)
                      -1.22      1.52                65.64

MUTUAL A      - -     -0.32      0.58       - -       1.61       - -
                      (0.21)    (0.23)               (1.04)
                      -1.58      2.52                 1.55

SHAR STR      - -     -1.61      2.85       - -       7.96       - -
```

```
                    (0.94)     (0.61)                (4.97)
                    -1.70       4.70                  1.60

 TRUST RE    0.00     0.01      -0.02      -0.01      0.00      -0.02
           (0.01)   (0.03)     (0.06)     (0.02)    (0.00)     (0.08)
            -0.28     0.28      -0.28      -0.28     -0.27      -0.28

 CUSTOM P    0.07    -0.39       0.70       0.30      0.05       1.00
           (0.05)   (0.23)     (0.15)     (0.15)    (0.04)
             1.44    -1.68       4.51       2.07      1.14

 LESS LEA    0.10    -0.55       0.97       0.42      0.06       1.39
           (0.07)   (0.32)     (0.21)     (0.20)    (0.06)     (0.21)
             1.44    -1.69       4.67       2.08      1.14       6.75

  SPECIAL    0.04    -0.25       0.45       0.20      0.03       0.65
           (0.03)   (0.15)     (0.11)     (0.10)    (0.03)     (0.12)
             1.42    -1.66       4.08       2.02      1.13       5.54

 COMP ADV    0.03    -0.17       0.31       0.22      0.02        - -
           (0.02)   (0.11)     (0.09)     (0.06)    (0.02)
             1.54    -1.62       3.56       3.44      1.12

 KNOW AND    0.12    -0.79       1.40       1.00      0.09        - -
           (0.08)   (0.48)     (0.36)               (0.08)
             1.56    -1.64       3.88                 1.13


         Indirect Effects of ETA on Y

            Aggre     Anch      Cyber     Switch     Inter      Spl P
         --------  --------  --------  --------  --------  --------
  EXT FAC     - -    -0.86       0.04        - -      0.10        - -
                    (0.50)     (0.02)               (0.09)
```

		-1.71	1.49		1.15	
ACT TAKE	- -	-1.65 (0.96) -1.71	0.07 (0.05) 1.49	- -	0.19 (0.17) 1.15	- -
IND CHAN	- -	-1.63 (0.95) -1.71	0.07 (0.05) 1.49	- -	0.19 (0.17) 1.15	- -
TECH DEV	- -	-2.16 (1.28) -1.68	0.09 (0.06) 1.47	- -	0.25 (0.22) 1.14	- -
MULTI SK	- -	-1.13 (0.66) -1.71	0.05 (0.03) 1.49	- -	0.13 (0.12) 1.15	- -
COMM FOC	- -	-1.34 (0.78) -1.72	0.06 (0.04) 1.50	- -	0.16 (0.14) 1.15	- -
CODEP NE	- -	-7.70 (4.48) -1.72	0.32 (0.22) 1.50	- -	0.90 (0.79) 1.15	- -
JOB ROLE	0.10 (0.06) 1.58	-0.67 (0.40) -1.67	1.19 (0.28) 4.25	- -	0.08 (0.07) 1.14	- -
ROLE EXC	- -	-0.60 (0.35) -1.68	0.03 (0.02) 1.47	- -	0.07 (0.06) 1.14	- -

ICT NET	- -	-1.73 (1.01) -1.71	3.07 (0.61) 5.05	- -	0.20 (0.18) 1.15	- -
IOS	- -	-0.41 (0.24) -1.69	0.73 (0.16) 4.65	- -	0.05 (0.04) 1.14	- -
RICH MED	- -	-1.71 (1.32) -1.30	3.03 (1.64) 1.86	- -	0.20 (0.20) 0.99	- -
ICT INTD	- -	-0.35 (0.22) -1.61	0.62 (0.17) 3.53	- -	0.04 (0.04) 1.12	- -
ICT CORE	- -	-0.58 (0.34) -1.69	0.02 (0.02) 1.56	- -	0.07 (0.06) 1.14	- -
ICT CONN	- -	-0.28 (0.19) -1.50	0.50 (0.19) 2.65	- -	0.03 (0.03) 1.08	- -
INDVID K	0.08 (0.05) 1.62	-0.49 (0.29) -1.71	0.87 (0.17) 5.15	- -	0.06 (0.05) 1.15	- -
SOCIAL K	0.07 (0.04) 1.58	-0.43 (0.26) -1.67	0.77 (0.18) 4.24	- -	0.05 (0.04) 1.14	- -
ALT TASK	- -	-0.20 (0.13)	0.35 (0.14)	- -	0.02 (0.02)	- -

```
                      -1.57      2.49                1.10

 RESTRUCU     - -      0.02     -0.04       - -     -0.12         - -
                      (0.02)    (0.04)              (0.12)
                       1.56     -1.16               -1.00

 MANG CHA     - -      0.03     -0.05       - -     -0.14         - -
                      (0.02)    (0.04)              (0.14)
                       1.45     -1.15               -1.00

 OUTSOURC     - -     -0.75      0.03       - -      0.09         - -
                      (0.44)    (0.02)              (0.08)
                      -1.69      1.48                1.14

 RULE CHA     - -      0.03     -0.05       - -     -0.13         - -
                      (0.02)    (0.04)              (0.13)
                       1.45     -1.15               -1.00

 SHAR SYS     - -     -0.75      0.03       - -      0.09         - -
                      (0.44)    (0.02)              (0.08)
                      -1.70      1.49                1.15

 SHAR S A     - -      0.01     -0.03       - -     -0.07         - -
                      (0.01)    (0.02)              (0.07)
                       1.31     -1.08               -0.95

 MUTUAL D     - -     -0.21      0.37       - -      0.02         - -
                      (0.17)    (0.24)              (0.02)
                      -1.22      1.52                1.56

 MUTUAL A     - -     -0.32      0.58       - -      0.04         - -
                      (0.21)    (0.23)              (0.03)
                      -1.58      2.52                1.10
```

```
SHAR STR        - -       -1.61       2.85        - -        0.19        - -
                         (0.94)      (0.61)                 (0.16)
                          -1.70       4.70                   1.18

TRUST RE       0.00        0.01      -0.02      -0.01        0.00        - -
              (0.01)     (0.03)      (0.06)     (0.02)      (0.00)
              -0.28        0.28      -0.28      -0.28       -0.27

CUSTOM P       0.07       -0.39       0.70       0.30        0.05        - -
              (0.05)     (0.23)      (0.15)     (0.15)      (0.04)
               1.44       -1.68       4.51       2.07        1.14

LESS LEA       0.10       -0.55       0.97       0.42        0.06        - -
              (0.07)     (0.32)      (0.21)     (0.20)      (0.06)
               1.44       -1.69       4.67       2.08        1.14

 SPECIAL       0.04       -0.25       0.45       0.20        0.03        - -
              (0.03)     (0.15)      (0.11)     (0.10)      (0.03)
               1.42       -1.66       4.08       2.02        1.13

COMP ADV       0.03       -0.17       0.31        - -        0.02        - -
              (0.02)     (0.11)      (0.09)                 (0.02)
               1.54       -1.62       3.56                   1.12

KNOW AND       0.12       -0.79       1.40        - -        0.09        - -
              (0.08)     (0.48)      (0.36)                 (0.08)
               1.56       -1.64       3.88                   1.13


Standardized Total and Indirect Effects

        Standardized Total Effects of ETA on ETA
```

```
               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
   Aggre         - -      -0.18       0.75        - -       0.03        - -
    Anch         - -       0.02      -0.10        - -      -0.18        - -
   Cyber         - -      -0.25       0.02        - -       0.04        - -
  Switch        0.28      -0.19       0.78        - -       0.03        - -
   Inter         - -      -0.14       0.56        - -       0.02        - -
   Spl P        0.25      -0.15       0.62       0.48       0.03        - -

         Standardized Indirect Effects of ETA on ETA

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
   Aggre         - -      -0.18       0.02        - -       0.03        - -
    Anch         - -       0.02      -0.10        - -       0.00        - -
   Cyber         - -      -0.01       0.02        - -       0.04        - -
  Switch         - -      -0.19       0.22        - -       0.03        - -
   Inter         - -      -0.14       0.01        - -       0.02        - -
   Spl P        0.13      -0.15       0.47        - -       0.03        - -

         Standardized Total Effects of ETA on Y

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
 EXT FAC         - -      -0.24       1.01        - -       0.04        - -
ACT TAKE         - -      -0.47       1.94        - -       0.08        - -
IND CHAN         - -      -0.46       1.92        - -       0.08        - -
TECH DEV         - -      -0.61       2.55        - -       0.11        - -
MULTI SK         - -      -0.32       1.33        - -       0.06        - -
COMM FOC         - -      -0.38       1.58        - -       0.07        - -
CODEP NE         - -      -2.18       9.08        - -       0.39        - -
JOB ROLE        0.28      -0.19       0.79       1.01       0.03        - -
ROLE EXC         - -      -0.17       0.70        - -       0.03        - -
 ICT NET        2.73      -0.49       2.04        - -       0.09        - -
     IOS        0.65      -0.12       0.48        - -       0.02        - -
```

```
RICH MED       2.70      -0.48       2.01       - -        0.09       - -
ICT INTD       0.55      -0.10       0.41       - -        0.02       - -
ICT CORE        - -      -0.16       0.68       - -        0.03       - -
ICT CONN       0.45      -0.08       0.34       - -        0.01       - -
INDVID K       0.21      -0.14       0.58       0.74       0.02       - -
SOCIAL K       0.18      -0.12       0.51       0.65       0.02       - -
ALT TASK        - -      -0.06       0.23       - -        0.43       - -
RESTRUCU        - -       0.29      -0.03       - -       -0.05       - -
MANG CHA        - -       0.33      -0.03       - -       -0.06       - -
OUTSOURC        - -      -0.21       0.88       - -        0.04       - -
RULE CHA        - -       0.32      -0.03       - -       -0.06       - -
SHAR SYS        - -      -0.21       0.89       - -        0.04       - -
SHAR S A        - -       0.17      -0.02       - -       -0.03       - -
MUTUAL D        - -      -0.06       0.24       - -        0.44       - -
MUTUAL A        - -      -0.09       0.38       - -        0.70       - -
SHAR STR        - -      -0.45       1.89       - -        3.45       - -
TRUST RE       0.00       0.00      -0.01      -0.01       0.00      -0.02
CUSTOM P       0.19      -0.11       0.46       0.36       0.02       0.74
LESS LEA       0.26      -0.16       0.65       0.50       0.03       1.04
 SPECIAL       0.12      -0.07       0.30       0.23       0.01       0.48
COMP ADV       0.07      -0.05       0.20       0.26       0.01       - -
KNOW AND       0.33      -0.22       0.93       1.18       0.04       - -

        Completely Standardized Total Effects of ETA on Y

              Aggre       Anch      Cyber     Switch      Inter      Spl P
           --------   --------   --------   --------   --------   --------
 EXT FAC        - -      -0.13       0.54       - -        0.02       - -
ACT TAKE        - -      -0.13       0.56       - -        0.02       - -
IND CHAN        - -      -0.14       0.57       - -        0.02       - -
TECH DEV        - -      -0.11       0.45       - -        0.02       - -
MULTI SK        - -      -0.13       0.54       - -        0.02       - -
COMM FOC        - -      -0.15       0.64       - -        0.03       - -
CODEP NE        - -      -0.14       0.60       - -        0.03       - -
JOB ROLE       0.13      -0.09       0.36       0.46       0.02       - -
ROLE EXC        - -      -0.11       0.44       - -        0.02       - -
```

```
  ICT NET      0.71     -0.13      0.53       - -      0.02       - -
      IOS      0.59     -0.11      0.44       - -      0.02       - -
 RICH MED      0.16     -0.03      0.12       - -      0.01       - -
 ICT INTD      0.36     -0.06      0.27       - -      0.01       - -
 ICT CORE       - -     -0.11      0.47       - -      0.02       - -
 ICT CONN      0.24     -0.04      0.18       - -      0.01       - -
 INDVID K      0.19     -0.13      0.54      0.69      0.02       - -
 SOCIAL K      0.13     -0.09      0.36      0.46      0.02       - -
 ALT TASK       - -     -0.04      0.16       - -      0.29       - -
 RESTRUCU       - -      0.61     -0.06       - -     -0.11       - -
 MANG CHA       - -      0.51     -0.05       - -     -0.09       - -
 OUTSOURC       - -     -0.11      0.48       - -      0.02       - -
 RULE CHA       - -      0.58     -0.06       - -     -0.10       - -
 SHAR SYS       - -     -0.12      0.52       - -      0.02       - -
 SHAR S A       - -      0.25     -0.02       - -     -0.05       - -
 MUTUAL D       - -     -0.02      0.08       - -      0.14       - -
 MUTUAL A       - -     -0.04      0.17       - -      0.30       - -
 SHAR STR       - -     -0.12      0.48       - -      0.87       - -
 TRUST RE     -0.01      0.00     -0.01     -0.01      0.00     -0.02
 CUSTOM P      0.17     -0.10      0.41      0.32      0.02      0.66
 LESS LEA      0.18     -0.11      0.45      0.35      0.02      0.72
  SPECIAL      0.13     -0.08      0.31      0.24      0.01      0.50
 COMP ADV      0.10     -0.07      0.27      0.35      0.01       - -
 KNOW AND      0.11     -0.07      0.31      0.40      0.01       - -

         Standardized Indirect Effects of ETA on Y

              Aggre      Anch     Cyber    Switch     Inter     Spl P
           --------  --------  --------  --------  --------  --------
  EXT FAC       - -     -0.24      0.02       - -      0.04       - -
 ACT TAKE       - -     -0.47      0.05       - -      0.08       - -
 IND CHAN       - -     -0.46      0.05       - -      0.08       - -
 TECH DEV       - -     -0.61      0.06       - -      0.11       - -
 MULTI SK       - -     -0.32      0.03       - -      0.06       - -
 COMM FOC       - -     -0.38      0.04       - -      0.07       - -
 CODEP NE       - -     -2.18      0.22       - -      0.39       - -
```

```
 JOB ROLE      0.28     -0.19      0.79       - -       0.03       - -
 ROLE EXC       - -     -0.17      0.02       - -       0.03       - -
  ICT NET       - -     -0.49      2.04       - -       0.09       - -
      IOS       - -     -0.12      0.48       - -       0.02       - -
 RICH MED       - -     -0.48      2.01       - -       0.09       - -
 ICT INTD       - -     -0.10      0.41       - -       0.02       - -
 ICT CORE       - -     -0.16      0.02       - -       0.03       - -
 ICT CONN       - -     -0.08      0.34       - -       0.01       - -
 INDVID K      0.21     -0.14      0.58       - -       0.02       - -
 SOCIAL K      0.18     -0.12      0.51       - -       0.02       - -
 ALT TASK       - -     -0.06      0.23       - -       0.01       - -
 RESTRUCU       - -      0.01     -0.03       - -      -0.05       - -
 MANG CHA       - -      0.01     -0.03       - -      -0.06       - -
 OUTSOURC       - -     -0.21      0.02       - -       0.04       - -
 RULE CHA       - -      0.01     -0.03       - -      -0.06       - -
 SHAR SYS       - -     -0.21      0.02       - -       0.04       - -
 SHAR S A       - -      0.00     -0.02       - -      -0.03       - -
 MUTUAL D       - -     -0.06      0.24       - -       0.01       - -
 MUTUAL A       - -     -0.09      0.38       - -       0.02       - -
 SHAR STR       - -     -0.45      1.89       - -       0.08       - -
 TRUST RE      0.00      0.00     -0.01     -0.01       0.00       - -
 CUSTOM P      0.19     -0.11      0.46      0.36       0.02       - -
 LESS LEA      0.26     -0.16      0.65      0.50       0.03       - -
  SPECIAL      0.12     -0.07      0.30      0.23       0.01       - -
 COMP ADV      0.07     -0.05      0.20       - -       0.01       - -
 KNOW AND      0.33     -0.22      0.93       - -       0.04       - -

         Completely Standardized Indirect Effects of ETA on Y

               Aggre      Anch     Cyber    Switch     Inter     Spl P
            --------  --------  --------  --------  --------  --------
  EXT FAC       - -     -0.13      0.01       - -       0.02       - -
 ACT TAKE       - -     -0.13      0.01       - -       0.02       - -
 IND CHAN       - -     -0.14      0.01       - -       0.02       - -
 TECH DEV       - -     -0.11      0.01       - -       0.02       - -
 MULTI SK       - -     -0.13      0.01       - -       0.02       - -
```

COMM FOC	- -	-0.15	0.02	- -	0.03	- -
CODEP NE	- -	-0.14	0.01	- -	0.03	- -
JOB ROLE	0.13	-0.09	0.36	- -	0.02	- -
ROLE EXC	- -	-0.11	0.01	- -	0.02	- -
ICT NET	- -	-0.13	0.53	- -	0.02	- -
IOS	- -	-0.11	0.44	- -	0.02	- -
RICH MED	- -	-0.03	0.12	- -	0.01	- -
ICT INTD	- -	-0.06	0.27	- -	0.01	- -
ICT CORE	- -	-0.11	0.01	- -	0.02	- -
ICT CONN	- -	-0.04	0.18	- -	0.01	- -
INDVID K	0.19	-0.13	0.54	- -	0.02	- -
SOCIAL K	0.13	-0.09	0.36	- -	0.02	- -
ALT TASK	- -	-0.04	0.16	- -	0.01	- -
RESTRUCU	- -	0.01	-0.06	- -	-0.11	- -
MANG CHA	- -	0.01	-0.05	- -	-0.09	- -
OUTSOURC	- -	-0.11	0.01	- -	0.02	- -
RULE CHA	- -	0.01	-0.06	- -	-0.10	- -
SHAR SYS	- -	-0.12	0.01	- -	0.02	- -
SHAR S A	- -	0.01	-0.02	- -	-0.05	- -
MUTUAL D	- -	-0.02	0.08	- -	0.00	- -
MUTUAL A	- -	-0.04	0.17	- -	0.01	- -
SHAR STR	- -	-0.12	0.48	- -	0.02	- -
TRUST RE	-0.01	0.00	-0.01	-0.01	0.00	- -
CUSTOM P	0.17	-0.10	0.41	0.32	0.02	- -
LESS LEA	0.18	-0.11	0.45	0.35	0.02	- -
SPECIAL	0.13	-0.08	0.31	0.24	0.01	- -
COMP ADV	0.10	-0.07	0.27	- -	0.01	- -
KNOW AND	0.11	-0.07	0.31	- -	0.01	- -

ISSAAC V2 (Insignificant items removed)

```
Covariance Matrix

            EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
           --------   --------   --------   --------   --------   --------
  EXT FAC      3.44
 ACT TAKE      2.40      12.13
 IND CHAN      2.44       3.35      11.41
 TECH DEV      4.38       6.36       7.74      32.21
 MULTI SK      1.47       2.44       2.61       3.40       6.05
 COMM FOC      1.44       3.19       2.78       2.38       2.03       6.14
 CODEP NE      9.02      13.85      18.62      20.95      13.71      14.04
 JOB ROLE      0.33       1.31       1.37       0.25       1.09       1.75
 ROLE EXC      0.61       1.26       1.09       1.20       0.78       1.32
  ICT NET      1.85       3.98       3.49       4.65       2.57       3.07
      IOS      0.48       1.02       0.74       1.43       0.53       0.61
 RICH MED     -1.28      -2.14      -3.27      -8.33       1.14       0.39
 ICT INTD      0.25       0.75       0.43      -0.18       0.67       0.60
 ICT CORE      0.49       0.88       1.41       0.46       0.96       1.13
 ICT CONN      0.53       0.50       0.27       0.35       0.17       0.44
 INDVID K      0.37       1.08       0.95       1.28       0.62       0.93
 ALT TASK      0.28       0.34       0.42       0.51       0.10       0.48
 RESTRUCU     -0.08      -0.24      -0.13      -0.41      -0.11      -0.13
 MANG CHA     -0.04       0.04      -0.02      -0.11      -0.08       0.04
 OUTSOURC      0.89       1.70       1.67       2.35       1.05       1.34
 RULE CHA     -0.11      -0.24      -0.20      -0.35      -0.25      -0.20
 SHAR SYS      0.71       1.62       1.14       2.09       1.03       1.27
 MUTUAL D     -0.31      -0.73      -0.51      -2.32      -0.47      -0.03
 MUTUAL A      0.13       0.38      -0.33       0.44       0.25       0.36
 SHAR STR      1.30       3.67       2.56       4.66       2.37       2.95
 CUSTOM P      0.42       0.87       0.99       1.00       0.47       0.78
 LESS LEA      0.42       0.82       1.41       0.85       0.58       1.01
  SPECIAL      0.11       0.39       0.53       0.30       0.11       0.41
 COMP ADV      0.09       0.53       0.19       0.07       0.24       0.23
 KNOW AND      0.40       1.66       0.37       0.18       0.87       1.07
```

```
         Covariance Matrix

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
 CODEP NE     228.10
 JOB ROLE       8.09       4.77
 ROLE EXC       6.74       0.81       2.54
  ICT NET      14.22       2.31       1.02      14.94
      IOS       3.58       0.52       0.26       1.70       1.21
 RICH MED       7.08       3.49       0.71       6.75       1.70     284.06
 ICT INTD       3.80       0.06       0.61       1.54       0.29       4.46
 ICT CORE       6.83       0.89       0.49       1.82       0.42       4.42
 ICT CONN       2.70      -0.05       0.19       1.67       0.21       7.16
 INDVID K       5.62       0.73       0.56       1.22       0.38       2.28
 ALT TASK       3.40       0.79       0.65       0.41       0.08       2.15
 RESTRUCU      -0.82      -0.21      -0.02      -0.38      -0.15       0.18
 MANG CHA       0.36      -0.10       0.11      -0.15      -0.10       0.28
 OUTSOURC       6.47       0.46       0.55       1.88       0.44      -0.41
 RULE CHA      -0.81      -0.15       0.00      -0.40      -0.11      -0.44
 SHAR SYS       7.83       0.54       0.47       1.70       0.49       0.42
 MUTUAL D       2.09       0.05       0.70      -0.76      -0.20       4.30
 MUTUAL A       3.46      -0.17       0.60       0.03       0.18       4.75
 SHAR STR      13.95       2.46       1.63       5.10       1.62       4.99
 CUSTOM P       4.52       0.48       0.37       1.11       0.32      -0.27
 LESS LEA       5.81       0.97       0.45       1.50       0.39       1.94
  SPECIAL       1.55       0.38       0.19       0.84       0.21       1.88
 COMP ADV       1.60       0.30       0.10       0.66       0.14      -0.99
 KNOW AND       5.66       1.52       0.24       2.27       0.49      -4.14

         Covariance Matrix

            ICT INTD   ICT CORE   ICT CONN   INDVID K   ALT TASK   RESTRUCU
            --------   --------   --------   --------   --------   --------
 ICT INTD       2.36
 ICT CORE       0.59       2.14
```

```
ICT CONN       0.49       0.30       3.44
INDVID K       0.22       0.28       0.04       1.15
ALT TASK       0.32       0.13       0.32       0.17       2.10
RESTRUCU       0.04      -0.10       0.05      -0.12       0.01       0.22
MANG CHA       0.09      -0.03       0.12       0.00       0.00       0.10
OUTSOURC       0.48       0.58      -0.03       0.50       0.25      -0.08
RULE CHA      -0.05      -0.11       0.00      -0.04       0.01       0.08
SHAR SYS       0.28       0.56       0.08       0.61       0.08      -0.16
MUTUAL D       0.30      -0.17       0.44       0.05       1.05       0.22
MUTUAL A       0.46      -0.23       0.65       0.29       0.70       0.14
SHAR STR       1.08       1.19       0.11       1.21       1.25      -0.36
CUSTOM P       0.20       0.30       0.05       0.40       0.26      -0.08
LESS LEA       0.30       0.52       0.04       0.55       0.28      -0.08
 SPECIAL       0.17       0.26       0.27       0.16       0.18      -0.04
COMP ADV       0.16       0.12      -0.02       0.14       0.07      -0.03
KNOW AND       0.22       0.25      -0.21       0.81       0.43      -0.30

         Covariance Matrix

            MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   MUTUAL D   MUTUAL A
            --------   --------   --------   --------   --------   --------
MANG CHA       0.44
OUTSOURC      -0.02       3.44
RULE CHA       0.11      -0.12       0.31
SHAR SYS      -0.10       0.90      -0.19       2.95
MUTUAL D      -0.03      -0.35       0.13       0.12      10.10
MUTUAL A       0.07      -0.15       0.13       0.42       2.18       5.32
SHAR STR      -0.39       1.60      -0.43       2.10       1.24       2.28
CUSTOM P      -0.01       0.46      -0.04       0.53       0.10       0.47
LESS LEA       0.03       0.56      -0.05       0.66       0.46       0.53
 SPECIAL      -0.02       0.22      -0.08       0.33       0.23       0.44
COMP ADV      -0.02       0.21      -0.05       0.20       0.17       0.19
KNOW AND      -0.30       0.77      -0.31       1.12       1.17       0.79

         Covariance Matrix
```

```
            SHAR STR   CUSTOM P   LESS LEA    SPECIAL   COMP ADV   KNOW AND
            --------   --------   --------   --------   --------   --------
 SHAR STR      15.63
 CUSTOM P       1.35       1.28
 LESS LEA       1.31       0.74       2.07
  SPECIAL       1.05       0.38       0.52       0.91
 COMP ADV       0.59       0.07       0.24       0.08       0.56
 KNOW AND       2.46       0.61       1.00       0.34       0.87       8.90


 Parameter Specifications

         LAMBDA-Y

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
  EXT FAC          0          0          1          0          0          0
 ACT TAKE          0          0          2          0          0          0
 IND CHAN          0          0          3          0          0          0
 TECH DEV          0          0          4          0          0          0
 MULTI SK          0          0          5          0          0          0
 COMM FOC          0          0          6          0          0          0
 CODEP NE          0          0          7          0          0          0
 JOB ROLE          0          0          0          8          0          0
 ROLE EXC          0          0          9          0          0          0
  ICT NET          0          0          0          0          0          0
      IOS         10          0          0          0          0          0
 RICH MED         11          0          0          0          0          0
 ICT INTD         12          0          0          0          0          0
 ICT CORE          0          0          0          0          0          0
 ICT CONN         13          0          0          0          0          0
 INDVID K          0          0          0         14          0          0
 ALT TASK          0          0          0          0         15          0
 RESTRUCU          0          0          0          0          0          0
```

```
MANG CHA          0         16          0          0          0          0
OUTSOURC          0          0         17          0          0          0
RULE CHA          0         18          0          0          0          0
SHAR SYS          0          0         19          0          0          0
MUTUAL D          0          0          0          0          0          0
MUTUAL A          0          0          0          0         20          0
SHAR STR          0          0          0          0         21          0
CUSTOM P          0          0          0          0          0          0
LESS LEA          0          0          0          0          0         22
 SPECIAL          0          0          0          0          0         23
COMP ADV          0          0          0         24          0          0
KNOW AND          0          0          0          0          0          0

        BETA

             Aggre       Anch      Cyber     Switch      Inter      Spl P
          --------   --------   --------   --------   --------   --------
   Aggre          0          0         25          0          0          0
    Anch          0          0          0          0         26          0
   Cyber          0         27          0          0          0          0
  Switch         28          0         29          0          0          0
   Inter          0          0         30          0          0          0
   Spl P         31          0         32         33          0          0

        PSI

             Aggre       Anch      Cyber     Switch      Inter      Spl P
          --------   --------   --------   --------   --------   --------
                34         35         36         37         38         39

        THETA-EPS

           EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
          --------   --------   --------   --------   --------   --------
                40         41         42         43         44         45
```

```
        THETA-EPS

           CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
           --------   --------   --------   --------   --------   --------
                 46         47         48         49         50         51

        THETA-EPS

           ICT INTD   ICT CORE   ICT CONN   INDVID K   ALT TASK   RESTRUCU
           --------   --------   --------   --------   --------   --------
                 52         53         54         55         56         57

        THETA-EPS

           MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   MUTUAL D   MUTUAL A
           --------   --------   --------   --------   --------   --------
                 58         59         60         61         62         63

        THETA-EPS

           SHAR STR   CUSTOM P   LESS LEA    SPECIAL   COMP ADV   KNOW AND
           --------   --------   --------   --------   --------   --------
                 64         65         66         67         68         69



 Number of Iterations = 65

 LISREL Estimates (Maximum Likelihood)

        LAMBDA-Y

              Aggre       Anch      Cyber     Switch      Inter      Spl P
```

EXT FAC	- -	- -	1.46 (0.28) 5.16	- -	- -	- -
ACT TAKE	- -	- -	2.83 (0.54) 5.24	- -	- -	- -
IND CHAN	- -	- -	2.78 (0.53) 5.28	- -	- -	- -
TECH DEV	- -	- -	3.66 (0.80) 4.57	- -	- -	- -
MULTI SK	- -	- -	1.93 (0.38) 5.15	- -	- -	- -
COMM FOC	- -	- -	2.29 (0.41) 5.60	- -	- -	- -
CODEP NE	- -	- -	13.15 (2.42) 5.43	- -	- -	- -
JOB ROLE	- -	- -	- -	0.88 (0.21) 4.30	- -	- -
ROLE EXC	- -	- -	1.02	- -	- -	- -

			(0.22) 4.55			
ICT NET	1.00	- -	- -	- -	- -	- -
IOS	0.23 (0.04) 6.23	- -	- -	- -	- -	- -
RICH MED	0.95 (0.51) 1.87	- -	- -	- -	- -	- -
ICT INTD	0.20 (0.05) 4.15	- -	- -	- -	- -	- -
ICT CORE	- -	- -	1.00	- -	- -	- -
ICT CONN	0.16 (0.06) 2.91	- -	- -	- -	- -	- -
INDVID K	- -	- -	- -	0.55 (0.12) 4.72	- -	- -
ALT TASK	- -	- -	- -	- -	0.97 (0.64) 1.51	- -
RESTRUCU	- -	1.00	- -	- -	- -	- -
MANG CHA	- -	1.12	- -	- -	- -	- -

		(0.29) 3.92				
OUTSOURC	- -	- -	1.29 (0.27) 4.79	- -	- -	- -
RULE CHA	- -	1.06 (0.27) 3.99	- -	- -	- -	- -
SHAR SYS	- -	- -	1.28 (0.26) 5.01	- -	- -	- -
MUTUAL D	- -	- -	- -	- -	1.00	- -
MUTUAL A	- -	- -	- -	- -	1.60 (1.05) 1.52	- -
SHAR STR	- -	- -	- -	- -	8.19 (5.27) 1.55	- -
CUSTOM P	- -	- -	- -	- -	- -	1.00
LESS LEA	- -	- -	- -	- -	- -	1.42 (0.21) 6.76
SPECIAL	- -	- -	- -	- -	- -	0.66 (0.12) 5.57

```
COMP ADV        - -        - -        - -       0.22        - -        - -
                                               (0.06)
                                                3.63

KNOW AND        - -        - -        - -       1.00        - -        - -


        BETA

                Aggre       Anch      Cyber     Switch      Inter      Spl P
             --------   --------   --------   --------   --------   --------
   Aggre        - -        - -       2.99        - -        - -        - -
                                    (0.58)
                                     5.13

    Anch        - -        - -        - -        - -      -0.14        - -
                                                          (0.13)
                                                          -1.11

   Cyber        - -      -0.56        - -        - -        - -        - -
                         (0.34)
                         -1.67

  Switch       0.13        - -       1.00        - -        - -        - -
              (0.09)                (0.38)
               1.50                  2.63

   Inter        - -        - -       0.33        - -        - -        - -
                                    (0.22)
                                     1.48

   Spl P       0.03        - -       0.14       0.32        - -        - -
              (0.05)                (0.22)     (0.14)
```

```
           0.53                0.65        2.24

   Covariance Matrix of ETA

              Aggre      Anch     Cyber    Switch     Inter     Spl P
           --------  --------  --------  --------  --------  --------
    Aggre      7.64
     Anch     -0.20      0.08
    Cyber      1.35     -0.07      0.45
   Switch      2.33     -0.09      0.62      1.57
    Inter      0.48     -0.04      0.16      0.22      0.17
    Spl P      1.14     -0.04      0.30      0.65      0.11      0.54

   PSI
   Note: This matrix is diagonal.

              Aggre      Anch     Cyber    Switch     Inter     Spl P
           --------  --------  --------  --------  --------  --------
               3.60      0.08      0.40      0.65      0.12      0.26
             (1.12)    (0.02)    (0.13)    (0.29)    (0.14)    (0.08)
               3.21      3.01      3.12      2.20      0.82      3.28


   Squared Multiple Correlations for Structural Equations

              Aggre      Anch     Cyber    Switch     Inter     Spl P
           --------  --------  --------  --------  --------  --------
               0.53      0.09      0.11      0.59      0.33      0.52

   THETA-EPS

            EXT FAC  ACT TAKE  IND CHAN  TECH DEV  MULTI SK  COMM FOC
           --------  --------  --------  --------  --------  --------
               2.47      8.51      7.91     26.15      4.37      3.76
```

```
             (0.27)      (0.92)      (0.86)      (2.72)      (0.47)      (0.42)
               9.31        9.25        9.22        9.61        9.32        8.88


         THETA-EPS

           CODEP NE    JOB ROLE    ROLE EXC     ICT NET         IOS    RICH MED
           --------    --------    --------    --------    --------    --------
             149.96        3.54        2.07        7.31        0.79      277.19
            (16.52)      (0.41)      (0.22)      (1.24)      (0.10)     (27.90)
               9.08        8.71        9.61        5.87        8.03        9.94


         THETA-EPS

           ICT INTD    ICT CORE    ICT CONN    INDVID K    ALT TASK    RESTRUCU
           --------    --------    --------    --------    --------    --------
               2.06        1.68        3.23        0.67        1.93        0.14
             (0.22)      (0.18)      (0.33)      (0.09)      (0.20)      (0.02)
               9.49        9.54        9.79        7.04        9.67        5.70


         THETA-EPS

           MANG CHA    OUTSOURC    RULE CHA    SHAR SYS    MUTUAL D    MUTUAL A
           --------    --------    --------    --------    --------    --------
               0.33        2.69        0.21        2.20        9.93        4.88
             (0.04)      (0.28)      (0.03)      (0.23)      (1.00)      (0.51)
               7.79        9.52        6.77        9.41        9.97        9.63


         THETA-EPS

           SHAR STR    CUSTOM P    LESS LEA     SPECIAL    COMP ADV    KNOW AND
           --------    --------    --------    --------    --------    --------
```

```
       3.92       0.74       0.98       0.68       0.48       7.33
     (3.10)     (0.10)     (0.17)     (0.08)     (0.05)     (0.79)
       1.26       7.30       5.90       8.78       9.43       9.23


 Squared Multiple Correlations for Y - Variables

    EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
   --------   --------   --------   --------   --------   --------
       0.28       0.30       0.31       0.19       0.28       0.39

 Squared Multiple Correlations for Y - Variables

   CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
   --------   --------   --------   --------   --------   --------
       0.34       0.26       0.19       0.51       0.34       0.02

 Squared Multiple Correlations for Y - Variables

   ICT INTD   ICT CORE   ICT CONN   INDVID K   ALT TASK   RESTRUCU
   --------   --------   --------   --------   --------   --------
       0.13       0.21       0.06       0.42       0.08       0.37

 Squared Multiple Correlations for Y - Variables

   MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   MUTUAL D   MUTUAL A
   --------   --------   --------   --------   --------   --------
       0.24       0.22       0.31       0.25       0.02       0.08

 Squared Multiple Correlations for Y - Variables

   SHAR STR   CUSTOM P   LESS LEA    SPECIAL   COMP ADV   KNOW AND
   --------   --------   --------   --------   --------   --------
       0.75       0.42       0.53       0.26       0.14       0.18
```

```
                      Goodness of Fit Statistics

                        Degrees of Freedom = 396
          Minimum Fit Function Chi-Square = 443.53 (P = 0.050)
 Normal Theory Weighted Least Squares Chi-Square = 490.58 (P = 0.00082)
            Estimated Non-centrality Parameter (NCP) = 94.58
       90 Percent Confidence Interval for NCP = (42.37 ; 154.97)

                   Minimum Fit Function Value = 2.21
           Population Discrepancy Function Value (F0) = 0.47
         90 Percent Confidence Interval for F0 = (0.21 ; 0.77)
        Root Mean Square Error of Approximation (RMSEA) = 0.034
       90 Percent Confidence Interval for RMSEA = (0.023 ; 0.044)
          P-Value for Test of Close Fit (RMSEA < 0.05) = 1.00

             Expected Cross-Validation Index (ECVI) = 3.13
        90 Percent Confidence Interval for ECVI = (2.87 ; 3.43)
                    ECVI for Saturated Model = 4.63
                  ECVI for Independence Model = 15.94

Chi-Square for Independence Model with 435 Degrees of Freedom = 3144.88
                       Independence AIC = 3204.88
                           Model AIC = 628.58
                         Saturated AIC = 930.00
                      Independence CAIC = 3334.12
                          Model CAIC = 925.85
                        Saturated CAIC = 2933.34

                     Normed Fit Index (NFI) = 0.86
                   Non-Normed Fit Index (NNFI) = 0.98
                Parsimony Normed Fit Index (PNFI) = 0.78
                   Comparative Fit Index (CFI) = 0.98
                   Incremental Fit Index (IFI) = 0.98
                    Relative Fit Index (RFI) = 0.85
```

```
                         Critical N (CN) = 211.46


                   Root Mean Square Residual (RMR) = 1.17
                          Standardized RMR = 0.068
                     Goodness of Fit Index (GFI) = 0.86
                Adjusted Goodness of Fit Index (AGFI) = 0.84
               Parsimony Goodness of Fit Index (PGFI) = 0.73


         Fitted Covariance Matrix

                EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
               --------   --------   --------   --------   --------   --------
   EXT FAC         3.44
  ACT TAKE         1.87      12.13
  IND CHAN         1.84       3.56      11.41
  TECH DEV         2.42       4.69       4.60      32.21
  MULTI SK         1.28       2.47       2.43       3.20       6.05
  COMM FOC         1.52       2.93       2.88       3.79       2.00       6.14
  CODEP NE         8.70      16.83      16.53      21.76      11.49      13.62
  JOB ROLE         0.81       1.56       1.54       2.02       1.07       1.27
  ROLE EXC         0.68       1.31       1.28       1.69       0.89       1.06
   ICT NET         1.98       3.82       3.76       4.95       2.61       3.10
       IOS         0.46       0.89       0.87       1.15       0.61       0.72
  RICH MED         1.87       3.63       3.56       4.69       2.48       2.94
  ICT INTD         0.39       0.76       0.75       0.98       0.52       0.62
  ICT CORE         0.66       1.28       1.26       1.66       0.87       1.04
  ICT CONN         0.32       0.63       0.62       0.81       0.43       0.51
  INDVID K         0.51       0.98       0.96       1.27       0.67       0.79
  ALT TASK         0.23       0.44       0.43       0.57       0.30       0.36
  RESTRUCU        -0.10      -0.19      -0.19      -0.24      -0.13      -0.15
  MANG CHA        -0.11      -0.21      -0.21      -0.27      -0.14      -0.17
  OUTSOURC         0.85       1.65       1.62       2.13       1.13       1.34
```

```
 RULE CHA     -0.10       -0.20       -0.20       -0.26       -0.14       -0.16
 SHAR SYS      0.85        1.64        1.61        2.13        1.12        1.33
 MUTUAL D      0.24        0.45        0.45        0.59        0.31        0.37
 MUTUAL A      0.37        0.73        0.71        0.94        0.50        0.59
 SHAR STR      1.92        3.72        3.66        4.82        2.54        3.01
 CUSTOM P      0.44        0.85        0.83        1.10        0.58        0.69
 LESS LEA      0.62        1.21        1.18        1.56        0.82        0.98
  SPECIAL      0.29        0.56        0.55        0.72        0.38        0.45
 COMP ADV      0.20        0.39        0.39        0.51        0.27        0.32
 KNOW AND      0.91        1.77        1.74        2.29        1.21        1.43

         Fitted Covariance Matrix

            CODEP NE    JOB ROLE    ROLE EXC     ICT NET         IOS    RICH MED
            --------    --------    --------    --------    --------    --------
 CODEP NE    228.10
 JOB ROLE      7.26        4.77
 ROLE EXC      6.07        0.56        2.54
  ICT NET     17.76        2.06        1.38       14.94
      IOS      4.13        0.48        0.32        1.78        1.21
 RICH MED     16.84        1.95        1.31        7.24        1.69      284.06
 ICT INTD      3.53        0.41        0.27        1.52        0.35        1.44
 ICT CORE      5.94        0.55        0.46        1.35        0.31        1.28
 ICT CONN      2.91        0.34        0.23        1.25        0.29        1.19
 INDVID K      4.55        0.77        0.35        1.29        0.30        1.22
 ALT TASK      2.05        0.19        0.16        0.47        0.11        0.44
 RESTRUCU     -0.88       -0.08       -0.07       -0.20       -0.05       -0.19
 MANG CHA     -0.98       -0.09       -0.08       -0.22       -0.05       -0.21
 OUTSOURC      7.66        0.71        0.59        1.74        0.41        1.65
 RULE CHA     -0.93       -0.09       -0.07       -0.21       -0.05       -0.20
 SHAR SYS      7.63        0.71        0.59        1.73        0.40        1.64
 MUTUAL D      2.11        0.20        0.16        0.48        0.11        0.46
 MUTUAL A      3.37        0.31        0.26        0.77        0.18        0.73
 SHAR STR     17.29        1.61        1.34        3.93        0.91        3.73
 CUSTOM P      3.94        0.58        0.31        1.14        0.26        1.08
 LESS LEA      5.60        0.82        0.43        1.62        0.38        1.53
```

```
 SPECIAL       2.60      0.38      0.20      0.75      0.17      0.71
COMP ADV       1.82      0.31      0.14      0.52      0.12      0.49
KNOW AND       8.21      1.39      0.64      2.33      0.54      2.21

        Fitted Covariance Matrix

            ICT INTD  ICT CORE  ICT CONN  INDVID K  ALT TASK  RESTRUCU
            --------  --------  --------  --------  --------  --------
ICT INTD       2.36
ICT CORE       0.27      2.14
ICT CONN       0.25      0.22      3.44
INDVID K       0.26      0.35      0.21      1.15
ALT TASK       0.09      0.16      0.08      0.12      2.10
RESTRUCU      -0.04     -0.07     -0.03     -0.05     -0.04      0.22
MANG CHA      -0.04     -0.07     -0.04     -0.06     -0.04      0.09
OUTSOURC       0.35      0.58      0.29      0.45      0.20     -0.09
RULE CHA      -0.04     -0.07     -0.03     -0.05     -0.04      0.09
SHAR SYS       0.35      0.58      0.28      0.44      0.20     -0.09
MUTUAL D       0.10      0.16      0.08      0.12      0.17     -0.04
MUTUAL A       0.15      0.26      0.13      0.20      0.27     -0.06
SHAR STR       0.78      1.32      0.64      1.01      1.39     -0.33
CUSTOM P       0.23      0.30      0.19      0.36      0.10     -0.04
LESS LEA       0.32      0.43      0.26      0.51      0.15     -0.06
 SPECIAL       0.15      0.20      0.12      0.24      0.07     -0.03
COMP ADV       0.10      0.14      0.08      0.19      0.05     -0.02
KNOW AND       0.46      0.62      0.38      0.87      0.22     -0.09

        Fitted Covariance Matrix

            MANG CHA  OUTSOURC  RULE CHA  SHAR SYS  MUTUAL D  MUTUAL A
            --------  --------  --------  --------  --------  --------
MANG CHA       0.44
OUTSOURC      -0.10      3.44
RULE CHA       0.10     -0.09      0.31
SHAR SYS      -0.10      0.75     -0.09      2.95
MUTUAL D      -0.04      0.21     -0.04      0.21     10.10
```

```
MUTUAL A       -0.07        0.33       -0.07        0.33        0.28        5.32
SHAR STR       -0.36        1.70       -0.35        1.69        1.43        2.28
CUSTOM P       -0.05        0.39       -0.05        0.38        0.11        0.17
LESS LEA       -0.07        0.55       -0.07        0.55        0.15        0.24
 SPECIAL       -0.03        0.25       -0.03        0.25        0.07        0.11
COMP ADV       -0.02        0.18       -0.02        0.18        0.05        0.08
KNOW AND       -0.10        0.81       -0.10        0.80        0.22        0.35

        Fitted Covariance Matrix

            SHAR STR    CUSTOM P    LESS LEA     SPECIAL    COMP ADV    KNOW AND
            --------    --------    --------    --------    --------    --------
SHAR STR       15.63
CUSTOM P        0.87        1.28
LESS LEA        1.24        0.77        2.07
 SPECIAL        0.58        0.36        0.51        0.91
COMP ADV        0.40        0.14        0.21        0.10        0.56
KNOW AND        1.82        0.65        0.93        0.43        0.35        8.91

        Fitted Residuals

             EXT FAC    ACT TAKE    IND CHAN    TECH DEV    MULTI SK    COMM FOC
            --------    --------    --------    --------    --------    --------
 EXT FAC        0.00
ACT TAKE        0.53        0.00
IND CHAN        0.60       -0.20        0.00
TECH DEV        1.96        1.68        3.13        0.00
MULTI SK        0.19       -0.04        0.18        0.20        0.00
COMM FOC       -0.08        0.25       -0.10       -1.42        0.03        0.00
CODEP NE        0.33       -2.98        2.09       -0.81        2.22        0.41
JOB ROLE       -0.48       -0.26       -0.16       -1.77        0.02        0.48
ROLE EXC       -0.07       -0.05       -0.20       -0.49       -0.12        0.26
 ICT NET       -0.12        0.16       -0.27       -0.29       -0.04       -0.02
     IOS        0.02        0.13       -0.14        0.28       -0.08       -0.11
RICH MED       -3.15       -5.77       -6.83      -13.02       -1.34       -2.54
ICT INTD       -0.14       -0.01       -0.32       -1.16        0.15       -0.02
```

```
ICT CORE      -0.17      -0.40       0.15      -1.20       0.09       0.10
ICT CONN       0.20      -0.13      -0.34      -0.47      -0.26      -0.07
INDVID K      -0.13       0.10      -0.01       0.01      -0.05       0.14
ALT TASK       0.05      -0.11      -0.01      -0.06      -0.21       0.12
RESTRUCU       0.02      -0.05       0.05      -0.16       0.02       0.03
MANG CHA       0.07       0.25       0.19       0.16       0.06       0.21
OUTSOURC       0.04       0.05       0.05       0.21      -0.07       0.01
RULE CHA       0.00      -0.04       0.00      -0.09      -0.11      -0.04
SHAR SYS      -0.14      -0.02      -0.47      -0.03      -0.10      -0.06
MUTUAL D      -0.55      -1.18      -0.96      -2.91      -0.78      -0.40
MUTUAL A      -0.25      -0.35      -1.04      -0.50      -0.24      -0.23
SHAR STR      -0.62      -0.05      -1.10      -0.16      -0.17      -0.06
CUSTOM P      -0.02       0.02       0.16      -0.09      -0.11       0.09
LESS LEA      -0.20      -0.39       0.22      -0.71      -0.24       0.03
 SPECIAL      -0.18      -0.17      -0.02      -0.42      -0.27      -0.04
COMP ADV      -0.12       0.13      -0.19      -0.44      -0.03      -0.09
KNOW AND      -0.52      -0.11      -1.37      -2.11      -0.34      -0.36

        Fitted Residuals

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
CODEP NE       0.00
JOB ROLE       0.83       0.00
ROLE EXC       0.67       0.24       0.00
 ICT NET      -3.54       0.25      -0.36       0.00
     IOS      -0.55       0.04      -0.06      -0.08       0.00
RICH MED      -9.76       1.53      -0.60      -0.49       0.01       0.00
ICT INTD       0.27      -0.35       0.34       0.02      -0.06       3.02
ICT CORE       0.89       0.33       0.02       0.47       0.10       3.14
ICT CONN      -0.21      -0.39      -0.04       0.42      -0.08       5.98
INDVID K       1.07      -0.04       0.20      -0.07       0.08       1.06
ALT TASK       1.35       0.59       0.49      -0.06      -0.03       1.71
RESTRUCU       0.06      -0.12       0.05      -0.19      -0.10       0.37
MANG CHA       1.34      -0.01       0.18       0.07      -0.05       0.49
OUTSOURC      -1.19      -0.25      -0.05       0.14       0.03      -2.06
```

```
RULE CHA       0.12      -0.06       0.07      -0.19      -0.06      -0.24
SHAR SYS       0.20      -0.16      -0.12      -0.03       0.09      -1.22
MUTUAL D      -0.02      -0.15       0.54      -1.24      -0.31       3.85
MUTUAL A       0.09      -0.49       0.33      -0.74       0.00       4.03
SHAR STR      -3.35       0.85       0.29       1.17       0.70       1.26
CUSTOM P       0.59      -0.09       0.06      -0.03       0.06      -1.35
LESS LEA       0.21       0.15       0.02      -0.11       0.01       0.41
 SPECIAL      -1.05       0.00      -0.02       0.09       0.03       1.17
COMP ADV      -0.22      -0.01      -0.04       0.14       0.02      -1.48
KNOW AND      -2.55       0.14      -0.40      -0.06      -0.05      -6.35

        Fitted Residuals

            ICT INTD   ICT CORE   ICT CONN   INDVID K   ALT TASK   RESTRUCU
            --------   --------   --------   --------   --------   --------
ICT INTD       0.00
ICT CORE       0.32       0.00
ICT CONN       0.24       0.07       0.00
INDVID K      -0.04      -0.06      -0.17       0.00
ALT TASK       0.22      -0.03       0.24       0.05       0.00
RESTRUCU       0.08      -0.03       0.09      -0.07       0.05       0.00
MANG CHA       0.13       0.04       0.16       0.06       0.04       0.01
OUTSOURC       0.13       0.00      -0.32       0.05       0.05       0.01
RULE CHA      -0.01      -0.04       0.04       0.02       0.06      -0.01
SHAR SYS      -0.06      -0.02      -0.20       0.16      -0.13      -0.07
MUTUAL D       0.21      -0.33       0.36      -0.08       0.89       0.26
MUTUAL A       0.31      -0.48       0.52       0.09       0.43       0.20
SHAR STR       0.30      -0.13      -0.54       0.21      -0.13      -0.04
CUSTOM P      -0.02       0.00      -0.14       0.04       0.16      -0.04
LESS LEA      -0.02       0.10      -0.23       0.03       0.13      -0.02
 SPECIAL       0.03       0.07       0.15      -0.08       0.11      -0.01
COMP ADV       0.05      -0.02      -0.11      -0.05       0.03      -0.01
KNOW AND      -0.24      -0.38      -0.59      -0.06       0.21      -0.21

        Fitted Residuals
```

```
            MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   MUTUAL D   MUTUAL A
            --------   --------   --------   --------   --------   --------
 MANG CHA       0.00
 OUTSOURC       0.08       0.00
 RULE CHA       0.01      -0.03       0.00
 SHAR SYS       0.00       0.15      -0.10       0.00
 MUTUAL D       0.01      -0.56       0.17      -0.09       0.00
 MUTUAL A       0.14      -0.48       0.20       0.09       1.91       0.00
 SHAR STR      -0.03      -0.10      -0.08       0.41      -0.19       0.00
 CUSTOM P       0.04       0.07       0.01       0.15      -0.01       0.30
 LESS LEA       0.10       0.01       0.02       0.11       0.31       0.29
  SPECIAL       0.02      -0.04      -0.05       0.08       0.16       0.32
 COMP ADV       0.01       0.03      -0.03       0.02       0.12       0.11
 KNOW AND      -0.19      -0.03      -0.22       0.31       0.95       0.43

         Fitted Residuals

            SHAR STR   CUSTOM P   LESS LEA    SPECIAL   COMP ADV   KNOW AND
            --------   --------   --------   --------   --------   --------
 SHAR STR       0.00
 CUSTOM P       0.48       0.00
 LESS LEA       0.07      -0.03       0.00
  SPECIAL       0.48       0.02       0.02       0.00
 COMP ADV       0.18      -0.07       0.03      -0.02       0.00
 KNOW AND       0.65      -0.04       0.07      -0.09       0.52       0.00

 Summary Statistics for Fitted Residuals

 Smallest Fitted Residual =  -13.02
   Median Fitted Residual =    0.00
  Largest Fitted Residual =    5.98

 Stemleaf Plot

 -13|0
 -12|
```

```
-11|
-10|
- 9|8
- 8|
- 7|
- 6|83
- 5|8
- 4|
- 3|5320
- 2|96511
- 1|8544332222221100
- 0|887766666555555555555444444444443333333333332222222222222222222222222222+96
  0|111111111111111111111111111111111111111111111111111112222222222222222222+64
  1|011223345779
  2|012
  3|0118
  4|0
  5|
  6|0

        Standardized Residuals

            EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
            --------  --------   --------   --------   --------   --------
  EXT FAC     - -
 ACT TAKE     1.77      - -
 IND CHAN     2.11     -0.39       - -
 TECH DEV     3.68      1.71       3.31       - -
 MULTI SK     0.88     -0.09       0.47       0.28       - -
 COMM FOC    -0.42      0.71      -0.30      -2.22       0.11       - -
 CODEP NE     0.27     -1.31       0.95      -0.20       1.36       0.28
 JOB ROLE    -2.15     -0.63      -0.41      -2.46       0.06       1.75
 ROLE EXC    -0.45     -0.17      -0.74      -1.00      -0.58       1.47
  ICT NET    -0.36      0.25      -0.44      -0.26      -0.08      -0.05
      IOS     0.16      0.65      -0.72       0.80      -0.56      -0.86
 RICH MED    -1.62     -1.59      -1.95      -2.10      -0.52      -1.03
```

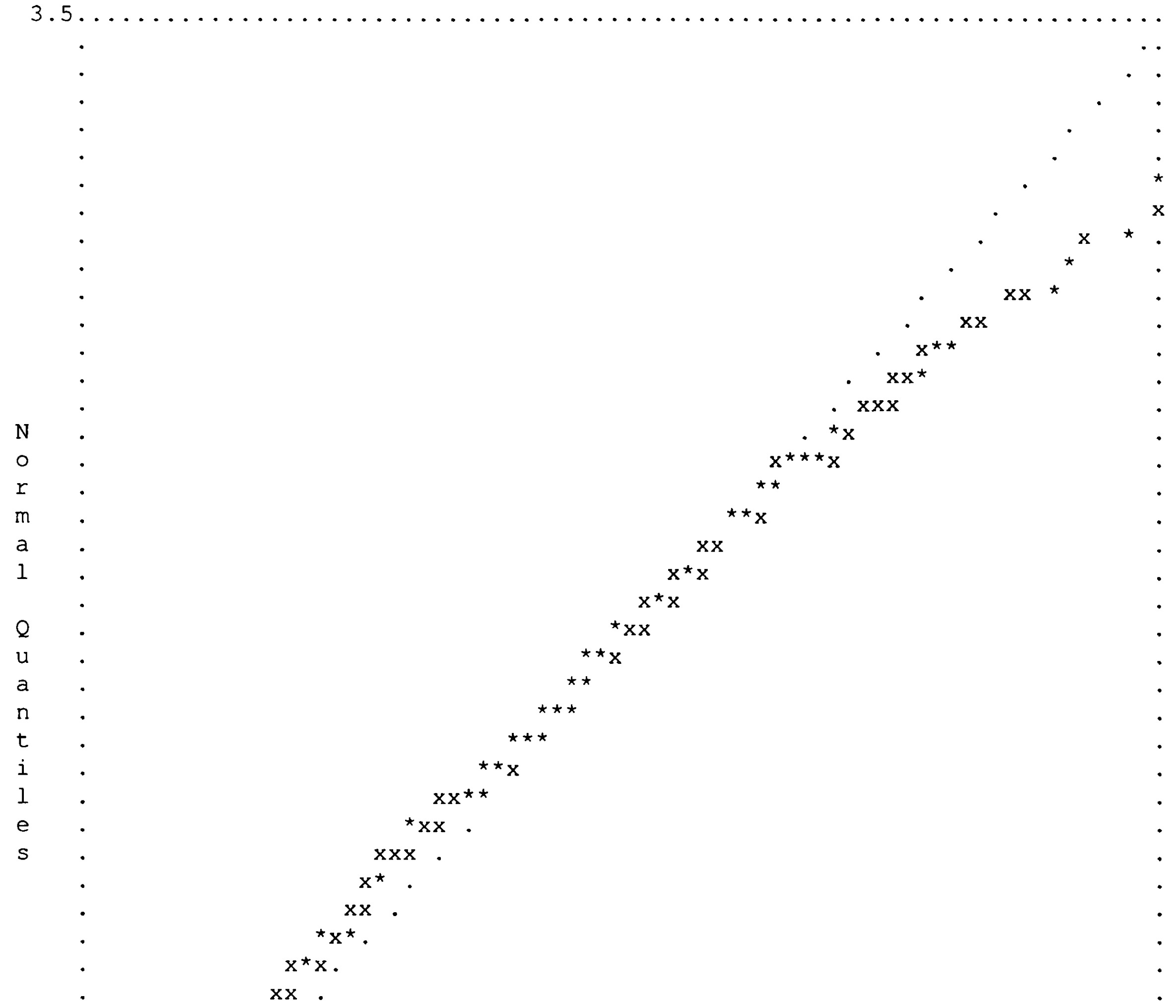
```
ICT INTD      -0.82      -0.04      -1.05      -2.14       0.69      -0.09
ICT CORE      -1.26      -1.60       0.64      -2.69       0.48       0.60
ICT CONN       0.96      -0.33      -0.91      -0.69      -0.91      -0.27
INDVID K      -1.34       0.53      -0.08       0.03      -0.37       1.12
ALT TASK       0.31      -0.34      -0.04      -0.12      -0.93       0.58
RESTRUCU       0.32      -0.52       0.58      -0.97       0.32       0.39
MANG CHA       0.96       1.72       1.37       0.66       0.58       2.12
OUTSOURC       0.24       0.15       0.16       0.38      -0.33       0.04
RULE CHA      -0.08      -0.37      -0.01      -0.45      -1.34      -0.49
SHAR SYS      -0.93      -0.08      -1.75      -0.07      -0.47      -0.31
MUTUAL D      -1.43      -1.64      -1.38      -2.40      -1.53      -0.79
MUTUAL A      -0.94      -0.70      -2.19      -0.59      -0.69      -0.68
SHAR STR      -1.76      -0.08      -1.75      -0.13      -0.36      -0.15
CUSTOM P      -0.20       0.11       0.77      -0.25      -0.74       0.66
LESS LEA      -1.48      -1.53       0.91      -1.57      -1.33       0.19
 SPECIAL      -1.73      -0.86      -0.09      -1.26      -1.93      -0.32
COMP ADV      -1.44       0.89      -1.33      -1.69      -0.30      -0.89
KNOW AND      -1.63      -0.19      -2.40      -2.06      -0.81      -0.91

         Standardized Residuals

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
CODEP NE        - -
JOB ROLE       0.48        - -
ROLE EXC       0.58       1.19        - -
 ICT NET      -1.35       0.66      -1.12        - -
     IOS      -0.67       0.35      -0.66      -1.08        - -
RICH MED      -0.63       0.65      -0.34      -0.20       0.01        - -
ICT INTD       0.20      -1.74       2.22       0.09      -0.81       1.85
ICT CORE       0.86       1.83       0.19       1.63       1.14       1.98
ICT CONN      -0.13      -1.55      -0.20       1.64      -0.82       2.88
INDVID K       1.39      -0.60       2.21      -0.45       1.53       0.98
ALT TASK       1.03       2.85       3.28      -0.16      -0.30       1.00
RESTRUCU       0.14      -1.86       1.01      -1.70      -3.21       0.68
MANG CHA       2.20      -0.09       2.66       0.43      -0.98       0.64
```

```
OUTSOURC      -0.92      -1.07      -0.31       0.38       0.27      -1.03
RULE CHA       0.24      -0.81       1.23      -1.41      -1.47      -0.37
SHAR SYS       0.17      -0.79      -0.84      -0.09       0.90      -0.67
MUTUAL D      -0.01      -0.32       1.59      -1.54      -1.31       1.02
MUTUAL A       0.04      -1.47       1.41      -1.33       0.01       1.49
SHAR STR      -1.23       1.75       0.87       1.55       3.01       0.30
CUSTOM P       0.66      -0.80       0.59      -0.17       0.96      -1.12
LESS LEA       0.20       1.11       0.16      -0.57       0.19       0.28
 SPECIAL      -1.28       0.00      -0.17       0.48       0.58       1.10
COMP ADV      -0.35      -0.16      -0.60       0.96       0.38      -1.76
KNOW AND      -1.02       0.44      -1.38      -0.10      -0.27      -1.92

        Standardized Residuals

            ICT INTD   ICT CORE   ICT CONN   INDVID K   ALT TASK   RESTRUCU
            --------   --------   --------   --------   --------   --------
ICT INTD        - -
ICT CORE       2.29        - -
ICT CONN       1.38       0.43        - -
INDVID K      -0.45      -0.77      -1.45        - -
ALT TASK       1.47      -0.22       1.29       0.50        - -
RESTRUCU       1.64      -0.77       1.47      -2.16       1.05        - -
MANG CHA       1.93       0.65       1.89       1.34       0.67       1.03
OUTSOURC       0.74       0.01      -1.46       0.51       0.31       0.11
RULE CHA      -0.09      -0.73       0.53       0.47       1.05      -1.90
SHAR SYS      -0.39      -0.19      -1.04       1.75      -0.80      -1.48
MUTUAL D       0.61      -1.07       0.87      -0.34       2.92       2.58
MUTUAL A       1.29      -2.25       1.78       0.60       2.08       2.82
SHAR STR       0.82      -0.43      -1.18       0.94      -2.46      -0.57
CUSTOM P      -0.21       0.03      -1.05       0.77       1.49      -1.17
LESS LEA      -0.20       0.84      -1.43       0.63       0.97      -0.46
 SPECIAL       0.28       0.78       1.31      -1.63       1.18      -0.48
COMP ADV       0.72      -0.33      -1.17      -1.70       0.37      -0.45
KNOW AND      -0.85      -1.46      -1.66      -0.54       0.73      -2.28

        Standardized Residuals
```

```
              MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   MUTUAL D   MUTUAL A
              --------   --------   --------   --------   --------   --------
   MANG CHA       - -
   OUTSOURC      1.03       - -
   RULE CHA      0.74      -0.48       - -
   SHAR SYS     -0.06       0.93      -1.67       - -
   MUTUAL D      0.10      -1.42       1.43      -0.24       - -
   MUTUAL A      1.41      -1.76       2.32       0.35       3.97       - -
   SHAR STR     -0.21      -0.26      -0.86       1.22      -1.10       0.03
   CUSTOM P      0.77       0.61       0.21       1.40      -0.02       1.77
   LESS LEA      1.62       0.07       0.34       0.87       1.02       1.36
    SPECIAL      0.37      -0.36      -1.29       0.79       0.77       2.19
   COMP ADV      0.20       0.34      -1.01       0.30       0.75       0.96
   KNOW AND     -1.46      -0.10      -1.95       1.05       1.46       0.94

         Standardized Residuals

              SHAR STR   CUSTOM P   LESS LEA    SPECIAL   COMP ADV   KNOW AND
              --------   --------   --------   --------   --------   --------
   SHAR STR       - -
   CUSTOM P      1.92       - -
   LESS LEA      0.23      -1.09       - -
    SPECIAL      2.11       0.54       0.52       - -
   COMP ADV      1.03      -1.63       0.58      -0.47       - -
   KNOW AND      0.93      -0.25       0.36      -0.54       4.28       - -

 Summary Statistics for Standardized Residuals

 Smallest Standardized Residual =   -3.21
   Median Standardized Residual =    0.00
  Largest Standardized Residual =    4.28

 Stemleaf Plot

 - 3|2
```

```
- 2|755
- 2|44332221111
- 1|99999988887777777766666666555555555555
- 1|4444444333333333333222211111111000000000
- 0|9999999999988888888888887777777777766666666655555555555
- 0|444444444444444443333333333333333332222222222222222221111111111111111111+44
  0|11111111222222222222222233333333333333344444444444
  0|55555555555666666666666666677777777777777888888888999999999999
  1|0000000000000000111111122223333444444444
  1|55555556666667778888888999
  2|01111222233
  2|678899
  3|033
  3|7
  4|03
Largest Negative Standardized Residuals
Residual for ICT CORE and TECH DEV  -2.69
Residual for RESTRUCU and      IOS  -3.21
Largest Positive Standardized Residuals
Residual for TECH DEV and  EXT FAC   3.68
Residual for TECH DEV and IND CHAN   3.31
Residual for ICT CONN and RICH MED   2.88
Residual for ALT TASK and JOB ROLE   2.85
Residual for ALT TASK and ROLE EXC   3.28
Residual for MANG CHA and ROLE EXC   2.66
Residual for MUTUAL D and ALT TASK   2.92
Residual for MUTUAL D and RESTRUCU   2.58
Residual for MUTUAL A and RESTRUCU   2.82
Residual for MUTUAL A and MUTUAL D   3.97
Residual for SHAR STR and      IOS   3.01
Residual for KNOW AND and COMP ADV   4.28
```

Qplot of Standardized Residuals


3.5
Normal Quantiles

```
    .            *.                                                         .
    .          x.                                                           .
    .          x                                                            .
    .  x    x.                                                              .
    .      .                                                                .
    .     .                                                                 .
    .   .                                                                   .
    . .                                                                     .
-3.5.........................................................................
  -3.5                                                                   3.5
                            Standardized Residuals


Modification Indices and Expected Change

        Modification Indices for LAMBDA-Y

              Aggre       Anch      Cyber     Switch      Inter      Spl P
           --------   --------   --------   --------   --------   --------
 EXT FAC       0.83       0.48        - -       9.56       3.36       4.05
ACT TAKE       0.03       0.06        - -       0.02       0.08       1.15
IND CHAN       1.75       1.15        - -       1.35       4.07       0.30
TECH DEV       1.11       0.24        - -       6.53       0.08       3.33
MULTI SK       0.38       0.03        - -       1.45       0.34       3.41
COMM FOC       0.22       0.85        - -       0.74       0.06       0.20
CODEP NE       1.44       1.48        - -       0.15       1.23       0.00
JOB ROLE       0.00       1.45       0.03        - -       1.55       0.12
ROLE EXC       0.17       4.28        - -       1.35       1.61       0.24
 ICT NET        - -       1.17       0.00       0.12       0.09       0.07
     IOS        - -       8.97       1.99       3.60       6.12       1.46
RICH MED        - -       0.45       3.65       0.54       0.02       0.07
ICT INTD        - -       3.47       0.02       0.81       0.31       0.09
ICT CORE       6.16       0.22        - -       0.16       0.48       0.73
ICT CONN        - -       4.63       2.48       7.22       1.68       2.18
INDVID K       0.65       0.00       5.23        - -       0.06       0.15
```

```
 ALT TASK       0.20       1.60       0.87       2.22        - -       1.96
 RESTRUCU       3.45        - -       1.39       6.31       0.00       2.72
 MANG CHA       4.04        - -       6.95       4.55       0.26       4.26
 OUTSOURC       0.06       0.07        - -       0.00       0.23       0.05
 RULE CHA       1.41        - -       1.56       0.37       0.23       0.07
 SHAR SYS       0.12       3.20        - -       2.61       1.41       2.61
 MUTUAL D       2.32       5.19       3.06       0.25        - -       0.04
 MUTUAL A       0.61      11.42       1.93       0.00        - -       1.95
 SHAR STR       8.38      17.64       3.10       4.31        - -       1.79
 CUSTOM P       0.16       0.12       2.07       0.01       2.37        - -
 LESS LEA       0.56       1.56       0.47       1.49       1.15        - -
  SPECIAL       0.18       0.52       0.72       1.88       2.61        - -
 COMP ADV       0.14       0.11       0.74        - -       0.37       0.45
 KNOW AND       2.05       5.51       5.01        - -       0.25       0.09

         Expected Change for LAMBDA-Y

                 Aggre       Anch      Cyber     Switch      Inter      Spl P
              --------   --------   --------   --------   --------   --------
  EXT FAC      -0.09       0.40        - -      -0.69      -0.77      -0.54
 ACT TAKE       0.03       0.26        - -      -0.06      -0.22      -0.54
 IND CHAN      -0.23       1.12        - -      -0.47      -1.53       0.27
 TECH DEV      -0.32      -0.90        - -      -1.81      -0.39      -1.57
 MULTI SK      -0.08      -0.14        - -      -0.36      -0.33      -0.66
 COMM FOC      -0.06       0.68        - -       0.25      -0.13       0.16
 CODEP NE      -0.92       5.61        - -       0.70      -3.70       0.12
 JOB ROLE       0.01      -0.82       0.09        - -       0.58       0.17
 ROLE EXC      -0.04       1.09        - -       0.23       0.48       0.12
  ICT NET        - -      -1.21       0.01       0.23       0.23      -0.20
      IOS        - -      -1.00       0.45       0.30       0.57       0.23
 RICH MED        - -       3.84      -7.13      -1.49       0.47      -0.72
 ICT INTD        - -       0.94       0.05      -0.17       0.19      -0.07
 ICT CORE       0.19      -0.23        - -       0.07      -0.24       0.19
 ICT CONN        - -       1.33      -0.65      -0.60      -0.54      -0.44
 INDVID K       0.06       0.02       0.75        - -       0.05       0.11
 ALT TASK       0.02       0.66       0.25       0.19        - -       0.27
```

```
RESTRUCU      -0.03        - -      -0.08      -0.09       0.00      -0.09
MANG CHA       0.04        - -       0.23       0.10       0.07       0.16
OUTSOURC       0.03       0.16        - -       0.01      -0.21       0.06
RULE CHA      -0.02        - -      -0.10      -0.02      -0.06      -0.02
SHAR SYS       0.03      -0.98        - -       0.34       0.47       0.41
MUTUAL D      -0.17       2.57      -0.88      -0.13        - -       0.08
MUTUAL A      -0.07       2.81      -0.60      -0.01        - -       0.42
SHAR STR       0.55     -13.33       4.87       0.92        - -       0.73
CUSTOM P       0.02      -0.11       0.31       0.02       0.34        - -
LESS LEA      -0.05       0.50      -0.21       0.31      -0.29        - -
 SPECIAL       0.02      -0.21      -0.14      -0.17       0.31        - -
COMP ADV       0.02      -0.08      -0.15        - -       0.10      -0.11
KNOW AND      -0.24      -2.25      -1.64        - -       0.32      -0.19

         Standardized Expected Change for LAMBDA-Y

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
 EXT FAC      -0.24       0.12        - -      -0.86      -0.32      -0.40
ACT TAKE       0.08       0.07        - -      -0.07      -0.09      -0.40
IND CHAN      -0.63       0.32        - -      -0.59      -0.64       0.20
TECH DEV      -0.89      -0.26        - -      -2.27      -0.16      -1.15
MULTI SK      -0.22      -0.04        - -      -0.45      -0.14      -0.49
COMM FOC      -0.16       0.20        - -       0.31      -0.06       0.11
CODEP NE      -2.53       1.61        - -       0.87      -1.55       0.09
JOB ROLE       0.01      -0.24       0.06        - -       0.24       0.12
ROLE EXC      -0.10       0.31        - -       0.29       0.20       0.09
 ICT NET        - -      -0.35       0.01       0.29       0.10      -0.14
     IOS        - -      -0.29       0.31       0.38       0.24       0.17
RICH MED        - -       1.11      -4.80      -1.87       0.20      -0.53
ICT INTD        - -       0.27       0.03      -0.21       0.08      -0.05
ICT CORE       0.53      -0.06        - -       0.09      -0.10       0.14
ICT CONN        - -       0.38      -0.44      -0.75      -0.22      -0.32
INDVID K       0.16       0.01       0.51        - -       0.02       0.08
ALT TASK       0.07       0.19       0.17       0.23        - -       0.19
RESTRUCU      -0.08        - -      -0.06      -0.11       0.00      -0.07
```

```
 MANG CHA       0.12        - -       0.16       0.13       0.03       0.12
 OUTSOURC       0.07       0.05        - -       0.02      -0.09       0.04
 RULE CHA      -0.06        - -      -0.07      -0.03      -0.03      -0.01
 SHAR SYS       0.09      -0.28        - -       0.42       0.20       0.30
 MUTUAL D      -0.48       0.74      -0.59      -0.16        - -       0.06
 MUTUAL A      -0.19       0.81      -0.41      -0.01        - -       0.31
 SHAR STR       1.53      -3.84       3.27       1.15        - -       0.54
 CUSTOM P       0.06      -0.03       0.21       0.02       0.14        - -
 LESS LEA      -0.15       0.15      -0.14       0.39      -0.12        - -
  SPECIAL       0.05      -0.06      -0.09      -0.21       0.13        - -
 COMP ADV       0.04      -0.02      -0.10        - -       0.04      -0.08
 KNOW AND      -0.67      -0.65      -1.10        - -       0.14      -0.14

         Completely Standardized Expected Change for LAMBDA-Y

               Aggre       Anch      Cyber     Switch      Inter      Spl P
            --------   --------   --------   --------   --------   --------
  EXT FAC      -0.13       0.06        - -      -0.47      -0.17      -0.22
 ACT TAKE       0.02       0.02        - -      -0.02      -0.03      -0.11
 IND CHAN      -0.19       0.10        - -      -0.17      -0.19       0.06
 TECH DEV      -0.16      -0.05        - -      -0.40      -0.03      -0.20
 MULTI SK      -0.09      -0.02        - -      -0.18      -0.06      -0.20
 COMM FOC      -0.06       0.08        - -       0.12      -0.02       0.05
 CODEP NE      -0.17       0.11        - -       0.06      -0.10       0.01
 JOB ROLE       0.01      -0.11       0.03        - -       0.11       0.06
 ROLE EXC      -0.06       0.20        - -       0.18       0.13       0.05
  ICT NET        - -      -0.09       0.00       0.08       0.03      -0.04
      IOS        - -      -0.26       0.28       0.35       0.22       0.15
 RICH MED        - -       0.07      -0.28      -0.11       0.01      -0.03
 ICT INTD        - -       0.18       0.02      -0.14       0.05      -0.03
 ICT CORE       0.37      -0.04        - -       0.06      -0.07       0.09
 ICT CONN        - -       0.21      -0.24      -0.41      -0.12      -0.17
 INDVID K       0.15       0.00       0.47        - -       0.02       0.07
 ALT TASK       0.05       0.13       0.12       0.16        - -       0.13
 RESTRUCU      -0.18        - -      -0.12      -0.24       0.00      -0.14
 MANG CHA       0.18        - -       0.24       0.19       0.05       0.17
```

```
OUTSOURC      0.04      0.03       - -      0.01     -0.05      0.02
RULE CHA     -0.11       - -     -0.12     -0.06     -0.05     -0.02
SHAR SYS      0.05     -0.16       - -      0.25      0.11      0.18
MUTUAL D     -0.15      0.23     -0.19     -0.05       - -      0.02
MUTUAL A     -0.08      0.35     -0.18     -0.01       - -      0.13
SHAR STR      0.39     -0.97      0.83      0.29       - -      0.14
CUSTOM P      0.05     -0.03      0.18      0.02      0.12       - -
LESS LEA     -0.11      0.10     -0.10      0.27     -0.09       - -
 SPECIAL      0.05     -0.06     -0.10     -0.22      0.13       - -
COMP ADV      0.06     -0.03     -0.14       - -      0.06     -0.11
KNOW AND     -0.22     -0.22     -0.37       - -      0.05     -0.05

        Modification Indices for BETA

               Aggre      Anch     Cyber    Switch     Inter     Spl P
            --------  --------  --------  --------  --------  --------
   Aggre         - -      4.70       - -       - -      8.41       - -
    Anch        2.65       - -       - -      2.86       - -      0.03
   Cyber        4.70       - -       - -      5.12       - -      0.46
  Switch         - -      2.99       - -       - -      5.51       - -
   Inter        8.41       - -       - -      9.40       - -      6.36
   Spl P         - -      0.20       - -       - -      1.95       - -

        Expected Change for BETA

               Aggre      Anch     Cyber    Switch     Inter     Spl P
            --------  --------  --------  --------  --------  --------
   Aggre         - -     -2.29       - -       - -      2.24       - -
    Anch       -0.04       - -       - -     -0.09       - -     -0.01
   Cyber       -0.46       - -       - -     -1.11       - -     -0.40
  Switch         - -     -0.82       - -       - -      0.81       - -
   Inter        0.07       - -       - -      0.18       - -      0.18
   Spl P         - -      0.12       - -       - -      0.27       - -

        Standardized Expected Change for BETA
```

```
            Aggre      Anch      Cyber     Switch     Inter      Spl P
          --------  --------  --------  --------  --------  --------
  Aggre       - -     -2.88       - -       - -      1.94       - -
   Anch     -0.05       - -       - -     -0.25       - -     -0.05
  Cyber     -0.25       - -       - -     -1.32       - -     -0.82
 Switch       - -     -2.26       - -       - -      1.54       - -
  Inter      0.06       - -       - -      0.34       - -      0.58
  Spl P       - -      0.57       - -       - -      0.89       - -

      Modification Indices for PSI

            Aggre      Anch      Cyber     Switch     Inter      Spl P
          --------  --------  --------  --------  --------  --------
  Aggre       - -
   Anch      2.65       - -
  Cyber      4.70       - -       - -
 Switch       - -      1.67      2.99       - -
  Inter      8.41       - -       - -      5.51       - -
  Spl P       - -      0.55      0.20       - -      1.95       - -

      Expected Change for PSI

            Aggre      Anch      Cyber     Switch     Inter      Spl P
          --------  --------  --------  --------  --------  --------
  Aggre       - -
   Anch     -0.13       - -
  Cyber     -1.65       - -       - -
 Switch       - -     -0.05     -0.59       - -
  Inter      0.26       - -       - -      0.09       - -
  Spl P       - -      0.02      0.09       - -      0.03       - -

      Standardized Expected Change for PSI

            Aggre      Anch      Cyber     Switch     Inter      Spl P
          --------  --------  --------  --------  --------  --------
  Aggre       - -
```

```
      Anch    -0.17       - -
     Cyber    -0.89       - -       - -
    Switch      - -     -0.13     -0.69       - -
     Inter     0.23       - -       - -      0.18       - -
     Spl P      - -      0.07      0.18       - -      0.10       - -

         Modification Indices for THETA-EPS

             EXT FAC  ACT TAKE  IND CHAN  TECH DEV  MULTI SK  COMM FOC
            --------  --------  --------  --------  --------  --------
   EXT FAC      - -
  ACT TAKE     3.15       - -
  IND CHAN     4.45      0.15       - -
  TECH DEV    13.56      2.91     10.96       - -
  MULTI SK     0.77      0.01      0.22      0.08       - -
  COMM FOC     0.17      0.50      0.09      4.92      0.01       - -
  CODEP NE     0.07      1.72      0.91      0.04      1.85      0.08
  JOB ROLE     3.04      0.54      0.05      4.72      0.11      3.31
  ROLE EXC     0.20      0.03      0.54      0.99      0.34      2.17
   ICT NET     0.00      0.07      0.01      0.04      0.05      0.03
       IOS     0.05      0.19      0.55      1.20      0.58      1.63
  RICH MED     1.27      1.33      2.09      2.90      0.00      0.16
  ICT INTD     0.65      0.01      1.00      4.75      0.70      0.01
  ICT CORE     1.58      2.56      0.41      7.23      0.23      0.36
  ICT CONN     2.63      0.01      0.13      0.07      0.22      0.12
  INDVID K     0.86      0.08      0.01      0.51      0.18      0.30
  ALT TASK     0.13      0.46      0.00      0.11      1.61      0.09
  RESTRUCU     0.28      0.18      0.53      0.58      1.13      0.45
  MANG CHA     0.07      0.83      0.01      0.01      0.15      0.99
  OUTSOURC     0.06      0.02      0.03      0.14      0.11      0.00
  RULE CHA     0.01      0.00      0.00      0.00      1.51      0.21
  SHAR SYS     0.87      0.01      3.06      0.00      0.22      0.10
  MUTUAL D     0.52      1.18      0.39      4.08      0.90      0.00
  MUTUAL A     0.05      0.06      2.48      0.05      0.03      0.02
  SHAR STR     2.70      0.03      1.60      0.00      0.00      0.02
  CUSTOM P     0.15      0.08      0.09      0.12      0.19      0.01
```

```
 LESS LEA      0.42       1.96       1.45       0.87       0.28       0.04
  SPECIAL      1.24       0.13       0.00       0.39       2.02       0.03
 COMP ADV      0.74       1.58       1.12       1.52       0.01       0.76
 KNOW AND      0.43       0.17       3.56       1.76       0.01       0.22

         Modification Indices for THETA-EPS

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
 CODEP NE       - -
 JOB ROLE      0.17        - -
 ROLE EXC      0.34       1.06        - -
  ICT NET      1.60       0.69       1.82        - -
      IOS      0.56       0.00       0.74       1.17        - -
 RICH MED      0.00       0.88       0.01       0.04       0.00        - -
 ICT INTD      0.15       3.07       6.05       0.01       0.65       3.42
 ICT CORE      0.74       3.82       0.04       0.94       0.08       5.83
 ICT CONN      0.28       0.98       0.03       2.69       0.67       8.28
 INDVID K      1.25       0.36       4.03       1.12       1.22       2.30
 ALT TASK      1.02       5.84       9.44       0.90       1.70       0.90
 RESTRUCU      0.00       0.74       0.33       0.42       5.00       0.70
 MANG CHA      1.13       0.12       2.61       0.01       1.16       0.10
 OUTSOURC      0.84       1.63       0.10       0.16       0.00       0.40
 RULE CHA      0.14       0.00       1.07       0.34       0.05       0.41
 SHAR SYS      0.03       1.83       0.71       0.10       0.50       0.05
 MUTUAL D      0.91       0.12       4.73       1.67       1.33       1.40
 MUTUAL A      0.70       4.68       2.71       3.43       0.10       2.51
 SHAR STR      2.45       1.18       0.00       1.24       5.72       0.00
 CUSTOM P      0.14       1.31       0.04       0.15       0.38       1.87
 LESS LEA      0.23       1.28       0.00       0.14       0.05       0.45
  SPECIAL      1.63       0.07       0.02       0.25       0.04       1.77
 COMP ADV      0.04       0.03       0.46       1.21       0.00       3.08
 KNOW AND      0.34       0.19       1.74       0.32       0.02       3.26

         Modification Indices for THETA-EPS
```

```
            ICT INTD   ICT CORE   ICT CONN   INDVID K   ALT TASK   RESTRUCU
            --------   --------   --------   --------   --------   --------
 ICT INTD      - -
 ICT CORE     4.24       - -
 ICT CONN     1.91       0.33       - -
 INDVID K     0.09       2.19       0.54       - -
 ALT TASK     1.71       0.15       2.34       0.23       - -
 RESTRUCU     4.05       0.20       1.54       3.48       0.54       - -
 MANG CHA     1.62       0.00       1.33       1.07       0.05       1.07
 OUTSOURC     0.54       0.00       1.47       0.07       0.02       0.15
 RULE CHA     0.34       0.10       0.01       2.64       0.72       3.59
 SHAR SYS     0.28       0.04       0.54       1.42       2.04       0.44
 MUTUAL D     0.97       0.26       1.63       0.07       8.53       5.06
 MUTUAL A     1.98       3.76       5.11       0.32       4.32       4.01
 SHAR STR     0.00       0.00       3.20       0.06       6.04       0.33
 CUSTOM P     0.04       0.62       0.38       0.70       0.33       0.42
 LESS LEA     0.00       0.67       1.00       0.12       0.06       0.00
  SPECIAL     0.12       0.79       4.04       2.54       0.08       0.31
 COMP ADV     0.79       0.06       0.62       2.88       0.04       0.20
 KNOW AND     0.26       1.49       1.12       0.29       0.02       0.93

         Modification Indices for THETA-EPS

            MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   MUTUAL D   MUTUAL A
            --------   --------   --------   --------   --------   --------
 MANG CHA      - -
 OUTSOURC     0.03       - -
 RULE CHA     0.54       0.11       - -
 SHAR SYS     0.25       0.86       0.81       - -
 MUTUAL D     0.74       0.81       0.56       0.10       - -
 MUTUAL A     0.08       2.06       2.25       0.37      15.74       - -
 SHAR STR     1.14       0.00       0.43       1.16       1.21       0.00
 CUSTOM P     0.00       0.12       0.86       0.38       0.21       0.95
 LESS LEA     0.66       0.01       0.32       0.11       2.07       0.80
  SPECIAL     0.00       0.06       1.78       0.46       0.34       2.29
 COMP ADV     0.01       0.31       0.75       0.07       0.73       0.71
```

```
KNOW AND       2.28       0.13       1.24       1.94       2.87       0.73

        Modification Indices for THETA-EPS

            SHAR STR   CUSTOM P   LESS LEA    SPECIAL   COMP ADV   KNOW AND
            --------   --------   --------   --------   --------   --------
SHAR STR       - -
CUSTOM P       0.54       - -
LESS LEA       1.58       1.19       - -
 SPECIAL       2.32       0.29       0.28       - -
COMP ADV       0.35       3.10       1.04       0.02       - -
KNOW AND       0.12       0.04       0.25       0.08      18.28       - -

        Expected Change for THETA-EPS

             EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
            --------   --------   --------   --------   --------   --------
 EXT FAC       - -
ACT TAKE       0.63       - -
IND CHAN       0.72      -0.25       - -
TECH DEV       2.22       1.92       3.60       - -
MULTI SK       0.22      -0.04       0.21       0.23       - -
COMM FOC      -0.10       0.32      -0.13      -1.70       0.03       - -
CODEP NE       0.40      -3.66       2.58      -0.95       2.71       0.54
JOB ROLE      -0.40      -0.31      -0.09      -1.58       0.10       0.52
ROLE EXC      -0.08      -0.05      -0.23      -0.54      -0.13       0.32
 ICT NET      -0.01       0.19       0.05       0.23       0.10       0.08
     IOS       0.02       0.09      -0.15       0.39      -0.11      -0.18
RICH MED      -2.16      -4.11      -4.96     -10.46       0.14      -0.96
ICT INTD      -0.14      -0.04      -0.30      -1.17       0.19      -0.02
ICT CORE      -0.19      -0.46       0.18      -1.32       0.10       0.12
ICT CONN       0.34       0.04      -0.14      -0.18      -0.13       0.09
INDVID K      -0.10       0.05      -0.02       0.24      -0.06       0.07
ALT TASK       0.06      -0.20      -0.01      -0.17      -0.27       0.06
RESTRUCU       0.03      -0.04       0.06      -0.12       0.07       0.04
MANG CHA      -0.02       0.12       0.01       0.02      -0.04       0.09
```

```
 OUTSOURC       0.05       0.06       0.06       0.24      -0.08       0.01
 RULE CHA       0.01      -0.01       0.00       0.01      -0.10      -0.03
 SHAR SYS      -0.17      -0.03      -0.56      -0.04      -0.11      -0.07
 MUTUAL D      -0.26      -0.73      -0.41      -2.34      -0.46       0.01
 MUTUAL A      -0.05      -0.11      -0.72      -0.18      -0.06      -0.04
 SHAR STR      -0.64       0.12      -0.89       0.08      -0.03      -0.07
 CUSTOM P       0.04       0.06       0.06       0.12      -0.06       0.02
 LESS LEA      -0.09      -0.35       0.29      -0.40      -0.09       0.04
  SPECIAL      -0.11      -0.07       0.00      -0.20      -0.19      -0.02
 COMP ADV      -0.07       0.19      -0.15      -0.32       0.01      -0.09
 KNOW AND      -0.21       0.25      -1.08      -1.36      -0.04      -0.19

         Expected Change for THETA-EPS

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
 CODEP NE        - -
 JOB ROLE       0.74        - -
 ROLE EXC       0.78       0.21        - -
  ICT NET      -3.68       0.39      -0.45        - -
      IOS      -0.65       0.00      -0.09      -0.42        - -
 RICH MED       0.68       2.19       0.18      -0.81       0.02        - -
 ICT INTD       0.51      -0.36       0.37       0.03      -0.09       3.22
 ICT CORE       1.05       0.36       0.03       0.29       0.03       3.77
 ICT CONN       0.87      -0.25       0.03       0.75      -0.11       6.18
 INDVID K       0.93      -0.10       0.19      -0.24       0.07       1.62
 ALT TASK       1.28       0.47       0.45      -0.30      -0.12       1.57
 RESTRUCU       0.01      -0.05       0.03      -0.06      -0.06       0.42
 MANG CHA       0.59      -0.03       0.10      -0.01      -0.04       0.23
 OUTSOURC      -1.41      -0.30      -0.05       0.15       0.00      -1.25
 RULE CHA       0.17       0.00       0.05      -0.07       0.01      -0.38
 SHAR SYS       0.24      -0.29      -0.13      -0.11       0.07      -0.38
 MUTUAL D       2.72      -0.15       0.71      -0.91      -0.25       4.41
 MUTUAL A       1.68      -0.67       0.38      -0.93      -0.05       4.16
 SHAR STR      -4.82       0.51      -0.02       0.84       0.54       0.25
 CUSTOM P       0.33      -0.16       0.02      -0.09       0.04      -1.54
```

```
LESS LEA        0.51       0.19       0.00      -0.11      -0.02       0.93
 SPECIAL       -0.99       0.03      -0.01       0.10       0.01       1.35
COMP ADV       -0.13      -0.02      -0.05       0.18       0.00      -1.46
KNOW AND       -1.46       0.18      -0.38       0.36      -0.03      -5.94

        Expected Change for THETA-EPS

            ICT INTD   ICT CORE   ICT CONN   INDVID K   ALT TASK   RESTRUCU
            --------   --------   --------   --------   --------   --------
ICT INTD        - -
ICT CORE        0.28       - -
ICT CONN        0.26       0.10       - -
INDVID K       -0.03      -0.13      -0.09       - -
ALT TASK        0.19      -0.05       0.27      -0.04       - -
RESTRUCU        0.09      -0.02       0.07      -0.05       0.03       - -
MANG CHA        0.08       0.00       0.09       0.04       0.01       0.04
OUTSOURC        0.13       0.00      -0.26       0.03       0.03       0.02
RULE CHA       -0.03      -0.01      -0.01       0.05       0.04      -0.07
SHAR SYS       -0.08      -0.03      -0.14       0.12      -0.22      -0.03
MUTUAL D        0.32      -0.15       0.52      -0.05       0.92       0.21
MUTUAL A        0.32      -0.41       0.65       0.08       0.48       0.14
SHAR STR       -0.02       0.00      -0.77      -0.05      -1.71      -0.07
CUSTOM P       -0.02      -0.07      -0.08       0.05       0.05      -0.02
LESS LEA        0.00       0.09      -0.15       0.03       0.03       0.00
 SPECIAL        0.03       0.07       0.22      -0.09       0.02       0.01
COMP ADV        0.06      -0.02      -0.07      -0.09      -0.01       0.01
KNOW AND       -0.15      -0.32      -0.38      -0.11       0.04      -0.08

        Expected Change for THETA-EPS

            MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   MUTUAL D   MUTUAL A
            --------   --------   --------   --------   --------   --------
MANG CHA        - -
OUTSOURC        0.01       - -
RULE CHA        0.03      -0.02       - -
SHAR SYS       -0.03       0.17      -0.05       - -
```

```
 MUTUAL D     -0.12     -0.34      0.09      0.11       - -
 MUTUAL A      0.03     -0.38      0.12      0.15      1.99       - -
 SHAR STR     -0.17      0.03     -0.09      0.39     -1.27      0.03
 CUSTOM P      0.00      0.04      0.03      0.06     -0.10      0.15
 LESS LEA      0.04      0.01      0.02      0.04      0.37      0.16
  SPECIAL      0.00     -0.03     -0.04      0.06      0.11      0.20
 COMP ADV      0.00      0.05     -0.02      0.02      0.13      0.09
 KNOW AND     -0.18      0.12     -0.11      0.42      1.05      0.37

         Expected Change for THETA-EPS

            SHAR STR  CUSTOM P  LESS LEA   SPECIAL  COMP ADV  KNOW AND
            --------  --------  --------  --------  --------  --------
 SHAR STR       - -
 CUSTOM P      0.17       - -
 LESS LEA     -0.35     -0.16       - -
  SPECIAL      0.31      0.04      0.05       - -
 COMP ADV      0.10     -0.08      0.06     -0.01       - -
 KNOW AND      0.23     -0.04      0.12     -0.05      0.61       - -

         Completely Standardized Expected Change for THETA-EPS

             EXT FAC  ACT TAKE  IND CHAN  TECH DEV  MULTI SK  COMM FOC
            --------  --------  --------  --------  --------  --------
  EXT FAC       - -
 ACT TAKE      0.10       - -
 IND CHAN      0.11     -0.02       - -
 TECH DEV      0.21      0.10      0.19       - -
 MULTI SK      0.05      0.00      0.03      0.02       - -
 COMM FOC     -0.02      0.04     -0.02     -0.12      0.01       - -
 CODEP NE      0.01     -0.07      0.05     -0.01      0.07      0.01
 JOB ROLE     -0.10     -0.04     -0.01     -0.13      0.02      0.10
 ROLE EXC     -0.03     -0.01     -0.04     -0.06     -0.03      0.08
  ICT NET      0.00      0.01      0.00      0.01      0.01      0.01
      IOS      0.01      0.02     -0.04      0.06     -0.04     -0.07
 RICH MED     -0.07     -0.07     -0.09     -0.11      0.00     -0.02
```

```
ICT INTD      -0.05      -0.01      -0.06      -0.13       0.05       0.00
ICT CORE      -0.07      -0.09       0.04      -0.16       0.03       0.03
ICT CONN       0.10       0.01      -0.02      -0.02      -0.03       0.02
INDVID K      -0.05       0.01      -0.01       0.04      -0.02       0.03
ALT TASK       0.02      -0.04       0.00      -0.02      -0.08       0.02
RESTRUCU       0.03      -0.02       0.04      -0.04       0.06       0.04
MANG CHA      -0.01       0.05       0.00       0.01      -0.02       0.05
OUTSOURC       0.01       0.01       0.01       0.02      -0.02       0.00
RULE CHA       0.01       0.00       0.00       0.00      -0.07      -0.02
SHAR SYS      -0.05       0.00      -0.10       0.00      -0.03      -0.02
MUTUAL D      -0.04      -0.07      -0.04      -0.13      -0.06       0.00
MUTUAL A      -0.01      -0.01      -0.09      -0.01      -0.01      -0.01
SHAR STR      -0.09       0.01      -0.07       0.00       0.00      -0.01
CUSTOM P       0.02       0.01       0.02       0.02      -0.02       0.01
LESS LEA      -0.03      -0.07       0.06      -0.05      -0.03       0.01
 SPECIAL      -0.06      -0.02       0.00      -0.04      -0.08      -0.01
COMP ADV      -0.05       0.07      -0.06      -0.08       0.01      -0.05
KNOW AND      -0.04       0.02      -0.11      -0.08      -0.01      -0.03

        Completely Standardized Expected Change for THETA-EPS

           CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
           --------   --------   --------   --------   --------   --------
CODEP NE       - -
JOB ROLE      0.02       - -
ROLE EXC      0.03       0.06       - -
 ICT NET     -0.06       0.05      -0.07       - -
     IOS     -0.04       0.00      -0.05      -0.10       - -
RICH MED      0.00       0.06       0.01      -0.01       0.00       - -
ICT INTD      0.02      -0.11       0.15       0.01      -0.05       0.12
ICT CORE      0.05       0.11       0.01       0.05       0.02       0.15
ICT CONN      0.03      -0.06       0.01       0.10      -0.05       0.20
INDVID K      0.06      -0.04       0.11      -0.06       0.06       0.09
ALT TASK      0.06       0.15       0.19      -0.05      -0.08       0.06
RESTRUCU      0.00      -0.05       0.03      -0.03      -0.13       0.05
MANG CHA      0.06      -0.02       0.10       0.00      -0.06       0.02
```

```
OUTSOURC      -0.05       -0.07       -0.02        0.02        0.00       -0.04
RULE CHA       0.02        0.00        0.06       -0.03        0.01       -0.04
SHAR SYS       0.01       -0.08       -0.05       -0.02        0.04       -0.01
MUTUAL D       0.06       -0.02        0.14       -0.07       -0.07        0.08
MUTUAL A       0.05       -0.13        0.10       -0.10       -0.02        0.11
SHAR STR      -0.08        0.06        0.00        0.06        0.13        0.00
CUSTOM P       0.02       -0.06        0.01       -0.02        0.03       -0.08
LESS LEA       0.02        0.06        0.00       -0.02       -0.01        0.04
 SPECIAL      -0.07        0.02       -0.01        0.03        0.01        0.08
COMP ADV      -0.01       -0.01       -0.04        0.06        0.00       -0.12
KNOW AND      -0.03        0.03       -0.08        0.03       -0.01       -0.12

        Completely Standardized Expected Change for THETA-EPS

            ICT INTD    ICT CORE    ICT CONN    INDVID K    ALT TASK    RESTRUCU
            --------    --------    --------    --------    --------    --------
ICT INTD        - -
ICT CORE       0.13         - -
ICT CONN       0.09        0.04         - -
INDVID K      -0.02       -0.08       -0.04         - -
ALT TASK       0.09       -0.02        0.10       -0.03         - -
RESTRUCU       0.12       -0.03        0.08       -0.10        0.05         - -
MANG CHA       0.08        0.00        0.07        0.06        0.01        0.12
OUTSOURC       0.04        0.00       -0.08        0.01        0.01        0.02
RULE CHA      -0.04       -0.02       -0.01        0.09        0.05       -0.27
SHAR SYS      -0.03       -0.01       -0.05        0.06       -0.09       -0.04
MUTUAL D       0.07       -0.03        0.09       -0.02        0.20        0.14
MUTUAL A       0.09       -0.12        0.15        0.03        0.14        0.12
SHAR STR       0.00        0.00       -0.10       -0.01       -0.30       -0.04
CUSTOM P      -0.01       -0.04       -0.04        0.04        0.03       -0.03
LESS LEA       0.00        0.04       -0.06        0.02        0.01        0.00
 SPECIAL       0.02        0.05        0.13       -0.09        0.02        0.03
COMP ADV       0.06       -0.01       -0.05       -0.11       -0.01        0.03
KNOW AND      -0.03       -0.07       -0.07       -0.04        0.01       -0.06

        Completely Standardized Expected Change for THETA-EPS
```

```
            MANG CHA   OUTSOURC   RULE CHA   SHAR SYS   MUTUAL D   MUTUAL A
            --------   --------   --------   --------   --------   --------
 MANG CHA     - -
 OUTSOURC     0.01       - -
 RULE CHA     0.08      -0.02       - -
 SHAR SYS    -0.03       0.05      -0.05       - -
 MUTUAL D    -0.06      -0.06       0.05       0.02       - -
 MUTUAL A     0.02      -0.09       0.09       0.04       0.27       - -
 SHAR STR    -0.06       0.00      -0.04       0.06      -0.10       0.00
 CUSTOM P     0.00       0.02       0.05       0.03      -0.03       0.06
 LESS LEA     0.04       0.00       0.03       0.02       0.08       0.05
  SPECIAL     0.00      -0.01      -0.08       0.04       0.04       0.09
 COMP ADV    -0.01       0.03      -0.05       0.02       0.06       0.05
 KNOW AND    -0.09       0.02      -0.07       0.08       0.11       0.05

         Completely Standardized Expected Change for THETA-EPS

            SHAR STR   CUSTOM P   LESS LEA    SPECIAL   COMP ADV   KNOW AND
            --------   --------   --------   --------   --------   --------
 SHAR STR     - -
 CUSTOM P     0.04       - -
 LESS LEA    -0.06      -0.10       - -
  SPECIAL     0.08       0.03       0.04       - -
 COMP ADV     0.03      -0.10       0.06      -0.01       - -
 KNOW AND     0.02      -0.01       0.03      -0.02       0.28       - -

 Maximum Modification Index is   18.28 for Element (30,29) of THETA-EPS


 Standardized Solution

         LAMBDA-Y

               Aggre        Anch       Cyber      Switch       Inter       Spl P
```

```
            --------  --------  --------  --------  --------  --------
  EXT FAC       - -       - -      0.98       - -       - -       - -
 ACT TAKE       - -       - -      1.90       - -       - -       - -
 IND CHAN       - -       - -      1.87       - -       - -       - -
 TECH DEV       - -       - -      2.46       - -       - -       - -
 MULTI SK       - -       - -      1.30       - -       - -       - -
 COMM FOC       - -       - -      1.54       - -       - -       - -
 CODEP NE       - -       - -      8.84       - -       - -       - -
 JOB ROLE       - -       - -       - -      1.11       - -       - -
 ROLE EXC       - -       - -      0.69       - -       - -       - -
  ICT NET      2.76       - -       - -       - -       - -       - -
      IOS      0.64       - -       - -       - -       - -       - -
 RICH MED      2.62       - -       - -       - -       - -       - -
 ICT INTD      0.55       - -       - -       - -       - -       - -
 ICT CORE       - -       - -      0.67       - -       - -       - -
 ICT CONN      0.45       - -       - -       - -       - -       - -
 INDVID K       - -       - -       - -      0.69       - -       - -
 ALT TASK       - -       - -       - -       - -      0.41       - -
 RESTRUCU       - -      0.29       - -       - -       - -       - -
 MANG CHA       - -      0.32       - -       - -       - -       - -
 OUTSOURC       - -       - -      0.87       - -       - -       - -
 RULE CHA       - -      0.31       - -       - -       - -       - -
 SHAR SYS       - -       - -      0.86       - -       - -       - -
 MUTUAL D       - -       - -       - -       - -      0.42       - -
 MUTUAL A       - -       - -       - -       - -      0.67       - -
 SHAR STR       - -       - -       - -       - -      3.42       - -
 CUSTOM P       - -       - -       - -       - -       - -      0.73
 LESS LEA       - -       - -       - -       - -       - -      1.04
  SPECIAL       - -       - -       - -       - -       - -      0.49
 COMP ADV       - -       - -       - -      0.28       - -       - -
 KNOW AND       - -       - -       - -      1.25       - -       - -

         BETA

                Aggre      Anch     Cyber    Switch     Inter     Spl P
            --------  --------  --------  --------  --------  --------
```

```
     Aggre       - -        - -       0.73        - -        - -        - -
      Anch       - -        - -        - -        - -      -0.21        - -
     Cyber       - -      -0.24        - -        - -        - -        - -
    Switch      0.28        - -       0.54        - -        - -        - -
     Inter       - -        - -       0.54        - -        - -        - -
     Spl P      0.10        - -       0.13       0.54        - -        - -

         Correlation Matrix of ETA

                Aggre       Anch      Cyber     Switch      Inter      Spl P
             --------   --------   --------   --------   --------   --------
     Aggre      1.00
      Anch     -0.25       1.00
     Cyber      0.73      -0.34       1.00
    Switch      0.67      -0.26       0.74       1.00
     Inter      0.42      -0.33       0.57       0.42       1.00
     Spl P      0.56      -0.21       0.61       0.71       0.35       1.00

         PSI
         Note: This matrix is diagonal.

                Aggre       Anch      Cyber     Switch      Inter      Spl P
             --------   --------   --------   --------   --------   --------
                 0.47       0.91       0.89       0.41       0.67       0.48


 Completely Standardized Solution

         LAMBDA-Y

                Aggre       Anch      Cyber     Switch      Inter      Spl P
             --------   --------   --------   --------   --------   --------
  EXT FAC        - -        - -       0.53        - -        - -        - -
  ACT TAKE       - -        - -       0.55        - -        - -        - -
  IND CHAN       - -        - -       0.55        - -        - -        - -
```

```
   TECH DEV        - -        - -       0.43        - -        - -        - -
   MULTI SK        - -        - -       0.53        - -        - -        - -
   COMM FOC        - -        - -       0.62        - -        - -        - -
   CODEP NE        - -        - -       0.59        - -        - -        - -
   JOB ROLE        - -        - -        - -       0.51        - -        - -
   ROLE EXC        - -        - -       0.43        - -        - -        - -
    ICT NET       0.71        - -        - -        - -        - -        - -
        IOS       0.59        - -        - -        - -        - -        - -
   RICH MED       0.16        - -        - -        - -        - -        - -
   ICT INTD       0.36        - -        - -        - -        - -        - -
   ICT CORE        - -        - -       0.46        - -        - -        - -
   ICT CONN       0.24        - -        - -        - -        - -        - -
   INDVID K        - -        - -        - -       0.65        - -        - -
   ALT TASK        - -        - -        - -        - -       0.28        - -
   RESTRUCU        - -       0.61        - -        - -        - -        - -
   MANG CHA        - -       0.49        - -        - -        - -        - -
   OUTSOURC        - -        - -       0.47        - -        - -        - -
   RULE CHA        - -       0.55        - -        - -        - -        - -
   SHAR SYS        - -        - -       0.50        - -        - -        - -
   MUTUAL D        - -        - -        - -        - -       0.13        - -
   MUTUAL A        - -        - -        - -        - -       0.29        - -
   SHAR STR        - -        - -        - -        - -       0.87        - -
   CUSTOM P        - -        - -        - -        - -        - -       0.65
   LESS LEA        - -        - -        - -        - -        - -       0.73
    SPECIAL        - -        - -        - -        - -        - -       0.51
   COMP ADV        - -        - -        - -       0.37        - -        - -
   KNOW AND        - -        - -        - -       0.42        - -        - -

         BETA

                 Aggre       Anch      Cyber     Switch      Inter      Spl P
              --------   --------   --------   --------   --------   --------
      Aggre        - -        - -       0.73        - -        - -        - -
       Anch        - -        - -        - -        - -      -0.21        - -
      Cyber        - -      -0.24        - -        - -        - -        - -
     Switch       0.28        - -       0.54        - -        - -        - -
```

```
Inter          - -          - -         0.54          - -          - -          - -
Spl P         0.10          - -         0.13         0.54          - -          - -

     Correlation Matrix of ETA

             Aggre         Anch        Cyber       Switch        Inter        Spl P
          --------     --------     --------     --------     --------     --------
Aggre         1.00
 Anch        -0.25         1.00
Cyber         0.73        -0.34         1.00
Switch        0.67        -0.26         0.74         1.00
 Inter        0.42        -0.33         0.57         0.42         1.00
 Spl P        0.56        -0.21         0.61         0.71         0.35         1.00

     PSI
     Note: This matrix is diagonal.

             Aggre         Anch        Cyber       Switch        Inter        Spl P
          --------     --------     --------     --------     --------     --------
              0.47         0.91         0.89         0.41         0.67         0.48

     THETA-EPS

           EXT FAC     ACT TAKE     IND CHAN     TECH DEV     MULTI SK     COMM FOC
          --------     --------     --------     --------     --------     --------
              0.72         0.70         0.69         0.81         0.72         0.61

     THETA-EPS

          CODEP NE     JOB ROLE     ROLE EXC      ICT NET          IOS     RICH MED
          --------     --------     --------     --------     --------     --------
              0.66         0.74         0.81         0.49         0.66         0.98

     THETA-EPS

          ICT INTD     ICT CORE     ICT CONN     INDVID K     ALT TASK     RESTRUCU
```

```
           --------  --------  --------  --------  --------  --------
               0.87      0.79      0.94      0.58      0.92      0.63

         THETA-EPS

           MANG CHA  OUTSOURC  RULE CHA  SHAR SYS  MUTUAL D  MUTUAL A
           --------  --------  --------  --------  --------  --------
               0.76      0.78      0.69      0.75      0.98      0.92

         THETA-EPS

           SHAR STR  CUSTOM P  LESS LEA   SPECIAL  COMP ADV  KNOW AND
           --------  --------  --------  --------  --------  --------
               0.25      0.58      0.47      0.74      0.86      0.82


 Total and Indirect Effects

         Total Effects of ETA on ETA

              Aggre      Anch     Cyber    Switch     Inter     Spl P
           --------  --------  --------  --------  --------  --------
    Aggre       - -     -1.73      3.07       - -      0.25       - -
                       (1.03)    (0.60)              (0.21)
                        -1.68      5.12                1.20

     Anch       - -      0.03     -0.05       - -     -0.15       - -
                       (0.02)    (0.04)              (0.13)
                         1.74     -1.32               -1.10

    Cyber       - -     -0.58      0.03       - -      0.08       - -
                       (0.35)    (0.02)              (0.07)
                        -1.67      1.74                1.19
```

```
 Switch        0.13       -0.80        1.42        - -         0.12        - -
             (0.09)      (0.49)      (0.36)                  (0.10)
               1.50       -1.62        3.95                    1.18

  Inter        - -        -0.19        0.34        - -         0.03        - -
                         (0.16)      (0.23)                  (0.02)
                          -1.20        1.48                    1.74

  Spl P        0.07       -0.38        0.68        0.32        0.06        - -
             (0.05)      (0.23)      (0.15)      (0.14)      (0.05)
               1.43       -1.66        4.51        2.24        1.19

  Largest Eigenvalue of B*B' (Stability Index) is  10.057

       Indirect Effects of ETA on ETA

              Aggre        Anch       Cyber      Switch       Inter       Spl P
           --------    --------    --------    --------    --------    --------
  Aggre        - -        -1.73        0.08        - -         0.25        - -
                         (1.03)      (0.05)                  (0.21)
                          -1.68        1.65                    1.20

   Anch        - -         0.03       -0.05        - -         0.00        - -
                         (0.02)      (0.04)                  (0.01)
                           1.74       -1.32                   -0.79

  Cyber        - -        -0.02        0.03        - -         0.08        - -
                         (0.01)      (0.02)                  (0.07)
                          -1.12        1.74                    1.19

 Switch        - -        -0.80        0.42        - -         0.12        - -
                         (0.49)      (0.26)                  (0.10)
                          -1.62        1.61                    1.18
```

```
   Inter         - -      -0.19      0.01       - -       0.03       - -
                         (0.16)    (0.01)               (0.02)
                          -1.20      1.08                 1.74

   Spl P        0.04      -0.38      0.54       - -       0.06       - -
              (0.03)     (0.23)    (0.21)               (0.05)
                1.31      -1.66      2.51                 1.19


         Total Effects of ETA on Y

               Aggre       Anch     Cyber    Switch      Inter     Spl P
            --------   --------  --------  --------   --------  --------
  EXT FAC        - -      -0.84      1.50       - -       0.12       - -
                         (0.50)    (0.29)               (0.10)
                          -1.68      5.14                 1.20

 ACT TAKE        - -      -1.63      2.91       - -       0.24       - -
                         (0.97)    (0.56)               (0.20)
                          -1.69      5.23                 1.20

 IND CHAN        - -      -1.61      2.86       - -       0.23       - -
                         (0.95)    (0.54)               (0.19)
                          -1.69      5.26                 1.20

 TECH DEV        - -      -2.11      3.76       - -       0.31       - -
                         (1.27)    (0.83)               (0.26)
                          -1.66      4.56                 1.19

 MULTI SK        - -      -1.12      1.99       - -       0.16       - -
                         (0.66)    (0.39)               (0.13)
                          -1.68      5.13                 1.20
```

COMM FOC	- -	-1.32	2.36	- -	0.19	- -
		(0.78)	(0.42)		(0.16)	
		-1.70	5.58		1.20	
CODEP NE	- -	-7.59	13.51	- -	1.10	- -
		(4.49)	(2.50)		(0.91)	
		-1.69	5.41		1.20	
JOB ROLE	0.11	-0.71	1.26	0.88	0.10	- -
	(0.07)	(0.43)	(0.29)	(0.21)	(0.09)	
	1.52	-1.65	4.39	4.30	1.19	
ROLE EXC	- -	-0.59	1.05	- -	0.09	- -
		(0.36)	(0.23)		(0.07)	
		-1.66	4.53		1.19	
ICT NET	1.00	-1.73	3.07	- -	0.25	- -
		(1.03)	(0.60)		(0.21)	
		-1.68	5.12		1.20	
IOS	0.23	-0.40	0.71	- -	0.06	- -
	(0.04)	(0.24)	(0.15)		(0.05)	
	6.23	-1.66	4.65		1.19	
RICH MED	0.95	-1.64	2.91	- -	0.24	- -
	(0.51)	(1.29)	(1.61)		(0.23)	
	1.87	-1.27	1.81		1.02	
ICT INTD	0.20	-0.34	0.61	- -	0.05	- -
	(0.05)	(0.22)	(0.17)		(0.04)	
	4.15	-1.59	3.54		1.16	
ICT CORE	- -	-0.58	1.03	- -	0.08	- -
		(0.35)	(0.02)		(0.07)	

		-1.67	64.34		1.19	
ICT CONN	0.16	-0.28	0.50	- -	0.04	- -
	(0.06)	(0.19)	(0.19)		(0.04)	
	2.91	-1.48	2.67		1.12	
INDVID K	0.07	-0.44	0.79	0.55	0.06	- -
	(0.05)	(0.26)	(0.16)	(0.12)	(0.05)	
	1.54	-1.68	4.95	4.72	1.20	
ALT TASK	- -	-0.19	0.33	- -	1.00	- -
		(0.12)	(0.14)		(0.66)	
		-1.57	2.42		1.51	
RESTRUCU	- -	1.03	-0.05	- -	-0.15	- -
		(0.02)	(0.04)		(0.13)	
		64.34	-1.32		-1.10	
MANG CHA	- -	1.15	-0.06	- -	-0.17	- -
		(0.29)	(0.04)		(0.15)	
		3.90	-1.30		-1.09	
OUTSOURC	- -	-0.74	1.32	- -	0.11	- -
		(0.45)	(0.28)		(0.09)	
		-1.67	4.78		1.19	
RULE CHA	- -	1.09	-0.05	- -	-0.16	- -
		(0.28)	(0.04)		(0.14)	
		3.98	-1.31		-1.10	
SHAR SYS	- -	-0.74	1.32	- -	0.11	- -
		(0.44)	(0.26)		(0.09)	
		-1.68	4.99		1.20	

```
 MUTUAL D       - -       -0.19      0.34       - -       1.03       - -
                          (0.16)    (0.23)               (0.02)
                          -1.20      1.48                64.34

 MUTUAL A       - -       -0.31      0.55       - -       1.64       - -
                          (0.19)    (0.22)               (1.08)
                          -1.58      2.46                 1.52

 SHAR STR       - -       -1.58      2.81       - -       8.42       - -
                          (0.93)    (0.60)               (5.40)
                          -1.70      4.69                 1.56

 CUSTOM P      0.07       -0.38      0.68      0.32       0.06      1.00
              (0.05)      (0.23)    (0.15)    (0.14)     (0.05)
               1.43       -1.66      4.51      2.24       1.19

 LESS LEA      0.10       -0.54      0.97      0.45       0.08      1.42
              (0.07)      (0.33)    (0.21)    (0.20)     (0.07)    (0.21)
               1.44       -1.67      4.72      2.27       1.19      6.76

  SPECIAL      0.04       -0.25      0.45      0.21       0.04      0.66
              (0.03)      (0.15)    (0.11)    (0.10)     (0.03)    (0.12)
               1.42       -1.63      4.11      2.19       1.18      5.57

 COMP ADV      0.03       -0.18      0.32      0.22       0.03       - -
              (0.02)      (0.11)    (0.09)    (0.06)     (0.02)
               1.49       -1.60      3.67      3.63       1.17

 KNOW AND      0.13       -0.80      1.42      1.00       0.12       - -
              (0.09)      (0.49)    (0.36)               (0.10)
               1.50       -1.62      3.95                 1.18

         Indirect Effects of ETA on Y
```

	Aggre	Anch	Cyber	Switch	Inter	Spl P
EXT FAC	- -	-0.84	0.04	- -	0.12	- -
		(0.50)	(0.02)		(0.10)	
		-1.68	1.65		1.20	
ACT TAKE	- -	-1.63	0.08	- -	0.24	- -
		(0.97)	(0.05)		(0.20)	
		-1.69	1.65		1.20	
IND CHAN	- -	-1.61	0.08	- -	0.23	- -
		(0.95)	(0.05)		(0.19)	
		-1.69	1.66		1.20	
TECH DEV	- -	-2.11	0.10	- -	0.31	- -
		(1.27)	(0.06)		(0.26)	
		-1.66	1.63		1.19	
MULTI SK	- -	-1.12	0.05	- -	0.16	- -
		(0.66)	(0.03)		(0.13)	
		-1.68	1.65		1.20	
COMM FOC	- -	-1.32	0.06	- -	0.19	- -
		(0.78)	(0.04)		(0.16)	
		-1.70	1.66		1.20	
CODEP NE	- -	-7.59	0.37	- -	1.10	- -
		(4.49)	(0.22)		(0.91)	
		-1.69	1.66		1.20	
JOB ROLE	0.11	-0.71	1.26	- -	0.10	- -
	(0.07)	(0.43)	(0.29)		(0.09)	
	1.52	-1.65	4.39		1.19	

ROLE EXC	- -	-0.59	0.03	- -	0.09	- -
		(0.36)	(0.02)		(0.07)	
		-1.66	1.63		1.19	
ICT NET	- -	-1.73	3.07	- -	0.25	- -
		(1.03)	(0.60)		(0.21)	
		-1.68	5.12		1.20	
IOS	- -	-0.40	0.71	- -	0.06	- -
		(0.24)	(0.15)		(0.05)	
		-1.66	4.65		1.19	
RICH MED	- -	-1.64	2.91	- -	0.24	- -
		(1.29)	(1.61)		(0.23)	
		-1.27	1.81		1.02	
ICT INTD	- -	-0.34	0.61	- -	0.05	- -
		(0.22)	(0.17)		(0.04)	
		-1.59	3.54		1.16	
ICT CORE	- -	-0.58	0.03	- -	0.08	- -
		(0.35)	(0.02)		(0.07)	
		-1.67	1.74		1.19	
ICT CONN	- -	-0.28	0.50	- -	0.04	- -
		(0.19)	(0.19)		(0.04)	
		-1.48	2.67		1.12	
INDVID K	0.07	-0.44	0.79	- -	0.06	- -
	(0.05)	(0.26)	(0.16)		(0.05)	
	1.54	-1.68	4.95		1.20	
ALT TASK	- -	-0.19	0.33	- -	0.03	- -

		(0.12)	(0.14)		(0.02)	
		-1.57	2.42		1.14	
RESTRUCU	- -	0.03	-0.05	- -	-0.15	- -
		(0.02)	(0.04)		(0.13)	
		1.74	-1.32		-1.10	
MANG CHA	- -	0.03	-0.06	- -	-0.17	- -
		(0.02)	(0.04)		(0.15)	
		1.57	-1.30		-1.09	
OUTSOURC	- -	-0.74	0.04	- -	0.11	- -
		(0.45)	(0.02)		(0.09)	
		-1.67	1.64		1.19	
RULE CHA	- -	0.03	-0.05	- -	-0.16	- -
		(0.02)	(0.04)		(0.14)	
		1.58	-1.31		-1.10	
SHAR SYS	- -	-0.74	0.04	- -	0.11	- -
		(0.44)	(0.02)		(0.09)	
		-1.68	1.65		1.20	
MUTUAL D	- -	-0.19	0.34	- -	0.03	- -
		(0.16)	(0.23)		(0.02)	
		-1.20	1.48		1.74	
MUTUAL A	- -	-0.31	0.55	- -	0.04	- -
		(0.19)	(0.22)		(0.04)	
		-1.58	2.46		1.14	
SHAR STR	- -	-1.58	2.81	- -	0.23	- -
		(0.93)	(0.60)		(0.18)	
		-1.70	4.69		1.23	

CUSTOM P	0.07	-0.38	0.68	0.32	0.06	- -
	(0.05)	(0.23)	(0.15)	(0.14)	(0.05)	
	1.43	-1.66	4.51	2.24	1.19	
LESS LEA	0.10	-0.54	0.97	0.45	0.08	- -
	(0.07)	(0.33)	(0.21)	(0.20)	(0.07)	
	1.44	-1.67	4.72	2.27	1.19	
SPECIAL	0.04	-0.25	0.45	0.21	0.04	- -
	(0.03)	(0.15)	(0.11)	(0.10)	(0.03)	
	1.42	-1.63	4.11	2.19	1.18	
COMP ADV	0.03	-0.18	0.32	- -	0.03	- -
	(0.02)	(0.11)	(0.09)		(0.02)	
	1.49	-1.60	3.67		1.17	
KNOW AND	0.13	-0.80	1.42	- -	0.12	- -
	(0.09)	(0.49)	(0.36)		(0.10)	
	1.50	-1.62	3.95		1.18	

```
Standardized Total and Indirect Effects

        Standardized Total Effects of ETA on ETA

                 Aggre       Anch      Cyber     Switch      Inter      Spl P
              --------   --------   --------   --------   --------   --------
    Aggre         - -      -0.18       0.75        - -       0.04        - -
     Anch         - -       0.03      -0.12        - -      -0.22        - -
    Cyber         - -      -0.25       0.03        - -       0.05        - -
   Switch        0.28      -0.18       0.76        - -       0.04        - -
    Inter         - -      -0.13       0.55        - -       0.03        - -
    Spl P        0.25      -0.15       0.62       0.54       0.03        - -

        Standardized Indirect Effects of ETA on ETA

                 Aggre       Anch      Cyber     Switch      Inter      Spl P
              --------   --------   --------   --------   --------   --------
    Aggre         - -      -0.18       0.02        - -       0.04        - -
     Anch         - -       0.03      -0.12        - -      -0.01        - -
    Cyber         - -      -0.01       0.03        - -       0.05        - -
   Switch         - -      -0.18       0.23        - -       0.04        - -
    Inter         - -      -0.13       0.01        - -       0.03        - -
    Spl P        0.15      -0.15       0.49        - -       0.03        - -

        Standardized Total Effects of ETA on Y

                 Aggre       Anch      Cyber     Switch      Inter      Spl P
              --------   --------   --------   --------   --------   --------
  EXT FAC         - -      -0.24       1.01        - -       0.05        - -
 ACT TAKE         - -      -0.47       1.96        - -       0.10        - -
 IND CHAN         - -      -0.46       1.92        - -       0.10        - -
 TECH DEV         - -      -0.61       2.53        - -       0.13        - -
 MULTI SK         - -      -0.32       1.34        - -       0.07        - -
 COMM FOC         - -      -0.38       1.58        - -       0.08        - -
 CODEP NE         - -      -2.19       9.09        - -       0.46        - -
 JOB ROLE        0.31      -0.20       0.84       1.11       0.04        - -
```

```
  ROLE EXC      - -      -0.17      0.71       - -       0.04       - -
   ICT NET     2.76      -0.50      2.06       - -       0.10       - -
       IOS     0.64      -0.12      0.48       - -       0.02       - -
  RICH MED     2.62      -0.47      1.96       - -       0.10       - -
  ICT INTD     0.55      -0.10      0.41       - -       0.02       - -
  ICT CORE      - -      -0.17      0.69       - -       0.03       - -
  ICT CONN     0.45      -0.08      0.34       - -       0.02       - -
  INDVID K     0.20      -0.13      0.53      0.69       0.03       - -
  ALT TASK      - -      -0.05      0.22       - -       0.42       - -
  RESTRUCU      - -       0.30     -0.03       - -      -0.06       - -
  MANG CHA      - -       0.33     -0.04       - -      -0.07       - -
  OUTSOURC      - -      -0.21      0.89       - -       0.04       - -
  RULE CHA      - -       0.32     -0.04       - -      -0.07       - -
  SHAR SYS      - -      -0.21      0.89       - -       0.04       - -
  MUTUAL D      - -      -0.06      0.23       - -       0.43       - -
  MUTUAL A      - -      -0.09      0.37       - -       0.68       - -
  SHAR STR      - -      -0.45      1.89       - -       3.52       - -
  CUSTOM P     0.19      -0.11      0.46      0.40       0.02      0.73
  LESS LEA     0.26      -0.16      0.65      0.57       0.03      1.04
   SPECIAL     0.12      -0.07      0.30      0.26       0.02      0.49
  COMP ADV     0.08      -0.05      0.21      0.28       0.01       - -
  KNOW AND     0.35      -0.23      0.96      1.25       0.05       - -

         Completely Standardized Total Effects of ETA on Y

                Aggre       Anch      Cyber    Switch      Inter     Spl P
             --------   --------   --------  --------   --------  --------
   EXT FAC      - -      -0.13      0.55       - -       0.03       - -
  ACT TAKE      - -      -0.14      0.56       - -       0.03       - -
  IND CHAN      - -      -0.14      0.57       - -       0.03       - -
  TECH DEV      - -      -0.11      0.45       - -       0.02       - -
  MULTI SK      - -      -0.13      0.54       - -       0.03       - -
  COMM FOC      - -      -0.15      0.64       - -       0.03       - -
  CODEP NE      - -      -0.14      0.60       - -       0.03       - -
  JOB ROLE     0.14      -0.09      0.39      0.51       0.02       - -
  ROLE EXC      - -      -0.11      0.44       - -       0.02       - -
```

```
 ICT NET      0.71      -0.13       0.53       - -        0.03       - -
     IOS      0.59      -0.11       0.44       - -        0.02       - -
RICH MED      0.16      -0.03       0.12       - -        0.01       - -
ICT INTD      0.36      -0.06       0.27       - -        0.01       - -
ICT CORE       - -      -0.11       0.47       - -        0.02       - -
ICT CONN      0.24      -0.04       0.18       - -        0.01       - -
INDVID K      0.18      -0.12       0.49      0.65        0.02       - -
ALT TASK       - -      -0.04       0.15       - -        0.29       - -
RESTRUCU       - -       0.63      -0.07       - -       -0.13       - -
MANG CHA       - -       0.50      -0.06       - -       -0.11       - -
OUTSOURC       - -      -0.12       0.48       - -        0.02       - -
RULE CHA       - -       0.57      -0.06       - -       -0.12       - -
SHAR SYS       - -      -0.12       0.52       - -        0.03       - -
MUTUAL D       - -      -0.02       0.07       - -        0.14       - -
MUTUAL A       - -      -0.04       0.16       - -        0.30       - -
SHAR STR       - -      -0.11       0.48       - -        0.89       - -
CUSTOM P      0.16      -0.10       0.41      0.35        0.02      0.65
LESS LEA      0.18      -0.11       0.45      0.39        0.02      0.73
 SPECIAL      0.13      -0.08       0.32      0.28        0.02      0.51
COMP ADV      0.11      -0.07       0.28      0.37        0.01       - -
KNOW AND      0.12      -0.08       0.32      0.42        0.02       - -

        Standardized Indirect Effects of ETA on Y

             Aggre       Anch      Cyber     Switch      Inter      Spl P
          --------   --------   --------   --------   --------   --------
 EXT FAC       - -      -0.24       0.03       - -        0.05       - -
ACT TAKE       - -      -0.47       0.05       - -        0.10       - -
IND CHAN       - -      -0.46       0.05       - -        0.10       - -
TECH DEV       - -      -0.61       0.07       - -        0.13       - -
MULTI SK       - -      -0.32       0.04       - -        0.07       - -
COMM FOC       - -      -0.38       0.04       - -        0.08       - -
CODEP NE       - -      -2.19       0.25       - -        0.46       - -
JOB ROLE      0.31      -0.20       0.84       - -        0.04       - -
ROLE EXC       - -      -0.17       0.02       - -        0.04       - -
 ICT NET       - -      -0.50       2.06       - -        0.10       - -
```

```
     IOS        - -      -0.12       0.48        - -       0.02        - -
RICH MED        - -      -0.47       1.96        - -       0.10        - -
ICT INTD        - -      -0.10       0.41        - -       0.02        - -
ICT CORE        - -      -0.17       0.02        - -       0.03        - -
ICT CONN        - -      -0.08       0.34        - -       0.02        - -
INDVID K       0.20      -0.13       0.53        - -       0.03        - -
ALT TASK        - -      -0.05       0.22        - -       0.01        - -
RESTRUCU        - -       0.01      -0.03        - -      -0.06        - -
MANG CHA        - -       0.01      -0.04        - -      -0.07        - -
OUTSOURC        - -      -0.21       0.02        - -       0.04        - -
RULE CHA        - -       0.01      -0.04        - -      -0.07        - -
SHAR SYS        - -      -0.21       0.02        - -       0.04        - -
MUTUAL D        - -      -0.06       0.23        - -       0.01        - -
MUTUAL A        - -      -0.09       0.37        - -       0.02        - -
SHAR STR        - -      -0.45       1.89        - -       0.10        - -
CUSTOM P       0.19      -0.11       0.46       0.40       0.02        - -
LESS LEA       0.26      -0.16       0.65       0.57       0.03        - -
 SPECIAL       0.12      -0.07       0.30       0.26       0.02        - -
COMP ADV       0.08      -0.05       0.21        - -       0.01        - -
KNOW AND       0.35      -0.23       0.96        - -       0.05        - -

         Completely Standardized Indirect Effects of ETA on Y

              Aggre       Anch      Cyber     Switch      Inter      Spl P
           --------   --------   --------   --------   --------   --------
 EXT FAC        - -      -0.13       0.01        - -       0.03        - -
ACT TAKE        - -      -0.14       0.02        - -       0.03        - -
IND CHAN        - -      -0.14       0.02        - -       0.03        - -
TECH DEV        - -      -0.11       0.01        - -       0.02        - -
MULTI SK        - -      -0.13       0.01        - -       0.03        - -
COMM FOC        - -      -0.15       0.02        - -       0.03        - -
CODEP NE        - -      -0.14       0.02        - -       0.03        - -
JOB ROLE       0.14      -0.09       0.39        - -       0.02        - -
ROLE EXC        - -      -0.11       0.01        - -       0.02        - -
 ICT NET        - -      -0.13       0.53        - -       0.03        - -
     IOS        - -      -0.11       0.44        - -       0.02        - -
```

RICH MED	- -	-0.03	0.12	- -	0.01	- -
ICT INTD	- -	-0.06	0.27	- -	0.01	- -
ICT CORE	- -	-0.11	0.01	- -	0.02	- -
ICT CONN	- -	-0.04	0.18	- -	0.01	- -
INDVID K	0.18	-0.12	0.49	- -	0.02	- -
ALT TASK	- -	-0.04	0.15	- -	0.01	- -
RESTRUCU	- -	0.02	-0.07	- -	-0.13	- -
MANG CHA	- -	0.01	-0.06	- -	-0.11	- -
OUTSOURC	- -	-0.12	0.01	- -	0.02	- -
RULE CHA	- -	0.02	-0.06	- -	-0.12	- -
SHAR SYS	- -	-0.12	0.01	- -	0.03	- -
MUTUAL D	- -	-0.02	0.07	- -	0.00	- -
MUTUAL A	- -	-0.04	0.16	- -	0.01	- -
SHAR STR	- -	-0.11	0.48	- -	0.02	- -
CUSTOM P	0.16	-0.10	0.41	0.35	0.02	- -
LESS LEA	0.18	-0.11	0.45	0.39	0.02	- -
SPECIAL	0.13	-0.08	0.32	0.28	0.02	- -
COMP ADV	0.11	-0.07	0.28	- -	0.01	- -
KNOW AND	0.12	-0.08	0.32	- -	0.02	- -

ISSAAC V3 (Modified Model M^4)

```
Covariance Matrix

              EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
             --------   --------   --------   --------   --------   --------
  EXT FAC        3.44
 ACT TAKE        2.40      12.13
 IND CHAN        2.44       3.35      11.41
 TECH DEV        4.38       6.36       7.74      32.21
 MULTI SK        1.47       2.44       2.61       3.40       6.05
 COMM FOC        1.44       3.19       2.78       2.38       2.03       6.14
 CODEP NE        9.02      13.85      18.62      20.95      13.71      14.04
 JOB ROLE        0.33       1.31       1.37       0.25       1.09       1.75
 ROLE EXC        0.61       1.26       1.09       1.20       0.78       1.32
  ICT NET        1.85       3.98       3.49       4.65       2.57       3.07
      IOS        0.48       1.02       0.74       1.43       0.53       0.61
 RICH MED       -1.28      -2.14      -3.27      -8.33       1.14       0.39
 ICT INTD        0.25       0.75       0.43      -0.18       0.67       0.60
 ICT CORE        0.49       0.88       1.41       0.46       0.96       1.13
 ICT CONN        0.53       0.50       0.27       0.35       0.17       0.44
 INDVID K        0.37       1.08       0.95       1.28       0.62       0.93
 RESTRUCU       -0.08      -0.24      -0.13      -0.41      -0.11      -0.13
 MANG CHA       -0.04       0.04      -0.02      -0.11      -0.08       0.04
 OUTSOURC        0.89       1.70       1.67       2.35       1.05       1.34
 RULE CHA       -0.11      -0.24      -0.20      -0.35      -0.25      -0.20
 SHAR SYS        0.71       1.62       1.14       2.09       1.03       1.27
 CUSTOM P        0.42       0.87       0.99       1.00       0.47       0.78
 LESS LEA        0.42       0.82       1.41       0.85       0.58       1.01
  SPECIAL        0.11       0.39       0.53       0.30       0.11       0.41
 COMP ADV        0.09       0.53       0.19       0.07       0.24       0.23
 KNOW AND        0.40       1.66       0.37       0.18       0.87       1.07
 ALT TASK        0.28       0.34       0.42       0.51       0.10       0.48
 MUTUAL D       -0.31      -0.73      -0.51      -2.32      -0.47      -0.03
 MUTUAL A        0.13       0.38      -0.33       0.44       0.25       0.36
```

```
  SHAR STR       1.30        3.67        2.56        4.66        2.37        2.95

 Covariance Matrix

             CODEP NE    JOB ROLE    ROLE EXC     ICT NET         IOS    RICH MED
             --------    --------    --------    --------    --------    --------
  CODEP NE     228.10
  JOB ROLE       8.09        4.77
  ROLE EXC       6.74        0.81        2.54
   ICT NET      14.22        2.31        1.02       14.94
       IOS       3.58        0.52        0.26        1.70        1.21
  RICH MED       7.08        3.49        0.71        6.75        1.70      284.06
  ICT INTD       3.80        0.06        0.61        1.54        0.29        4.46
  ICT CORE       6.83        0.89        0.49        1.82        0.42        4.42
  ICT CONN       2.70       -0.05        0.19        1.67        0.21        7.16
  INDVID K       5.62        0.73        0.56        1.22        0.38        2.28
  RESTRUCU      -0.82       -0.21       -0.02       -0.38       -0.15        0.18
  MANG CHA       0.36       -0.10        0.11       -0.15       -0.10        0.28
  OUTSOURC       6.47        0.46        0.55        1.88        0.44       -0.41
  RULE CHA      -0.81       -0.15        0.00       -0.40       -0.11       -0.44
  SHAR SYS       7.83        0.54        0.47        1.70        0.49        0.42
  CUSTOM P       4.52        0.48        0.37        1.11        0.32       -0.27
  LESS LEA       5.81        0.97        0.45        1.50        0.39        1.94
   SPECIAL       1.55        0.38        0.19        0.84        0.21        1.88
  COMP ADV       1.60        0.30        0.10        0.66        0.14       -0.99
  KNOW AND       5.66        1.52        0.24        2.27        0.49       -4.14
  ALT TASK       3.40        0.79        0.65        0.41        0.08        2.15
  MUTUAL D       2.09        0.05        0.70       -0.76       -0.20        4.30
  MUTUAL A       3.46       -0.17        0.60        0.03        0.18        4.75
  SHAR STR      13.95        2.46        1.63        5.10        1.62        4.99

 Covariance Matrix

             ICT INTD    ICT CORE    ICT CONN    INDVID K    RESTRUCU    MANG CHA
             --------    --------    --------    --------    --------    --------
  ICT INTD       2.36
```

```
 ICT CORE      0.59      2.14
 ICT CONN      0.49      0.30      3.44
 INDVID K      0.22      0.28      0.04      1.15
 RESTRUCU      0.04     -0.10      0.05     -0.12      0.22
 MANG CHA      0.09     -0.03      0.12      0.00      0.10      0.44
 OUTSOURC      0.48      0.58     -0.03      0.50     -0.08     -0.02
 RULE CHA     -0.05     -0.11      0.00     -0.04      0.08      0.11
 SHAR SYS      0.28      0.56      0.08      0.61     -0.16     -0.10
 CUSTOM P      0.20      0.30      0.05      0.40     -0.08     -0.01
 LESS LEA      0.30      0.52      0.04      0.55     -0.08      0.03
  SPECIAL      0.17      0.26      0.27      0.16     -0.04     -0.02
 COMP ADV      0.16      0.12     -0.02      0.14     -0.03     -0.02
 KNOW AND      0.22      0.25     -0.21      0.81     -0.30     -0.30
 ALT TASK      0.32      0.13      0.32      0.17      0.01      0.00
 MUTUAL D      0.30     -0.17      0.44      0.05      0.22     -0.03
 MUTUAL A      0.46     -0.23      0.65      0.29      0.14      0.07
 SHAR STR      1.08      1.19      0.11      1.21     -0.36     -0.39

Covariance Matrix

            OUTSOURC  RULE CHA  SHAR SYS  CUSTOM P  LESS LEA   SPECIAL
            --------  --------  --------  --------  --------  --------
 OUTSOURC      3.44
 RULE CHA     -0.12      0.31
 SHAR SYS      0.90     -0.19      2.95
 CUSTOM P      0.46     -0.04      0.53      1.28
 LESS LEA      0.56     -0.05      0.66      0.74      2.07
  SPECIAL      0.22     -0.08      0.33      0.38      0.52      0.91
 COMP ADV      0.21     -0.05      0.20      0.07      0.24      0.08
 KNOW AND      0.77     -0.31      1.12      0.61      1.00      0.34
 ALT TASK      0.25      0.01      0.08      0.26      0.28      0.18
 MUTUAL D     -0.35      0.13      0.12      0.10      0.46      0.23
 MUTUAL A     -0.15      0.13      0.42      0.47      0.53      0.44
 SHAR STR      1.60     -0.43      2.10      1.35      1.31      1.05

Covariance Matrix
```

```
         COMP ADV   KNOW AND   ALT TASK   MUTUAL D   MUTUAL A   SHAR STR
         --------   --------   --------   --------   --------   --------
COMP ADV     0.56
KNOW AND     0.87       8.90
ALT TASK     0.07       0.43       2.10
MUTUAL D     0.17       1.17       1.05      10.10
MUTUAL A     0.19       0.79       0.70       2.18       5.32
SHAR STR     0.59       2.46       1.25       1.24       2.28      15.63


Parameter Specifications

       LAMBDA-Y

            Aggre       Anch      Cyber     Switch      Spl P
         --------   --------   --------   --------   --------
 EXT FAC        0          0          1          0          0
ACT TAKE        0          0          2          0          0
IND CHAN        0          0          3          0          0
TECH DEV        0          0          4          0          0
MULTI SK        0          0          5          0          0
COMM FOC        0          0          6          0          0
CODEP NE        0          0          7          0          0
JOB ROLE        0          0          0          8          0
ROLE EXC        0          0          9          0          0
 ICT NET        0          0          0          0          0
     IOS       10          0          0          0          0
RICH MED       11          0          0          0          0
ICT INTD       12          0          0          0          0
ICT CORE        0          0          0          0          0
ICT CONN       13          0          0          0          0
INDVID K        0          0          0         14          0
RESTRUCU        0          0          0          0          0
```

```
MANG CHA          0         15          0          0          0
OUTSOURC          0          0         16          0          0
RULE CHA          0         17          0          0          0
SHAR SYS          0          0         18          0          0
CUSTOM P          0          0          0          0          0
LESS LEA          0          0          0          0         19
 SPECIAL          0          0          0          0         20
COMP ADV          0          0          0         21          0
KNOW AND          0          0          0          0          0

        LAMBDA-X

               Inter
            --------
ALT TASK          22
MUTUAL D           0
MUTUAL A          23
SHAR STR          24

        BETA

               Aggre       Anch      Cyber     Switch      Spl P
            --------   --------   --------   --------   --------
   Aggre           0          0         25          0          0
    Anch           0          0          0          0          0
   Cyber           0         26          0          0          0
  Switch          27          0          0          0          0
   Spl P           0          0          0         28          0

        GAMMA

               Inter
            --------
   Aggre           0
    Anch          29
   Cyber           0
```

```
Switch          0
 Spl P          0

      PHI

            Inter
         --------
               30

      PSI

            Aggre       Anch      Cyber     Switch      Spl P
         --------   --------   --------   --------   --------
               31         32         33         34         35

      THETA-EPS

          EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
         --------   --------   --------   --------   --------   --------
               36         37         38         39         40         41

      THETA-EPS

         CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
         --------   --------   --------   --------   --------   --------
               42         43         44         45         46         47

      THETA-EPS

         ICT INTD   ICT CORE   ICT CONN   INDVID K   RESTRUCU   MANG CHA
         --------   --------   --------   --------   --------   --------
               48         49         50         51         52         53

      THETA-EPS

         OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
```

```
        --------  --------  --------  --------  --------  --------
              54        55        56        57        58        59

     THETA-EPS

        COMP ADV  KNOW AND
        --------  --------
              60        61

     THETA-DELTA

        ALT TASK  MUTUAL D  MUTUAL A  SHAR STR
        --------  --------  --------  --------
              62        63        64        65



Number of Iterations = 20

LISREL Estimates (Maximum Likelihood)

     LAMBDA-Y

           Aggre      Anch     Cyber    Switch     Spl P
        --------  --------  --------  --------  --------
 EXT FAC     - -       - -      1.51       - -       - -
                              (0.29)
                                5.29

ACT TAKE     - -       - -      2.82       - -       - -
                              (0.54)
                                5.27

IND CHAN     - -       - -      2.83       - -       - -
```

			(0.53) 5.36		
TECH DEV	- -	- -	3.75 (0.80) 4.67	- -	- -
MULTI SK	- -	- -	1.95 (0.37) 5.20	- -	- -
COMM FOC	- -	- -	2.25 (0.40) 5.58	- -	- -
CODEP NE	- -	- -	13.08 (2.40) 5.46	- -	- -
JOB ROLE	- -	- -	- -	0.88 (0.21) 4.24	- -
ROLE EXC	- -	- -	0.97 (0.22) 4.42	- -	- -
ICT NET	1.00	- -	- -	- -	- -
IOS	0.25 (0.04) 6.30	- -	- -	- -	- -
RICH MED	0.81 (0.54) 1.50	- -	- -	- -	- -

ICT INTD	0.20 (0.05) 3.90	- -	- -	- -	- -
ICT CORE	- -	- -	1.00	- -	- -
ICT CONN	0.14 (0.06) 2.36	- -	- -	- -	- -
INDVID K	- -	- -	- -	0.55 (0.12) 4.66	- -
RESTRUCU	- -	1.00	- -	- -	- -
MANG CHA	- -	1.07 (0.28) 3.80	- -	- -	- -
OUTSOURC	- -	- -	1.28 (0.27) 4.81	- -	- -
RULE CHA	- -	1.05 (0.27) 3.86	- -	- -	- -
SHAR SYS	- -	- -	1.23 (0.25) 4.92	- -	- -
CUSTOM P	- -	- -	- -	- -	1.00
LESS LEA	- -	- -	- -	- -	1.48

```
                                                        (0.22)
                                                          6.66

 SPECIAL        - -         - -         - -         - -     0.67
                                                        (0.12)
                                                          5.51

COMP ADV        - -         - -         - -       0.23       - -
                                                (0.06)
                                                  3.62

KNOW AND        - -         - -         - -       1.00       - -

        LAMBDA-X

              Inter
            --------
ALT TASK      0.42
            (0.13)
              3.23

MUTUAL D      1.00

MUTUAL A      0.92
            (0.28)
              3.27

SHAR STR      1.02
            (0.33)
              3.05

        BETA

              Aggre       Anch       Cyber      Switch      Spl P
```

```
          --------  --------  --------  --------  --------
 Aggre        - -       - -     3.01        - -       - -
                               (0.57)
                                5.24

  Anch        - -       - -       - -       - -       - -

 Cyber        - -     -0.79       - -       - -       - -
                     (0.29)
                      -2.73

Switch      0.41        - -       - -       - -       - -
           (0.09)
            4.46

 Spl P        - -       - -       - -     0.44        - -
                                         (0.10)
                                          4.24


     GAMMA

             Inter
          --------
 Aggre        - -

  Anch      0.00
           (0.02)
            0.12

 Cyber        - -

Switch        - -

 Spl P        - -
```

```
Covariance Matrix of ETA and KSI

            Aggre       Anch      Cyber     Switch      Spl P      Inter
         --------   --------   --------   --------   --------   --------
 Aggre       6.39
  Anch      -0.20       0.09
 Cyber       1.39      -0.07       0.46
Switch       2.59      -0.08       0.56       1.51
 Spl P       1.14      -0.04       0.25       0.66       0.52
 Inter      -0.02       0.01      -0.01      -0.01       0.00       2.20

PHI

            Inter
         --------
             2.20
           (0.94)
             2.34


PSI
Note: This matrix is diagonal.

            Aggre       Anch      Cyber     Switch      Spl P
         --------   --------   --------   --------   --------
             2.19       0.09       0.41       0.46       0.23
           (0.73)     (0.03)     (0.13)     (0.23)     (0.07)
             3.01       3.09       3.16       1.97       3.08

Squared Multiple Correlations for Structural Equations

            Aggre       Anch      Cyber     Switch      Spl P
         --------   --------   --------   --------   --------
             0.66       0.00       0.12       0.70       0.56
```

```
 Squared Multiple Correlations for Reduced Form

         Aggre       Anch      Cyber     Switch      Spl P
      --------   --------   --------   --------   --------
          0.00       0.00       0.00       0.00       0.00

 Reduced Form

         Inter
      --------
 Aggre   -0.01
        (0.06)
         -0.12

  Anch    0.00
        (0.02)
          0.12

 Cyber    0.00
        (0.02)
         -0.12

Switch    0.00
        (0.02)
         -0.12

 Spl P    0.00
        (0.01)
         -0.12


 THETA-EPS

       EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
      --------   --------   --------   --------   --------   --------
```

```
       2.38       8.45       7.71      25.72       4.30       3.80
     (0.26)     (0.92)     (0.85)     (2.70)     (0.47)     (0.43)
       9.15       9.17       9.09       9.53       9.23       8.82

 THETA-EPS

   CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
   --------   --------   --------   --------   --------   --------
     149.05       3.60       2.11       8.56       0.82     279.89
    (16.58)     (0.40)     (0.22)     (1.11)     (0.10)    (28.04)
       8.99       8.90       9.62       7.71       8.60       9.98

 THETA-EPS

   ICT INTD   ICT CORE   ICT CONN   INDVID K   RESTRUCU   MANG CHA
   --------   --------   --------   --------   --------   --------
       2.12       1.67       3.31       0.69       0.14       0.34
     (0.22)     (0.18)     (0.33)     (0.09)     (0.03)     (0.04)
       9.67       9.49       9.91       7.73       5.35       7.88

 THETA-EPS

   OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
   --------   --------   --------   --------   --------   --------
       2.68       0.21       2.24       0.76       0.94       0.68
     (0.28)     (0.03)     (0.24)     (0.10)     (0.17)     (0.08)
       9.47       6.65       9.41       7.44       5.56       8.77

 THETA-EPS

   COMP ADV   KNOW AND
   --------   --------
```

```
      0.48       7.40
    (0.05)     (0.79)
      9.48       9.33

 Squared Multiple Correlations for Y - Variables

    EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
   --------   --------   --------   --------   --------   --------
       0.31       0.30       0.32       0.20       0.29       0.38

 Squared Multiple Correlations for Y - Variables

   CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
   --------   --------   --------   --------   --------   --------
       0.35       0.25       0.17       0.43       0.32       0.01

 Squared Multiple Correlations for Y - Variables

   ICT INTD   ICT CORE   ICT CONN   INDVID K   RESTRUCU   MANG CHA
   --------   --------   --------   --------   --------   --------
       0.11       0.22       0.04       0.40       0.39       0.23

 Squared Multiple Correlations for Y - Variables

   OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
   --------   --------   --------   --------   --------   --------
       0.22       0.30       0.24       0.41       0.55       0.26

 Squared Multiple Correlations for Y - Variables

   COMP ADV   KNOW AND
   --------   --------
       0.14       0.17

 THETA-DELTA
```

```
         ALT TASK   MUTUAL D   MUTUAL A   SHAR STR
         --------   --------   --------   --------
             1.71       7.90       3.44      13.35
           (0.21)     (1.05)     (0.65)     (1.56)
             8.04       7.50       5.26       8.55

      Squared Multiple Correlations for X - Variables

         ALT TASK   MUTUAL D   MUTUAL A   SHAR STR
         --------   --------   --------   --------
             0.18       0.22       0.35       0.15


                        Goodness of Fit Statistics

                          Degrees of Freedom = 400
               Minimum Fit Function Chi-Square = 480.10 (P = 0.0036)
       Normal Theory Weighted Least Squares Chi-Square = 496.74 (P = 0.00068)
                  Estimated Non-centrality Parameter (NCP) = 96.74
             90 Percent Confidence Interval for NCP = (44.12 ; 157.52)

                       Minimum Fit Function Value = 2.39
                Population Discrepancy Function Value (F0) = 0.48
              90 Percent Confidence Interval for F0 = (0.22 ; 0.78)
             Root Mean Square Error of Approximation (RMSEA) = 0.035
             90 Percent Confidence Interval for RMSEA = (0.023 ; 0.044)
                P-Value for Test of Close Fit (RMSEA < 0.05) = 1.00

                 Expected Cross-Validation Index (ECVI) = 3.12
              90 Percent Confidence Interval for ECVI = (2.86 ; 3.42)
                        ECVI for Saturated Model = 4.63
                      ECVI for Independence Model = 15.94

     Chi-Square for Independence Model with 435 Degrees of Freedom = 3144.88
```

```
                   Independence AIC = 3204.88
                       Model AIC = 626.74
                     Saturated AIC = 930.00
                  Independence CAIC = 3334.12
                      Model CAIC = 906.77
                    Saturated CAIC = 2933.34

                 Normed Fit Index (NFI) = 0.85
              Non-Normed Fit Index (NNFI) = 0.97
           Parsimony Normed Fit Index (PNFI) = 0.78
              Comparative Fit Index (CFI) = 0.97
              Incremental Fit Index (IFI) = 0.97
               Relative Fit Index (RFI) = 0.83

                    Critical N (CN) = 197.24


           Root Mean Square Residual (RMR) = 1.42
                   Standardized RMR = 0.089
              Goodness of Fit Index (GFI) = 0.86
        Adjusted Goodness of Fit Index (AGFI) = 0.84
       Parsimony Goodness of Fit Index (PGFI) = 0.74


 Fitted Covariance Matrix

            EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
           --------   --------   --------   --------   --------   --------
  EXT FAC      3.44
 ACT TAKE      1.98      12.13
 IND CHAN      1.98       3.70      11.41
 TECH DEV      2.62       4.89       4.90      32.21
 MULTI SK      1.36       2.54       2.55       3.37       6.05
 COMM FOC      1.57       2.93       2.94       3.89       2.02       6.14
 CODEP NE      9.15      17.08      17.11      22.65      11.77      13.58
```

```
JOB ROLE       0.75        1.41        1.41        1.87        0.97        1.12
ROLE EXC       0.68        1.27        1.27        1.68        0.87        1.01
 ICT NET       2.11        3.93        3.94        5.21        2.71        3.13
     IOS       0.52        0.96        0.97        1.28        0.66        0.77
RICH MED       1.70        3.18        3.18        4.21        2.19        2.53
ICT INTD       0.42        0.78        0.78        1.03        0.54        0.62
ICT CORE       0.70        1.31        1.31        1.73        0.90        1.04
ICT CONN       0.30        0.55        0.55        0.73        0.38        0.44
INDVID K       0.47        0.87        0.88        1.16        0.60        0.70
RESTRUCU      -0.10       -0.19       -0.19       -0.25       -0.13       -0.15
MANG CHA      -0.11       -0.21       -0.21       -0.27       -0.14       -0.16
OUTSOURC       0.90        1.67        1.68        2.22        1.15        1.33
RULE CHA      -0.11       -0.20       -0.20       -0.27       -0.14       -0.16
SHAR SYS       0.86        1.61        1.61        2.14        1.11        1.28
CUSTOM P       0.38        0.70        0.70        0.93        0.48        0.56
LESS LEA       0.55        1.03        1.04        1.37        0.71        0.82
 SPECIAL       0.25        0.47        0.47        0.63        0.32        0.37
COMP ADV       0.19        0.36        0.36        0.48        0.25        0.29
KNOW AND       0.85        1.59        1.60        2.11        1.10        1.27
ALT TASK       0.00       -0.01       -0.01       -0.01        0.00        0.00
MUTUAL D      -0.01       -0.01       -0.01       -0.02       -0.01       -0.01
MUTUAL A      -0.01       -0.01       -0.01       -0.02       -0.01       -0.01
SHAR STR      -0.01       -0.01       -0.01       -0.02       -0.01       -0.01

        Fitted Covariance Matrix

            CODEP NE    JOB ROLE    ROLE EXC     ICT NET         IOS    RICH MED
            --------    --------    --------    --------    --------    --------
CODEP NE     228.10
JOB ROLE       6.51        4.77
ROLE EXC       5.86        0.48        2.54
 ICT NET      18.20        2.29        1.35       14.94
     IOS       4.46        0.56        0.33        1.57        1.21
RICH MED      14.71        1.85        1.09        5.16        1.27      284.06
ICT INTD       3.60        0.45        0.27        1.26        0.31        1.02
ICT CORE       6.05        0.50        0.45        1.39        0.34        1.12
```

```
ICT CONN       2.56        0.32        0.19        0.90        0.22        0.73
INDVID K       4.05        0.73        0.30        1.42        0.35        1.15
RESTRUCU      -0.89       -0.07       -0.07       -0.20       -0.05       -0.17
MANG CHA      -0.95       -0.08       -0.07       -0.22       -0.05       -0.18
OUTSOURC       7.75        0.64        0.57        1.78        0.44        1.44
RULE CHA      -0.93       -0.08       -0.07       -0.21       -0.05       -0.17
SHAR SYS       7.46        0.62        0.55        1.72        0.42        1.39
CUSTOM P       3.24        0.59        0.24        1.14        0.28        0.92
LESS LEA       4.79        0.86        0.35        1.68        0.41        1.36
 SPECIAL       2.18        0.39        0.16        0.77        0.19        0.62
COMP ADV       1.67        0.30        0.12        0.59        0.14        0.47
KNOW AND       7.38        1.33        0.55        2.59        0.63        2.09
ALT TASK      -0.03        0.00        0.00       -0.01        0.00       -0.01
MUTUAL D      -0.07       -0.01        0.00       -0.02        0.00       -0.01
MUTUAL A      -0.06        0.00        0.00       -0.01        0.00       -0.01
SHAR STR      -0.07       -0.01        0.00       -0.02        0.00       -0.01

        Fitted Covariance Matrix

            ICT INTD    ICT CORE    ICT CONN    INDVID K    RESTRUCU    MANG CHA
            --------    --------    --------    --------    --------    --------
ICT INTD       2.36
ICT CORE       0.28        2.14
ICT CONN       0.18        0.20        3.44
INDVID K       0.28        0.31        0.20        1.15
RESTRUCU      -0.04       -0.07       -0.03       -0.05        0.22
MANG CHA      -0.04       -0.07       -0.03       -0.05        0.09        0.44
OUTSOURC       0.35        0.59        0.25        0.40       -0.09       -0.09
RULE CHA      -0.04       -0.07       -0.03       -0.05        0.09        0.10
SHAR SYS       0.34        0.57        0.24        0.38       -0.08       -0.09
CUSTOM P       0.23        0.25        0.16        0.36       -0.04       -0.04
LESS LEA       0.33        0.37        0.24        0.54       -0.05       -0.06
 SPECIAL       0.15        0.17        0.11        0.24       -0.02       -0.03
COMP ADV       0.12        0.13        0.08        0.19       -0.02       -0.02
KNOW AND       0.51        0.56        0.36        0.83       -0.08       -0.09
ALT TASK       0.00        0.00        0.00        0.00        0.00        0.00
```

```
 MUTUAL D       0.00      -0.01       0.00       0.00       0.01       0.01
 MUTUAL A       0.00       0.00       0.00       0.00       0.01       0.01
 SHAR STR       0.00      -0.01       0.00       0.00       0.01       0.01

         Fitted Covariance Matrix

            OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
            --------   --------   --------   --------   --------   --------
 OUTSOURC       3.44
 RULE CHA      -0.09       0.31
 SHAR SYS       0.73      -0.09       2.95
 CUSTOM P       0.32      -0.04       0.31       1.28
 LESS LEA       0.47      -0.06       0.45       0.77       2.07
  SPECIAL       0.21      -0.03       0.21       0.35       0.51       0.91
 COMP ADV       0.16      -0.02       0.16       0.15       0.22       0.10
 KNOW AND       0.72      -0.09       0.70       0.66       0.98       0.45
 ALT TASK       0.00       0.00       0.00       0.00       0.00       0.00
 MUTUAL D      -0.01       0.01      -0.01       0.00       0.00       0.00
 MUTUAL A      -0.01       0.01      -0.01       0.00       0.00       0.00
 SHAR STR      -0.01       0.01      -0.01       0.00       0.00       0.00

         Fitted Covariance Matrix

            COMP ADV   KNOW AND   ALT TASK   MUTUAL D   MUTUAL A   SHAR STR
            --------   --------   --------   --------   --------   --------
 COMP ADV       0.56
 KNOW AND       0.34       8.91
 ALT TASK       0.00       0.00       2.10
 MUTUAL D       0.00      -0.01       0.92      10.10
 MUTUAL A       0.00      -0.01       0.85       2.03       5.32
 SHAR STR       0.00      -0.01       0.93       2.24       2.07      15.63

         Fitted Residuals

             EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
            --------   --------   --------   --------   --------   --------
```

```
 EXT FAC       0.00
ACT TAKE       0.42        0.00
IND CHAN       0.46       -0.34        0.00
TECH DEV       1.76        1.47        2.84        0.00
MULTI SK       0.10       -0.11        0.06        0.03        0.00
COMM FOC      -0.14        0.25       -0.16       -1.51        0.01        0.00
CODEP NE      -0.13       -3.23        1.51       -1.70        1.93        0.46
JOB ROLE      -0.42       -0.10       -0.04       -1.62        0.12        0.63
ROLE EXC      -0.07       -0.01       -0.18       -0.48       -0.10        0.32
 ICT NET      -0.26        0.05       -0.45       -0.56       -0.14       -0.05
     IOS      -0.04        0.05       -0.23        0.15       -0.14       -0.16
RICH MED      -2.98       -5.32       -6.45      -12.54       -1.05       -2.13
ICT INTD      -0.16       -0.03       -0.35       -1.21        0.14       -0.02
ICT CORE      -0.21       -0.42        0.10       -1.27        0.06        0.09
ICT CONN       0.23       -0.06       -0.28       -0.39       -0.21        0.00
INDVID K      -0.10        0.20        0.07        0.12        0.02        0.23
RESTRUCU       0.02       -0.05        0.06       -0.15        0.03        0.03
MANG CHA       0.08        0.24        0.19        0.16        0.06        0.20
OUTSOURC       0.00        0.02       -0.01        0.13       -0.10        0.01
RULE CHA       0.00       -0.04        0.00       -0.08       -0.11       -0.04
SHAR SYS      -0.16        0.01       -0.47       -0.05       -0.09       -0.01
CUSTOM P       0.04        0.17        0.29        0.08       -0.02        0.22
LESS LEA      -0.13       -0.22        0.37       -0.52       -0.13        0.19
 SPECIAL      -0.14       -0.08        0.06       -0.32       -0.21        0.04
COMP ADV      -0.11        0.17       -0.17       -0.41       -0.01       -0.06
KNOW AND      -0.46        0.06       -1.23       -1.94       -0.23       -0.20
ALT TASK       0.28        0.34        0.43        0.52        0.10        0.48
MUTUAL D      -0.31       -0.71       -0.50       -2.30       -0.46       -0.02
MUTUAL A       0.13        0.39       -0.32        0.46        0.26        0.37
SHAR STR       1.31        3.69        2.57        4.68        2.38        2.96

        Fitted Residuals

            CODEP NE    JOB ROLE    ROLE EXC     ICT NET         IOS    RICH MED
            --------    --------    --------    --------    --------    --------
CODEP NE       0.00
```

```
 JOB ROLE      1.58      0.00
 ROLE EXC      0.88      0.32      0.00
  ICT NET     -3.99      0.03     -0.33      0.00
      IOS     -0.88     -0.04     -0.07      0.13      0.00
 RICH MED     -7.63      1.64     -0.38      1.59      0.43      0.00
 ICT INTD      0.20     -0.39      0.35      0.27     -0.02      3.44
 ICT CORE      0.79      0.39      0.04      0.42      0.07      3.29
 ICT CONN      0.14     -0.38      0.00      0.78     -0.01      6.44
 INDVID K      1.57      0.00      0.26     -0.20      0.03      1.13
 RESTRUCU      0.07     -0.13      0.05     -0.18     -0.10      0.35
 MANG CHA      1.32     -0.02      0.18      0.07     -0.04      0.46
 OUTSOURC     -1.28     -0.17     -0.03      0.09      0.00     -1.85
 RULE CHA      0.12     -0.07      0.07     -0.18     -0.05     -0.27
 SHAR SYS      0.37     -0.07     -0.08     -0.01      0.07     -0.97
 CUSTOM P      1.28     -0.10      0.13     -0.03      0.04     -1.19
 LESS LEA      1.02      0.11      0.10     -0.18     -0.02      0.59
  SPECIAL     -0.63     -0.01      0.02      0.07      0.02      1.26
 COMP ADV     -0.07     -0.01     -0.03      0.08     -0.01     -1.46
 KNOW AND     -1.72      0.19     -0.31     -0.32     -0.14     -6.23
 ALT TASK      3.43      0.79      0.65      0.42      0.08      2.15
 MUTUAL D      2.16      0.05      0.71     -0.74     -0.19      4.31
 MUTUAL A      3.52     -0.17      0.60      0.04      0.18      4.76
 SHAR STR     14.01      2.46      1.63      5.11      1.62      5.00

         Fitted Residuals

            ICT INTD  ICT CORE  ICT CONN  INDVID K  RESTRUCU  MANG CHA
            --------  --------  --------  --------  --------  --------
 ICT INTD      0.00
 ICT CORE      0.31      0.00
 ICT CONN      0.31      0.10      0.00
 INDVID K     -0.07     -0.03     -0.16      0.00
 RESTRUCU      0.08     -0.03      0.08     -0.07      0.00
 MANG CHA      0.13      0.04      0.15      0.05      0.01      0.00
 OUTSOURC      0.12     -0.01     -0.28      0.10      0.01      0.08
 RULE CHA      0.00     -0.04      0.03      0.01     -0.01      0.01
```

```
SHAR SYS      -0.06       -0.01       -0.16        0.23       -0.07       -0.01
CUSTOM P      -0.02        0.05       -0.11        0.03       -0.05        0.03
LESS LEA      -0.04        0.16       -0.20        0.01       -0.03        0.09
 SPECIAL       0.02        0.10        0.17       -0.09       -0.02        0.01
COMP ADV       0.04       -0.01       -0.10       -0.05       -0.01        0.00
KNOW AND      -0.29       -0.32       -0.58       -0.02       -0.22       -0.21
ALT TASK       0.32        0.13        0.32        0.17        0.01        0.00
MUTUAL D       0.30       -0.17        0.44        0.05        0.22       -0.04
MUTUAL A       0.47       -0.22        0.65        0.29        0.13        0.07
SHAR STR       1.09        1.19        0.11        1.22       -0.37       -0.40

        Fitted Residuals

            OUTSOURC    RULE CHA    SHAR SYS    CUSTOM P    LESS LEA     SPECIAL
            --------    --------    --------    --------    --------    --------
OUTSOURC       0.00
RULE CHA      -0.03        0.00
SHAR SYS       0.17       -0.10        0.00
CUSTOM P       0.14        0.00        0.23        0.00
LESS LEA       0.09        0.01        0.21       -0.02        0.00
 SPECIAL       0.00       -0.05        0.13        0.03        0.01        0.00
COMP ADV       0.04       -0.03        0.04       -0.08        0.01       -0.03
KNOW AND       0.05       -0.23        0.42       -0.06        0.02       -0.11
ALT TASK       0.26        0.01        0.08        0.26        0.28        0.18
MUTUAL D      -0.34        0.12        0.12        0.10        0.47        0.23
MUTUAL A      -0.14        0.12        0.42        0.47        0.54        0.44
SHAR STR       1.61       -0.43        2.11        1.35        1.31        1.05

        Fitted Residuals

            COMP ADV    KNOW AND    ALT TASK    MUTUAL D    MUTUAL A    SHAR STR
            --------    --------    --------    --------    --------    --------
COMP ADV       0.00
KNOW AND       0.53        0.00
ALT TASK       0.08        0.43        0.00
MUTUAL D       0.17        1.18        0.13        0.00
```

```
MUTUAL A       0.19        0.79       -0.15        0.15        0.00
SHAR STR       0.59        2.47        0.32       -1.00        0.22        0.00

Summary Statistics for Fitted Residuals

Smallest Fitted Residual =  -12.54
  Median Fitted Residual =    0.01
 Largest Fitted Residual =   14.01

Stemleaf Plot

-12|5
-10|
- 8|
- 6|652
- 4|30
- 2|2031
- 0|997765533222100977666555555444444444443333333333333332222222222222222222+86
  0|111111111111111111111111111111111111111111111111111111111111112222222222+04
  2|12245568034457
  4|37801
  6|4
  8|
 10|
 12|
 14|0

        Standardized Residuals

            EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
            --------  --------   --------   --------   --------   --------
 EXT FAC      - -
ACT TAKE      1.48       - -
IND CHAN      1.70      -0.67       - -
TECH DEV      3.45       1.53       3.10       - -
MULTI SK      0.50      -0.27       0.16       0.04       - -
```

```
 COMM FOC     -0.73       0.72      -0.47      -2.40       0.03       - -
 CODEP NE     -0.11      -1.45       0.71      -0.42       1.21       0.31
 JOB ROLE     -1.83      -0.23      -0.09      -2.17       0.37       2.12
 ROLE EXC     -0.48      -0.03      -0.69      -0.98      -0.49       1.74
  ICT NET     -0.77       0.08      -0.75      -0.51      -0.30      -0.13
      IOS     -0.39       0.28      -1.25       0.45      -0.99      -1.23
 RICH MED     -1.59      -1.50      -1.90      -2.06      -0.42      -0.89
 ICT INTD     -0.99      -0.10      -1.18      -2.26       0.63      -0.10
 ICT CORE     -1.60      -1.73       0.44      -2.92       0.34       0.59
 ICT CONN      1.12      -0.15      -0.76      -0.58      -0.76      -0.02
 INDVID K     -0.91       1.03       0.39       0.34       0.13       1.75
 RESTRUCU      0.43      -0.49       0.67      -0.92       0.38       0.40
 MANG CHA      0.99       1.69       1.37       0.66       0.57       2.04
 OUTSOURC     -0.03       0.08      -0.03       0.23      -0.46       0.06
 RULE CHA     -0.01      -0.37       0.03      -0.42      -1.33      -0.53
 SHAR SYS     -1.05       0.04      -1.78      -0.09      -0.43      -0.04
 CUSTOM P      0.32       0.74       1.30       0.19      -0.10       1.41
 LESS LEA     -0.91      -0.78       1.39      -1.08      -0.67       0.98
  SPECIAL     -1.32      -0.38       0.31      -0.93      -1.45       0.26
 COMP ADV     -1.29       1.06      -1.13      -1.55      -0.12      -0.55
 KNOW AND     -1.40       0.10      -2.08      -1.84      -0.53      -0.46
 ALT TASK      1.51       0.97       1.25       0.89       0.40       1.94
 MUTUAL D     -0.75      -0.93      -0.67      -1.82      -0.85      -0.03
 MUTUAL A      0.45       0.70      -0.59       0.50       0.67       0.94
 SHAR STR      2.56       3.83       2.76       2.97       3.50       4.33

         Standardized Residuals

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
 CODEP NE       - -
 JOB ROLE      0.86       - -
 ROLE EXC      0.76       1.52       - -
  ICT NET     -1.52       0.07      -1.02       - -
      IOS     -1.09      -0.32      -0.77       0.96       - -
 RICH MED     -0.51       0.72      -0.22       0.53       0.44       - -
```

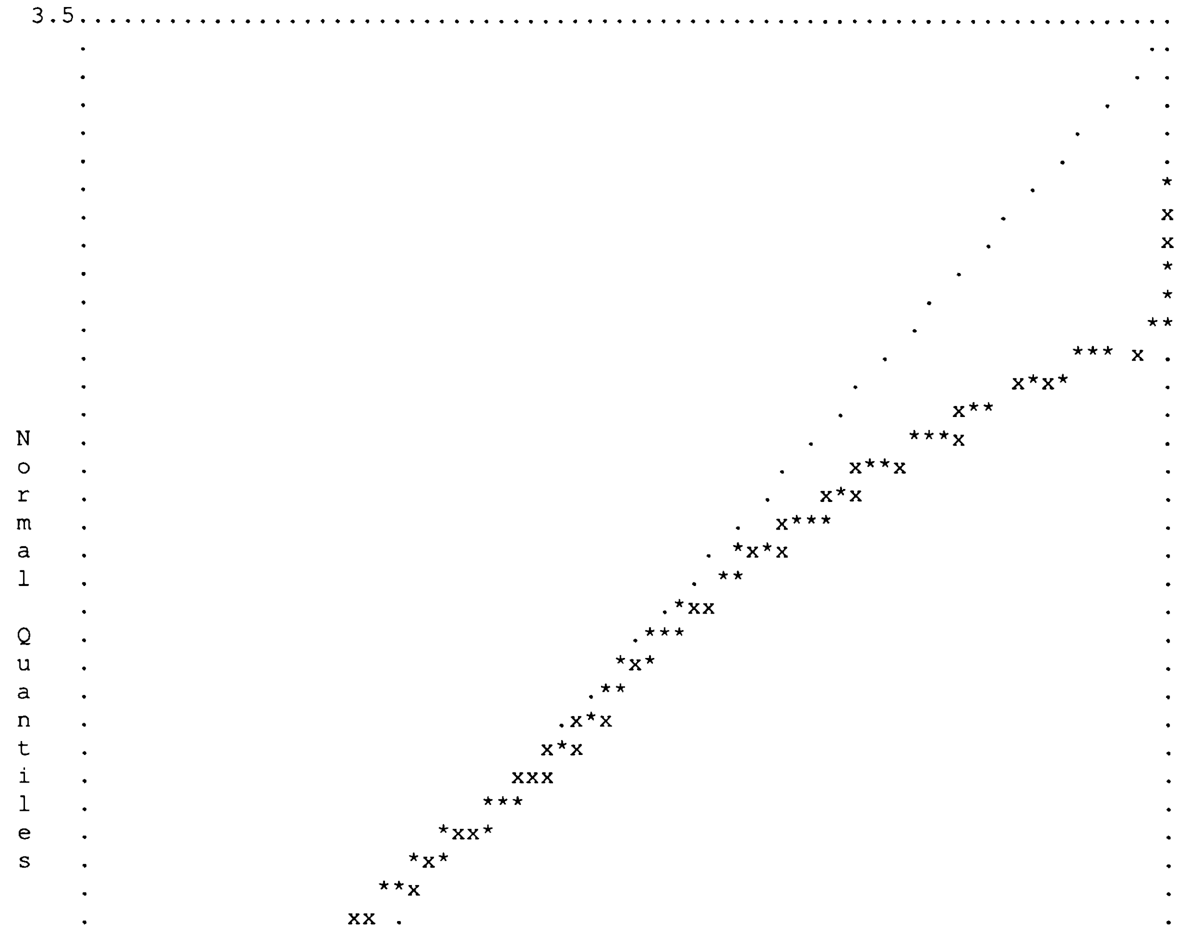
```
ICT INTD       0.16      -2.02       2.28       1.08      -0.21       2.05
ICT CORE       0.78       2.04       0.30       1.50       0.85       2.11
ICT CONN       0.08      -1.53      -0.01       2.37      -0.10       3.02
INDVID K       1.89      -0.04       2.62      -1.27       0.63       1.12
RESTRUCU       0.17      -1.95       0.96      -1.67      -3.15       0.64
MANG CHA       2.15      -0.21       2.57       0.42      -0.94       0.60
OUTSOURC      -1.00      -0.72      -0.18       0.26      -0.02      -0.94
RULE CHA       0.24      -0.92       1.16      -1.40      -1.41      -0.42
SHAR SYS       0.32      -0.32      -0.55      -0.04       0.74      -0.54
CUSTOM P       1.31      -0.88       1.14      -0.15       0.69      -1.00
LESS LEA       0.86       0.79       0.73      -0.75      -0.29       0.41
 SPECIAL      -0.72      -0.11       0.24       0.38       0.35       1.20
COMP ADV      -0.10      -0.07      -0.35       0.53      -0.12      -1.78
KNOW AND      -0.66       0.59      -1.03      -0.58      -0.82      -1.92
ALT TASK       2.25       3.54       4.01       1.06       0.71       1.25
MUTUAL D       0.65       0.11       2.00      -0.87      -0.79       1.14
MUTUAL A       1.46      -0.48       2.34       0.07       1.04       1.74
SHAR STR       3.36       4.05       3.69       4.78       5.33       1.07

        Standardized Residuals

            ICT INTD   ICT CORE   ICT CONN   INDVID K   RESTRUCU   MANG CHA
            --------   --------   --------   --------   --------   --------
ICT INTD       - -
ICT CORE       2.28       - -
ICT CONN       1.72       0.59       - -
INDVID K      -0.75      -0.31      -1.43       - -
RESTRUCU       1.67      -0.74       1.40      -2.27       - -
MANG CHA       1.92       0.62       1.82       1.14       1.28       - -
OUTSOURC       0.71      -0.06      -1.32       0.93       0.13       0.99
RULE CHA      -0.09      -0.73       0.47       0.28      -2.66       1.07
SHAR SYS      -0.36      -0.11      -0.82       2.24      -1.51      -0.13
CUSTOM P      -0.20       0.54      -0.85       0.69      -1.35       0.55
LESS LEA      -0.28       1.27      -1.27       0.17      -0.64       1.39
 SPECIAL       0.25       1.09       1.45      -1.76      -0.63       0.22
COMP ADV       0.56      -0.16      -1.16      -1.37      -0.52       0.12
```

```
KNOW AND     -1.04     -1.19     -1.64     -0.15     -2.35     -1.55
ALT TASK      2.02      0.86      1.67      1.56      0.13     -0.05
MUTUAL D      0.89     -0.51      1.06      0.21      2.37     -0.27
MUTUAL A      1.88     -0.95      2.16      1.70      2.21      0.71
SHAR STR      2.54      2.95      0.21      4.09     -3.10     -2.27

        Standardized Residuals

           OUTSOURC  RULE CHA  SHAR SYS  CUSTOM P  LESS LEA   SPECIAL
           --------  --------  --------  --------  --------  --------
OUTSOURC      - -
RULE CHA     -0.49      - -
SHAR SYS      1.02     -1.71      - -
CUSTOM P      1.11     -0.01      1.96      - -
LESS LEA      0.57      0.13      1.46     -1.06      - -
 SPECIAL      0.02     -1.42      1.21      0.73      0.31      - -
COMP ADV      0.51     -1.08      0.55     -1.76      0.29     -0.61
KNOW AND      0.15     -2.03      1.34     -0.32      0.11     -0.64
ALT TASK      1.36      0.23      0.45      2.29      1.91      1.84
MUTUAL D     -0.83      1.11      0.33      0.41      1.46      1.09
MUTUAL A     -0.48      1.65      1.54      2.60      2.31      2.83
SHAR STR      3.12     -3.01      4.43      4.30      3.28      3.97

        Standardized Residuals

           COMP ADV  KNOW AND  ALT TASK  MUTUAL D  MUTUAL A  SHAR STR
           --------  --------  --------  --------  --------  --------
COMP ADV      - -
KNOW AND      4.27      - -
ALT TASK      0.99      1.41      - -
MUTUAL D      1.04      1.77      0.84      - -
MUTUAL A      1.59      1.64     -2.07      1.09      - -
SHAR STR      2.83      2.98      1.26     -1.99      0.89      - -

Summary Statistics for Standardized Residuals
```

```
Smallest Standardized Residual =   -3.15
  Median Standardized Residual =    0.08
 Largest Standardized Residual =    5.33

Stemleaf Plot

- 3|110
- 2|97
- 2|4433321110000
- 1|998888888777666555555
- 1|44444444433333322222111110000000000
- 0|9999999999988888888888887777777777776666666655555555555555555
- 0|4444444443333333333222222221111111111111111111100000000000000000000000000+22
  0|1111111111111112222222222223333333333333334444444444444444
  0|55555555566666666666677777777777777778888999999999
  1|00000000000111111111111111122222233333444444444
  1|555555555566667777777788899999
  2|00000011122223333344
  2|566668889
  3|00011344
  3|5578
  4|00113334
  4|8
  5|3
Largest Negative Standardized Residuals
Residual for ICT CORE and TECH DEV  -2.92
Residual for RESTRUCU and      IOS  -3.15
Residual for RULE CHA and RESTRUCU  -2.66
Residual for SHAR STR and RESTRUCU  -3.10
Residual for SHAR STR and RULE CHA  -3.01
Largest Positive Standardized Residuals
Residual for TECH DEV and  EXT FAC   3.45
Residual for TECH DEV and IND CHAN   3.10
Residual for ICT CONN and RICH MED   3.02
Residual for INDVID K and ROLE EXC   2.62
Residual for KNOW AND and COMP ADV   4.27
```

```
Residual for ALT TASK and JOB ROLE   3.54
Residual for ALT TASK and ROLE EXC   4.01
Residual for MUTUAL A and CUSTOM P   2.60
Residual for MUTUAL A and  SPECIAL   2.83
Residual for SHAR STR and ACT TAKE   3.83
Residual for SHAR STR and IND CHAN   2.76
Residual for SHAR STR and TECH DEV   2.97
Residual for SHAR STR and MULTI SK   3.50
Residual for SHAR STR and COMM FOC   4.33
Residual for SHAR STR and CODEP NE   3.36
Residual for SHAR STR and JOB ROLE   4.05
Residual for SHAR STR and ROLE EXC   3.69
Residual for SHAR STR and  ICT NET   4.78
Residual for SHAR STR and      IOS   5.33
Residual for SHAR STR and ICT CORE   2.95
Residual for SHAR STR and INDVID K   4.09
Residual for SHAR STR and OUTSOURC   3.12
Residual for SHAR STR and SHAR SYS   4.43
Residual for SHAR STR and CUSTOM P   4.30
Residual for SHAR STR and LESS LEA   3.28
Residual for SHAR STR and  SPECIAL   3.97
Residual for SHAR STR and COMP ADV   2.83
Residual for SHAR STR and KNOW AND   2.98
```

Qplot of Standardized Residuals



```
    .               x* .                                                    .
    .              * .                                                      .
    .            *xx.                                                       .
    .           xx.                                                         .
    .     x  x x.                                                           .
    .    x     .                                                            .
    .   *    .                                                              .
    .      .                                                                .
    .     .                                                                 .
    .   .                                                                   .
    . .                                                                     .
-3.5.........................................................................
  -3.5                                                                     3.5
                            Standardized Residuals


Modification Indices and Expected Change

        Modification Indices for LAMBDA-Y

                 Aggre       Anch      Cyber     Switch      Spl P
              --------   --------   --------   --------   --------
 EXT FAC          4.04       0.43       - -        6.78       3.15
ACT TAKE          0.12       0.04       - -        0.07       0.25
IND CHAN          1.84       0.96       - -        0.50       0.58
TECH DEV          3.10       0.24       - -        4.59       2.46
MULTI SK          0.65       0.04       - -        0.75       1.72
COMM FOC          0.26       0.72       - -        1.88       1.30
CODEP NE          0.17       1.27       - -        0.43       0.36
JOB ROLE          0.11       1.27       0.05       - -        0.00
ROLE EXC          0.45       4.42       - -        2.10       1.04
 ICT NET          - -        0.82       1.18       1.40       0.67
     IOS          - -        6.16       0.83       0.00       0.01
RICH MED          - -        0.45       4.82       0.00       0.01
ICT INTD          - -        3.79       0.01       2.20       0.27
```

```
 ICT CORE       5.24       0.30        - -       1.46       1.43
 ICT CONN        - -       3.53       0.56       6.61       1.45
 INDVID K       1.48       0.02       5.11        - -       0.06
 RESTRUCU       4.94        - -       1.15       7.12       3.49
 MANG CHA       4.42        - -       6.60       3.44       3.04
 OUTSOURC       0.25       0.05        - -       0.27       0.34
 RULE CHA       1.52        - -       1.77       0.61       0.15
 SHAR SYS       2.23       3.12        - -       4.54       4.35
 CUSTOM P       1.14       0.17       2.97       0.09        - -
 LESS LEA       0.08       1.26       0.00       0.54        - -
  SPECIAL       0.03       0.30       0.44       1.12        - -
 COMP ADV       0.11       0.05       0.56        - -       0.79
 KNOW AND       4.77       4.96       3.12        - -       0.10

         Expected Change for LAMBDA-Y

                 Aggre       Anch      Cyber     Switch      Spl P
              --------   --------   --------   --------   --------
  EXT FAC       -0.26       0.37        - -      -0.48      -0.42
 ACT TAKE        0.08       0.21        - -       0.09      -0.22
 IND CHAN       -0.32       1.00        - -      -0.24       0.33
 TECH DEV       -0.73      -0.89        - -      -1.26      -1.19
 MULTI SK       -0.14      -0.14        - -      -0.21      -0.42
 COMM FOC        0.09       0.62        - -       0.33       0.35
 CODEP NE       -0.43       5.09        - -       0.97       1.13
 JOB ROLE       -0.07      -0.75       0.10        - -       0.03
 ROLE EXC        0.08       1.09        - -       0.24       0.22
  ICT NET        - -       -1.01      -1.40      -0.99      -0.54
      IOS        - -       -0.82      -0.30       0.01       0.02
 RICH MED        - -        3.83     -10.40      -0.22       0.34
 ICT INTD        - -        0.98      -0.05      -0.44      -0.14
 ICT CORE        0.24      -0.26        - -       0.18       0.23
 ICT CONN        - -        1.17      -0.39      -0.93      -0.39
 INDVID K        0.14      -0.05       0.48        - -      -0.06
 RESTRUCU       -0.04       - -       -0.08      -0.09      -0.10
 MANG CHA        0.05       - -        0.22       0.09       0.13
```

```
 OUTSOURC       0.07       0.13        - -       0.10       0.14
 RULE CHA      -0.03        - -      -0.10      -0.03      -0.02
 SHAR SYS       0.19      -0.96        - -       0.37       0.47
 CUSTOM P       0.07      -0.13       0.28       0.06        - -
 LESS LEA      -0.02       0.43       0.01       0.22        - -
  SPECIAL      -0.01      -0.15      -0.09      -0.14        - -
 COMP ADV      -0.02      -0.05      -0.11        - -      -0.15
 KNOW AND      -0.62      -2.07      -0.99        - -      -0.22

         Standardized Expected Change for LAMBDA-Y

               Aggre       Anch      Cyber     Switch      Spl P
            --------   --------   --------   --------   --------
  EXT FAC      -0.66       0.11        - -      -0.59      -0.30
 ACT TAKE       0.21       0.06        - -       0.11      -0.16
 IND CHAN      -0.81       0.29        - -      -0.29       0.23
 TECH DEV      -1.85      -0.26        - -      -1.55      -0.86
 MULTI SK      -0.36      -0.04        - -      -0.26      -0.30
 COMM FOC       0.22       0.18        - -       0.40       0.25
 CODEP NE      -1.09       1.49        - -       1.19       0.82
 JOB ROLE      -0.18      -0.22       0.07        - -       0.02
 ROLE EXC       0.20       0.32        - -       0.30       0.16
  ICT NET        - -      -0.29      -0.95      -1.21      -0.39
      IOS        - -      -0.24      -0.20       0.02       0.02
 RICH MED        - -       1.12      -7.07      -0.28       0.25
 ICT INTD        - -       0.29      -0.03      -0.54      -0.10
 ICT CORE       0.62      -0.08        - -       0.22       0.17
 ICT CONN        - -       0.34      -0.26      -1.14      -0.28
 INDVID K       0.36      -0.01       0.33        - -      -0.05
 RESTRUCU      -0.10        - -      -0.05      -0.12      -0.07
 MANG CHA       0.12        - -       0.15       0.11       0.09
 OUTSOURC       0.17       0.04        - -       0.12       0.10
 RULE CHA      -0.06        - -      -0.07      -0.04      -0.02
 SHAR SYS       0.47      -0.28        - -       0.46       0.34
 CUSTOM P       0.17      -0.04       0.19       0.07        - -
 LESS LEA      -0.06       0.13       0.01       0.27        - -
```

```
 SPECIAL      -0.02      -0.05      -0.06      -0.18        - -
COMP ADV      -0.06      -0.01      -0.07        - -      -0.11
KNOW AND      -1.57      -0.61      -0.68        - -      -0.16

        Completely Standardized Expected Change for LAMBDA-Y

              Aggre       Anch      Cyber     Switch      Spl P
           --------   --------   --------   --------   --------
 EXT FAC      -0.36       0.06        - -      -0.32      -0.16
ACT TAKE       0.06       0.02        - -       0.03      -0.05
IND CHAN      -0.24       0.09        - -      -0.09       0.07
TECH DEV      -0.33      -0.05        - -      -0.27      -0.15
MULTI SK      -0.14      -0.02        - -      -0.11      -0.12
COMM FOC       0.09       0.07        - -       0.16       0.10
CODEP NE      -0.07       0.10        - -       0.08       0.05
JOB ROLE      -0.08      -0.10       0.03        - -       0.01
ROLE EXC       0.13       0.20        - -       0.19       0.10
 ICT NET        - -      -0.08      -0.25      -0.31      -0.10
     IOS        - -      -0.22      -0.19       0.01       0.01
RICH MED        - -       0.07      -0.42      -0.02       0.01
ICT INTD        - -       0.19      -0.02      -0.35      -0.06
ICT CORE       0.42      -0.05        - -       0.15       0.11
ICT CONN        - -       0.18      -0.14      -0.62      -0.15
INDVID K       0.34      -0.01       0.30        - -      -0.04
RESTRUCU      -0.22        - -      -0.11      -0.24      -0.16
MANG CHA       0.19        - -       0.23       0.16       0.14
OUTSOURC       0.09       0.02        - -       0.07       0.06
RULE CHA      -0.11        - -      -0.13      -0.07      -0.03
SHAR SYS       0.27      -0.16        - -       0.27       0.20
CUSTOM P       0.15      -0.03       0.17       0.06        - -
LESS LEA      -0.04       0.09       0.00       0.19        - -
 SPECIAL      -0.02      -0.05      -0.06      -0.19        - -
COMP ADV      -0.08      -0.02      -0.10        - -      -0.15
KNOW AND      -0.53      -0.20      -0.23        - -      -0.05

No Non-Zero Modification Indices for LAMBDA-X
```

```
        Modification Indices for BETA

                 Aggre       Anch      Cyber     Switch      Spl P
              --------   --------   --------   --------   --------
     Aggre        - -       6.04        - -       7.71       3.14
      Anch       6.77        - -      11.78       5.99       1.29
     Cyber       6.04        - -        - -       0.32       0.94
    Switch        - -       2.44       7.71        - -       0.89
     Spl P       0.89       0.17       1.65        - -        - -

        Expected Change for BETA

                 Aggre       Anch      Cyber     Switch      Spl P
              --------   --------   --------   --------   --------
     Aggre        - -      -2.11        - -      -2.30      -1.13
      Anch      -0.09        - -     -11.83      -0.12      -0.07
     Cyber      -0.50        - -        - -      -0.14       0.24
    Switch        - -      -0.67       1.45        - -      -0.44
     Spl P       0.09       0.10       0.22        - -        - -

        Standardized Expected Change for BETA

                 Aggre       Anch      Cyber     Switch      Spl P
              --------   --------   --------   --------   --------
     Aggre        - -      -2.86        - -      -0.74      -0.62
      Anch      -0.12        - -     -59.43      -0.32      -0.33
     Cyber      -0.29        - -        - -      -0.17       0.48
    Switch        - -      -1.86       1.74        - -      -0.50
     Spl P       0.05       0.49       0.45        - -        - -

        Modification Indices for GAMMA

                 Inter
              --------
     Aggre       8.25
```

```
   Anch        - -
  Cyber      11.78
 Switch      11.16
  Spl P       7.46

        Expected Change for GAMMA

               Inter
            --------
  Aggre        0.44
   Anch        - -
  Cyber        0.16
 Switch        0.26
  Spl P        0.13

        Standardized Expected Change for GAMMA

               Inter
            --------
  Aggre        0.26
   Anch        - -
  Cyber        0.35
 Switch        0.32
  Spl P        0.27

No Non-Zero Modification Indices for PHI

        Modification Indices for PSI

               Aggre        Anch       Cyber      Switch       Spl P
            --------    --------    --------    --------    --------
  Aggre        - -
   Anch        6.26        - -
  Cyber        6.04       11.78        - -
 Switch        7.71        2.60        0.98        - -
  Spl P        0.99        0.14        2.28        0.89        - -
```

```
         Expected Change for PSI

                Aggre       Anch      Cyber     Switch      Spl P
              --------   --------   --------   --------   --------
     Aggre       - -
      Anch     -0.18        - -
     Cyber     -1.09      -4.83        - -
    Switch     -1.06      -0.06       0.17        - -
     Spl P     -0.17       0.01       0.11      -0.10        - -

         Standardized Expected Change for PSI

                Aggre       Anch      Cyber     Switch      Spl P
              --------   --------   --------   --------   --------
     Aggre       - -
      Anch     -0.25        - -
     Cyber     -0.63     -24.27        - -
    Switch     -0.34      -0.16       0.20        - -
     Spl P     -0.09       0.04       0.22      -0.11        - -

         Modification Indices for THETA-EPS

              EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
              --------   --------   --------   --------   --------   --------
   EXT FAC       - -
  ACT TAKE      2.19        - -
  IND CHAN      2.90       0.44        - -
  TECH DEV     11.89       2.34       9.63        - -
  MULTI SK      0.25       0.07       0.03       0.00        - -
  COMM FOC      0.54       0.51       0.22       5.75       0.00        - -
  CODEP NE      0.01       2.10       0.51       0.18       1.47       0.10
  JOB ROLE      2.62       0.28       0.00       4.08       0.30       4.26
  ROLE EXC      0.23       0.00       0.47       0.95       0.24       3.02
   ICT NET      0.01       0.03       0.07       0.02       0.01       0.01
       IOS      0.06       0.18       0.81       1.19       0.57       1.77
```

```
RICH MED      1.13      1.16      2.02      2.75      0.01      0.11
ICT INTD      0.66      0.01      1.23      4.72      0.65      0.02
ICT CORE      2.56      3.00      0.19      8.50      0.12      0.35
ICT CONN      2.35      0.00      0.29      0.12      0.34      0.03
INDVID K      0.77      0.18      0.00      0.62      0.06      0.60
RESTRUCU      0.49      0.17      0.79      0.52      1.29      0.40
MANG CHA      0.07      0.76      0.01      0.00      0.19      0.89
OUTSOURC      0.00      0.01      0.00      0.05      0.21      0.00
RULE CHA      0.08      0.00      0.04      0.02      1.36      0.19
SHAR SYS      1.10      0.00      3.15      0.01      0.18      0.00
CUSTOM P      0.32      0.17      0.20      0.25      0.08      0.09
LESS LEA      0.19      1.74      1.96      0.55      0.14      0.10
 SPECIAL      0.78      0.03      0.06      0.18      1.51      0.00
COMP ADV      0.58      1.95      0.93      1.28      0.06      0.47
KNOW AND      0.24      0.38      2.96      1.37      0.01      0.04

        Modification Indices for THETA-EPS

            CODEP NE  JOB ROLE  ROLE EXC   ICT NET       IOS  RICH MED
            --------  --------  --------  --------  --------  --------
CODEP NE        - -
JOB ROLE      0.46       - -
ROLE EXC      0.58      1.49       - -
 ICT NET      2.25      0.11      1.74       - -
     IOS      0.91      0.09      0.82      0.92       - -
RICH MED      0.01      0.63      0.01      0.28      0.19       - -
ICT INTD      0.06      3.55      5.50      1.16      0.05      4.18
ICT CORE      0.60      3.67      0.09      1.43      0.29      6.50
ICT CONN      0.11      1.36      0.00      5.63      0.01      9.14
INDVID K      1.74      0.00      4.62      2.25      0.26      1.59
RESTRUCU      0.00      0.84      0.16      0.28      4.81      0.54
MANG CHA      1.10      0.16      2.32      0.02      1.51      0.09
OUTSOURC      1.00      1.30      0.03      0.09      0.00      0.32
RULE CHA      0.22      0.01      0.85      0.39      0.01      0.54
SHAR SYS      0.10      1.33      0.31      0.15      0.39      0.03
CUSTOM P      0.28      1.29      0.10      0.14      0.24      1.97
```

```
 LESS LEA     0.36       0.91       0.01       0.47       0.31       0.29
  SPECIAL     1.15       0.01       0.00       0.62       0.19       1.76
 COMP ADV     0.00       0.01       0.30       0.64       0.01       3.30
 KNOW AND     0.10       0.35       1.25       0.00       0.22       3.68

         Modification Indices for THETA-EPS

            ICT INTD   ICT CORE   ICT CONN   INDVID K   RESTRUCU   MANG CHA
            --------   --------   --------   --------   --------   --------
 ICT INTD     - -
 ICT CORE     4.73       - -
 ICT CONN     2.95       0.37       - -
 INDVID K     0.33       2.49       1.02       - -
 RESTRUCU     3.75       0.16       1.50       3.20       - -
 MANG CHA     1.41       0.00       1.44       1.06       1.63       - -
 OUTSOURC     0.52       0.00       1.62       0.10       0.17       0.02
 RULE CHA     0.45       0.05       0.01       2.56       7.10       1.13
 SHAR SYS     0.29       0.01       0.67       1.61       0.59       0.33
 CUSTOM P     0.04       0.52       0.35       0.72       0.46       0.00
 LESS LEA     0.00       0.69       1.13       0.04       0.04       0.79
  SPECIAL     0.24       0.99       4.30       2.98       0.21       0.02
 COMP ADV     0.62       0.07       0.77       1.88       0.17       0.02
 KNOW AND     0.48       1.44       1.55       0.02       1.04       2.41

         Modification Indices for THETA-EPS

            OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
            --------   --------   --------   --------   --------   --------
 OUTSOURC     - -
 RULE CHA     0.08       - -
 SHAR SYS     1.05       0.90       - -
 CUSTOM P     0.20       0.65       0.53       - -
 LESS LEA     0.03       0.33       0.13       1.12       - -
  SPECIAL     0.01       2.22       0.65       0.54       0.09       - -
 COMP ADV     0.40       0.84       0.13       3.36       0.66       0.09
 KNOW AND     0.24       1.37       2.30       0.10       0.06       0.22
```

```
        Modification Indices for THETA-EPS

           COMP ADV   KNOW AND
           --------   --------
 COMP ADV      - -
 KNOW AND     18.22        - -

        Expected Change for THETA-EPS

            EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
           --------   --------   --------   --------   --------   --------
  EXT FAC      - -
 ACT TAKE      0.52       - -
 IND CHAN      0.57      -0.42       - -
 TECH DEV      2.06       1.72       3.35       - -
 MULTI SK      0.13      -0.13       0.07       0.03       - -
 COMM FOC     -0.18       0.33      -0.21      -1.85       0.01       - -
 CODEP NE     -0.17      -4.07       1.93      -2.03       2.42       0.61
 JOB ROLE     -0.36      -0.22      -0.03      -1.46       0.17       0.59
 ROLE EXC     -0.08      -0.01      -0.21      -0.53      -0.11       0.38
  ICT NET     -0.03       0.13      -0.18       0.15       0.04      -0.04
      IOS      0.03       0.09      -0.18       0.39      -0.11      -0.19
 RICH MED     -2.02      -3.84      -4.86     -10.16       0.31      -0.82
 ICT INTD     -0.14      -0.04      -0.33      -1.17       0.18      -0.03
 ICT CORE     -0.24      -0.50       0.12      -1.43       0.07       0.12
 ICT CONN      0.32       0.00      -0.20      -0.24      -0.16       0.05
 INDVID K     -0.09       0.08      -0.01       0.26      -0.03       0.10
 RESTRUCU      0.03      -0.04       0.08      -0.11       0.07       0.04
 MANG CHA     -0.02       0.12       0.01       0.01      -0.04       0.08
 OUTSOURC     -0.01       0.03      -0.01       0.14      -0.12       0.02
 RULE CHA      0.02       0.00       0.02       0.03      -0.09      -0.03
 SHAR SYS     -0.19       0.01      -0.57      -0.05      -0.10      -0.01
 CUSTOM P      0.06       0.09       0.09       0.18      -0.04       0.04
 LESS LEA     -0.06      -0.33       0.33      -0.32      -0.07       0.05
  SPECIAL     -0.09      -0.03       0.04      -0.13      -0.16       0.01
```

```
COMP ADV      -0.06        0.21       -0.14       -0.29        0.03       -0.07
KNOW AND      -0.15        0.37       -0.98       -1.19        0.05       -0.08

        Expected Change for THETA-EPS

            CODEP NE    JOB ROLE    ROLE EXC     ICT NET         IOS    RICH MED
            --------    --------    --------    --------    --------    --------
CODEP NE        - -
JOB ROLE        1.22        - -
ROLE EXC        1.03        0.25        - -
 ICT NET       -4.42        0.15       -0.45        - -
     IOS       -0.83       -0.04       -0.09        0.24        - -
RICH MED        1.15        1.86        0.21        2.06        0.51        - -
ICT INTD        0.34       -0.39        0.36        0.38       -0.02        3.58
ICT CORE        0.95        0.35        0.04        0.36        0.05        3.99
ICT CONN        0.54       -0.30        0.01        1.02       -0.01        6.54
INDVID K        1.09       -0.01        0.20       -0.33        0.03        1.37
RESTRUCU        0.02       -0.05        0.02       -0.05       -0.06        0.37
MANG CHA        0.59       -0.03        0.10       -0.02       -0.05        0.21
OUTSOURC       -1.55       -0.27       -0.03        0.12        0.00       -1.12
RULE CHA        0.22       -0.01        0.05       -0.07        0.00       -0.44
SHAR SYS        0.45       -0.25       -0.09       -0.14        0.07       -0.30
CUSTOM P        0.46       -0.16        0.03       -0.08        0.03       -1.59
LESS LEA        0.63        0.16        0.01       -0.19       -0.04        0.74
 SPECIAL       -0.83        0.01        0.00        0.16        0.03        1.35
COMP ADV       -0.02       -0.01       -0.04        0.13        0.00       -1.52
KNOW AND       -0.81        0.24       -0.33        0.03       -0.09       -6.35

        Expected Change for THETA-EPS

            ICT INTD    ICT CORE    ICT CONN    INDVID K    RESTRUCU    MANG CHA
            --------    --------    --------    --------    --------    --------
ICT INTD        - -
ICT CORE        0.30        - -
ICT CONN        0.33        0.10        - -
INDVID K       -0.06       -0.13       -0.12        - -
```

```
RESTRUCU       0.09      -0.02       0.07      -0.05       - -
MANG CHA       0.08       0.00       0.10       0.04      0.05       - -
OUTSOURC       0.13      -0.01      -0.28       0.03      0.02      0.01
RULE CHA      -0.04      -0.01      -0.01       0.05     -0.12      0.04
SHAR SYS      -0.09      -0.02      -0.16       0.13     -0.04     -0.04
CUSTOM P      -0.02      -0.06      -0.07       0.06     -0.02      0.00
LESS LEA      -0.01       0.09      -0.16       0.02      0.01      0.05
 SPECIAL       0.04       0.08       0.23      -0.10      0.01     -0.01
COMP ADV       0.06      -0.02      -0.08      -0.07      0.01      0.00
KNOW AND      -0.20      -0.31      -0.45      -0.03     -0.09     -0.19

        Expected Change for THETA-EPS

            OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
            --------   --------   --------   --------   --------   --------
OUTSOURC       - -
RULE CHA      -0.02       - -
SHAR SYS       0.19      -0.05       - -
CUSTOM P       0.05       0.03       0.08       - -
LESS LEA       0.02       0.02       0.05      -0.16       - -
 SPECIAL      -0.01      -0.05       0.08       0.05      0.03       - -
COMP ADV       0.05      -0.02       0.03      -0.09      0.05     -0.01
KNOW AND       0.16      -0.12       0.46      -0.06      0.06     -0.08

        Expected Change for THETA-EPS

            COMP ADV   KNOW AND
            --------   --------
COMP ADV       - -
KNOW AND       0.61       - -

        Completely Standardized Expected Change for THETA-EPS

             EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
            --------   --------   --------   --------   --------   --------
 EXT FAC       - -
```

```
ACT TAKE      0.08      - -
IND CHAN      0.09     -0.04      - -
TECH DEV      0.20      0.09     0.17      - -
MULTI SK      0.03     -0.01     0.01     0.00      - -
COMM FOC     -0.04      0.04    -0.02    -0.13     0.00      - -
CODEP NE     -0.01     -0.08     0.04    -0.02     0.07     0.02
JOB ROLE     -0.09     -0.03     0.00    -0.12     0.03     0.11
ROLE EXC     -0.03      0.00    -0.04    -0.06    -0.03     0.10
 ICT NET      0.00      0.01    -0.01     0.01     0.00     0.00
     IOS      0.01      0.02    -0.05     0.06    -0.04    -0.07
RICH MED     -0.06     -0.07    -0.09    -0.11     0.01    -0.02
ICT INTD     -0.05     -0.01    -0.06    -0.13     0.05    -0.01
ICT CORE     -0.09     -0.10     0.02    -0.17     0.02     0.03
ICT CONN      0.09      0.00    -0.03    -0.02    -0.04     0.01
INDVID K     -0.05      0.02     0.00     0.04    -0.01     0.04
RESTRUCU      0.04     -0.02     0.05    -0.04     0.06     0.03
MANG CHA     -0.01      0.05     0.00     0.00    -0.02     0.05
OUTSOURC      0.00      0.00     0.00     0.01    -0.03     0.00
RULE CHA      0.02      0.00     0.01     0.01    -0.07    -0.02
SHAR SYS     -0.06      0.00    -0.10    -0.01    -0.02     0.00
CUSTOM P      0.03      0.02     0.02     0.03    -0.01     0.02
LESS LEA     -0.02     -0.07     0.07    -0.04    -0.02     0.02
 SPECIAL     -0.05     -0.01     0.01    -0.02    -0.07     0.00
COMP ADV     -0.04      0.08    -0.06    -0.07     0.01    -0.04
KNOW AND     -0.03      0.04    -0.10    -0.07     0.01    -0.01

        Completely Standardized Expected Change for THETA-EPS

            CODEP NE  JOB ROLE  ROLE EXC   ICT NET       IOS  RICH MED
            --------  --------  --------  --------  --------  --------
CODEP NE      - -
JOB ROLE      0.04      - -
ROLE EXC      0.04      0.07      - -
 ICT NET     -0.08      0.02     -0.07      - -
     IOS     -0.05     -0.02     -0.05      0.06      - -
RICH MED      0.00      0.05      0.01      0.03      0.03      - -
```

```
ICT INTD       0.01      -0.12       0.15       0.06      -0.01       0.14
ICT CORE       0.04       0.11       0.02       0.06       0.03       0.16
ICT CONN       0.02      -0.07       0.00       0.14      -0.01       0.21
INDVID K       0.07       0.00       0.12      -0.08       0.03       0.08
RESTRUCU       0.00      -0.05       0.02      -0.03      -0.12       0.05
MANG CHA       0.06      -0.02       0.09      -0.01      -0.07       0.02
OUTSOURC      -0.06      -0.07      -0.01       0.02       0.00      -0.04
RULE CHA       0.03       0.00       0.06      -0.03       0.00      -0.05
SHAR SYS       0.02      -0.07      -0.03      -0.02       0.03      -0.01
CUSTOM P       0.03      -0.06       0.02      -0.02       0.03      -0.08
LESS LEA       0.03       0.05       0.00      -0.03      -0.03       0.03
 SPECIAL      -0.06       0.01       0.00       0.04       0.02       0.08
COMP ADV       0.00       0.00      -0.03       0.05       0.00      -0.12
KNOW AND      -0.02       0.04      -0.07       0.00      -0.03      -0.13

       Completely Standardized Expected Change for THETA-EPS

            ICT INTD   ICT CORE   ICT CONN   INDVID K   RESTRUCU   MANG CHA
            --------   --------   --------   --------   --------   --------
ICT INTD       - -
ICT CORE       0.13       - -
ICT CONN       0.12       0.04       - -
INDVID K      -0.03      -0.09      -0.06       - -
RESTRUCU       0.12      -0.02       0.08      -0.10       - -
MANG CHA       0.08       0.00       0.08       0.06       0.17       - -
OUTSOURC       0.04       0.00      -0.08       0.02       0.02       0.01
RULE CHA      -0.04      -0.01      -0.01       0.09      -0.44       0.12
SHAR SYS      -0.03      -0.01      -0.05       0.07      -0.04      -0.03
CUSTOM P      -0.01      -0.04      -0.03       0.05      -0.04       0.00
LESS LEA       0.00       0.04      -0.06       0.01       0.01       0.05
 SPECIAL       0.03       0.06       0.13      -0.10       0.03      -0.01
COMP ADV       0.05      -0.02      -0.06      -0.08       0.02      -0.01
KNOW AND      -0.04      -0.07      -0.08      -0.01      -0.06      -0.10

       Completely Standardized Expected Change for THETA-EPS
```

```
            OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
            --------   --------   --------   --------   --------   --------
 OUTSOURC       - -
 RULE CHA     -0.02        - -
 SHAR SYS      0.06      -0.06        - -
 CUSTOM P      0.02       0.04       0.04        - -
 LESS LEA      0.01       0.03       0.02      -0.10        - -
  SPECIAL     -0.01      -0.09       0.05       0.05       0.02        - -
 COMP ADV      0.04      -0.06       0.02      -0.11       0.05      -0.02
 KNOW AND      0.03      -0.07       0.09      -0.02       0.01      -0.03

         Completely Standardized Expected Change for THETA-EPS

            COMP ADV   KNOW AND
            --------   --------
 COMP ADV       - -
 KNOW AND      0.27        - -

         Modification Indices for THETA-DELTA-EPS

             EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
            --------   --------   --------   --------   --------   --------
 ALT TASK      0.21       0.17       0.11       0.00       1.15       0.21
 MUTUAL D      0.27       0.86       0.01       3.83       0.48       0.01
 MUTUAL A      0.00       0.08       1.82       0.17       0.18       0.00
 SHAR STR      0.83       0.62       0.27       0.33       0.27       0.50

         Modification Indices for THETA-DELTA-EPS

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
 ALT TASK      0.63       9.05       6.99       0.22       1.06       0.25
 MUTUAL D      0.75       0.07       2.14       0.81       1.37       0.49
 MUTUAL A      0.43       6.67       0.60       1.48       0.05       1.38
 SHAR STR      0.44       1.95       0.17       2.00       6.25       0.04
```

```
         Modification Indices for THETA-DELTA-EPS

              ICT INTD   ICT CORE   ICT CONN   INDVID K   RESTRUCU   MANG CHA
              --------   --------   --------   --------   --------   --------
 ALT TASK       0.80       0.01       0.72       0.14       0.00       0.07
 MUTUAL D       0.21       0.00       0.44       0.11       3.26       1.00
 MUTUAL A       0.98       2.88       2.98       0.46       1.63       0.18
 SHAR STR       0.00       0.32       2.73       0.13       2.37       0.29

         Modification Indices for THETA-DELTA-EPS

              OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
              --------   --------   --------   --------   --------   --------
 ALT TASK       0.35       0.12       1.87       0.39       0.03       0.00
 MUTUAL D       0.32       0.11       0.10       0.87       1.73       0.00
 MUTUAL A       1.40       1.16       0.95       1.07       0.28       1.90
 SHAR STR       0.39       2.20       2.67       1.63       1.34       1.65

         Modification Indices for THETA-DELTA-EPS

              COMP ADV   KNOW AND
              --------   --------
 ALT TASK       0.17       0.02
 MUTUAL D       0.48       2.33
 MUTUAL A       0.47       0.20
 SHAR STR       0.16       0.04

         Expected Change for THETA-DELTA-EPS

               EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
              --------   --------   --------   --------   --------   --------
 ALT TASK       0.07      -0.12       0.09       0.01      -0.22       0.09
 MUTUAL D      -0.18      -0.59      -0.05      -2.15      -0.31       0.04
 MUTUAL A       0.01       0.13      -0.59       0.32       0.14       0.01
 SHAR STR      -0.39       0.64      -0.41       0.80       0.30       0.39
```

```
         Expected Change for THETA-DELTA-EPS

            CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
            --------   --------   --------   --------   --------   --------
 ALT TASK       0.98       0.58       0.38      -0.15      -0.10       0.82
 MUTUAL D       2.35      -0.11       0.46      -0.61      -0.24       2.48
 MUTUAL A       1.27      -0.77       0.17      -0.59       0.03       2.96
 SHAR STR      -2.27       0.74       0.17       1.22       0.64      -0.87

         Expected Change for THETA-DELTA-EPS

            ICT INTD   ICT CORE   ICT CONN   INDVID K   RESTRUCU   MANG CHA
            --------   --------   --------   --------   --------   --------
 ALT TASK       0.13       0.01       0.15      -0.03       0.00       0.02
 MUTUAL D       0.14       0.01       0.26      -0.07       0.17      -0.13
 MUTUAL A       0.22      -0.34       0.48       0.09       0.09       0.04
 SHAR STR       0.02       0.20      -0.81       0.09      -0.18      -0.09

         Expected Change for THETA-DELTA-EPS

            OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
            --------   --------   --------   --------   --------   --------
 ALT TASK       0.10       0.02      -0.20       0.06      -0.02       0.01
 MUTUAL D      -0.20       0.04       0.10      -0.19       0.33       0.01
 MUTUAL A      -0.30       0.08       0.23       0.15       0.09       0.18
 SHAR STR       0.28      -0.20       0.67       0.33      -0.36       0.30

         Expected Change for THETA-DELTA-EPS

            COMP ADV   KNOW AND
            --------   --------
 ALT TASK      -0.03      -0.04
 MUTUAL D       0.10       0.90
 MUTUAL A       0.07       0.19
 SHAR STR       0.08       0.14
```

```
         Completely Standardized Expected Change for THETA-DELTA-EPS

               EXT FAC   ACT TAKE   IND CHAN   TECH DEV   MULTI SK   COMM FOC
              --------   --------   --------   --------   --------   --------
 ALT TASK       0.03      -0.02       0.02       0.00      -0.06       0.03
 MUTUAL D      -0.03      -0.05       0.00      -0.12      -0.04       0.00
 MUTUAL A       0.00       0.02      -0.08       0.02       0.02       0.00
 SHAR STR      -0.05       0.05      -0.03       0.04       0.03       0.04

         Completely Standardized Expected Change for THETA-DELTA-EPS

              CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
              --------   --------   --------   --------   --------   --------
 ALT TASK       0.04       0.18       0.16      -0.03      -0.06       0.03
 MUTUAL D       0.05      -0.02       0.09      -0.05      -0.07       0.05
 MUTUAL A       0.04      -0.15       0.05      -0.07       0.01       0.08
 SHAR STR      -0.04       0.09       0.03       0.08       0.15      -0.01

         Completely Standardized Expected Change for THETA-DELTA-EPS

              ICT INTD   ICT CORE   ICT CONN   INDVID K   RESTRUCU   MANG CHA
              --------   --------   --------   --------   --------   --------
 ALT TASK       0.06       0.01       0.06      -0.02       0.00       0.02
 MUTUAL D       0.03       0.00       0.04      -0.02       0.11      -0.06
 MUTUAL A       0.06      -0.10       0.11       0.04       0.08       0.03
 SHAR STR       0.00       0.03      -0.11       0.02      -0.10      -0.03

         Completely Standardized Expected Change for THETA-DELTA-EPS

              OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
              --------   --------   --------   --------   --------   --------
 ALT TASK       0.04       0.02      -0.08       0.04      -0.01       0.00
 MUTUAL D      -0.03       0.02       0.02      -0.05       0.07       0.00
 MUTUAL A      -0.07       0.07       0.06       0.06       0.03       0.08
 SHAR STR       0.04      -0.09       0.10       0.07      -0.06       0.08
```

```
        Completely Standardized Expected Change for THETA-DELTA-EPS

               COMP ADV   KNOW AND
               --------   --------
   ALT TASK       -0.03      -0.01
   MUTUAL D        0.04       0.10
   MUTUAL A        0.04       0.03
   SHAR STR        0.03       0.01

        Modification Indices for THETA-DELTA

               ALT TASK   MUTUAL D   MUTUAL A   SHAR STR
               --------   --------   --------   --------
   ALT TASK        - -
   MUTUAL D       0.71        - -
   MUTUAL A       4.28       1.19        - -
   SHAR STR       1.59       3.94       0.80        - -

        Expected Change for THETA-DELTA

               ALT TASK   MUTUAL D   MUTUAL A   SHAR STR
               --------   --------   --------   --------
   ALT TASK        - -
   MUTUAL D       0.36        - -
   MUTUAL A      -0.82       1.07        - -
   SHAR STR       0.57      -2.08       0.85        - -

        Completely Standardized Expected Change for THETA-DELTA

               ALT TASK   MUTUAL D   MUTUAL A   SHAR STR
               --------   --------   --------   --------
   ALT TASK        - -
   MUTUAL D       0.08        - -
   MUTUAL A      -0.25       0.15        - -
   SHAR STR       0.10      -0.17       0.09        - -
```

```
Maximum Modification Index is   18.22 for Element (26,25) of THETA-EPS


Standardized Solution

        LAMBDA-Y

               Aggre       Anch      Cyber     Switch      Spl P
            --------   --------   --------   --------   --------
 EXT FAC        - -        - -       1.03        - -        - -
ACT TAKE        - -        - -       1.92        - -        - -
IND CHAN        - -        - -       1.92        - -        - -
TECH DEV        - -        - -       2.55        - -        - -
MULTI SK        - -        - -       1.32        - -        - -
COMM FOC        - -        - -       1.53        - -        - -
CODEP NE        - -        - -       8.89        - -        - -
JOB ROLE        - -        - -        - -       1.08        - -
ROLE EXC        - -        - -       0.66        - -        - -
 ICT NET       2.53        - -        - -        - -        - -
     IOS       0.62        - -        - -        - -        - -
RICH MED       2.04        - -        - -        - -        - -
ICT INTD       0.50        - -        - -        - -        - -
ICT CORE        - -        - -       0.68        - -        - -
ICT CONN       0.36        - -        - -        - -        - -
INDVID K        - -        - -        - -       0.67        - -
RESTRUCU        - -       0.29        - -        - -        - -
MANG CHA        - -       0.31        - -        - -        - -
OUTSOURC        - -        - -       0.87        - -        - -
RULE CHA        - -       0.31        - -        - -        - -
SHAR SYS        - -        - -       0.84        - -        - -
CUSTOM P        - -        - -        - -        - -       0.72
LESS LEA        - -        - -        - -        - -       1.06
 SPECIAL        - -        - -        - -        - -       0.48
COMP ADV        - -        - -        - -       0.28        - -
KNOW AND        - -        - -        - -       1.23        - -
```

```
        LAMBDA-X

                 Inter
              --------
 ALT TASK       0.62
 MUTUAL D       1.48
 MUTUAL A       1.37
 SHAR STR       1.51

        BETA

                 Aggre       Anch      Cyber     Switch      Spl P
              --------   --------   --------   --------   --------
    Aggre         - -        - -       0.81        - -        - -
     Anch         - -        - -        - -        - -        - -
    Cyber         - -      -0.34        - -        - -        - -
   Switch        0.83        - -        - -        - -        - -
    Spl P         - -        - -        - -       0.75        - -

        GAMMA

                 Inter
              --------
    Aggre         - -
     Anch        0.01
    Cyber         - -
   Switch         - -
    Spl P         - -

        Correlation Matrix of ETA and KSI

                 Aggre       Anch      Cyber     Switch      Spl P      Inter
              --------   --------   --------   --------   --------   --------
    Aggre        1.00
     Anch       -0.28       1.00
```

```
 Cyber       0.81      -0.34       1.00
Switch       0.83      -0.23       0.68       1.00
 Spl P       0.63      -0.17       0.51       0.75       1.00
 Inter       0.00       0.01       0.00       0.00       0.00       1.00

        PSI
        Note: This matrix is diagonal.

               Aggre       Anch      Cyber     Switch      Spl P
            --------   --------   --------   --------   --------
                0.34       1.00       0.88       0.30       0.44

        Regression Matrix ETA on KSI (Standardized)

               Inter
            --------
 Aggre          0.00
  Anch          0.01
 Cyber          0.00
Switch          0.00
 Spl P          0.00


Completely Standardized Solution

        LAMBDA-Y

               Aggre       Anch      Cyber     Switch      Spl P
            --------   --------   --------   --------   --------
 EXT FAC         - -        - -       0.56        - -        - -
ACT TAKE         - -        - -       0.55        - -        - -
IND CHAN         - -        - -       0.57        - -        - -
TECH DEV         - -        - -       0.45        - -        - -
MULTI SK         - -        - -       0.54        - -        - -
COMM FOC         - -        - -       0.62        - -        - -
```

```
 CODEP NE       - -        - -       0.59        - -        - -
 JOB ROLE       - -        - -        - -       0.50        - -
 ROLE EXC       - -        - -       0.41        - -        - -
  ICT NET      0.65        - -        - -        - -        - -
      IOS      0.56        - -        - -        - -        - -
 RICH MED      0.12        - -        - -        - -        - -
 ICT INTD      0.32        - -        - -        - -        - -
 ICT CORE       - -        - -       0.47        - -        - -
 ICT CONN      0.19        - -        - -        - -        - -
 INDVID K       - -        - -        - -       0.63        - -
 RESTRUCU       - -       0.62        - -        - -        - -
 MANG CHA       - -       0.48        - -        - -        - -
 OUTSOURC       - -        - -       0.47        - -        - -
 RULE CHA       - -       0.55        - -        - -        - -
 SHAR SYS       - -        - -       0.49        - -        - -
 CUSTOM P       - -        - -        - -        - -       0.64
 LESS LEA       - -        - -        - -        - -       0.74
  SPECIAL       - -        - -        - -        - -       0.51
 COMP ADV       - -        - -        - -       0.37        - -
 KNOW AND       - -        - -        - -       0.41        - -

         LAMBDA-X

                Inter
             --------
 ALT TASK      0.43
 MUTUAL D      0.47
 MUTUAL A      0.59
 SHAR STR      0.38

         BETA

                Aggre       Anch      Cyber     Switch      Spl P
             --------   --------   --------   --------   --------
    Aggre       - -        - -       0.81        - -        - -
     Anch       - -        - -        - -        - -        - -
```

```
 Cyber        - -       -0.34         - -         - -         - -
Switch       0.83         - -         - -         - -         - -
 Spl P        - -         - -         - -        0.75         - -

     GAMMA

                Inter
             --------
 Aggre            - -
  Anch           0.01
 Cyber            - -
Switch            - -
 Spl P            - -

     Correlation Matrix of ETA and KSI

                Aggre        Anch       Cyber      Switch       Spl P       Inter
             --------    --------    --------    --------    --------    --------
 Aggre           1.00
  Anch          -0.28        1.00
 Cyber           0.81       -0.34        1.00
Switch           0.83       -0.23        0.68        1.00
 Spl P           0.63       -0.17        0.51        0.75        1.00
 Inter           0.00        0.01        0.00        0.00        0.00        1.00

     PSI
     Note: This matrix is diagonal.

                Aggre        Anch       Cyber      Switch       Spl P
             --------    --------    --------    --------    --------
                 0.34        1.00        0.88        0.30        0.44

     THETA-EPS

              EXT FAC    ACT TAKE    IND CHAN    TECH DEV    MULTI SK    COMM FOC
             --------    --------    --------    --------    --------    --------
```

```
        0.69       0.70       0.68       0.80       0.71       0.62

 THETA-EPS

    CODEP NE   JOB ROLE   ROLE EXC    ICT NET        IOS   RICH MED
    --------   --------   --------   --------   --------   --------
        0.65       0.75       0.83       0.57       0.68       0.99

 THETA-EPS

    ICT INTD   ICT CORE   ICT CONN   INDVID K   RESTRUCU   MANG CHA
    --------   --------   --------   --------   --------   --------
        0.89       0.78       0.96       0.60       0.61       0.77

 THETA-EPS

    OUTSOURC   RULE CHA   SHAR SYS   CUSTOM P   LESS LEA    SPECIAL
    --------   --------   --------   --------   --------   --------
        0.78       0.70       0.76       0.59       0.45       0.74

 THETA-EPS

    COMP ADV   KNOW AND
    --------   --------
        0.86       0.83

 THETA-DELTA

    ALT TASK   MUTUAL D   MUTUAL A   SHAR STR
    --------   --------   --------   --------
        0.82       0.78       0.65       0.85

 Regression Matrix ETA on KSI (Standardized)

       Inter
    --------
```

```
   Aggre       0.00
    Anch       0.01
   Cyber       0.00
  Switch       0.00
   Spl P       0.00


Total and Indirect Effects

        Total Effects of KSI on ETA

                 Inter
              --------
   Aggre       -0.01
              (0.06)
               -0.12

    Anch        0.00
              (0.02)
                0.12

   Cyber        0.00
              (0.02)
               -0.12

  Switch        0.00
              (0.02)
               -0.12

   Spl P        0.00
              (0.01)
               -0.12

        Indirect Effects of KSI on ETA
```

```
               Inter
            --------
 Aggre         -0.01
              (0.06)
               -0.12

  Anch          - -

 Cyber          0.00
              (0.02)
               -0.12

Switch          0.00
              (0.02)
               -0.12

 Spl P          0.00
              (0.01)
               -0.12

      Total Effects of ETA on ETA

               Aggre       Anch      Cyber     Switch      Spl P
            --------   --------   --------   --------   --------
 Aggre          - -       -2.39       3.01        - -        - -
                          (0.85)     (0.57)
                          -2.81       5.24

  Anch          - -         - -        - -        - -        - -

 Cyber          - -       -0.79        - -        - -        - -
                          (0.29)
                          -2.73
```

```
 Switch       0.41      -0.97       1.22        - -        - -
            (0.09)     (0.38)     (0.31)
              4.46      -2.53       3.90

  Spl P       0.18      -0.43       0.54       0.44        - -
            (0.03)     (0.16)     (0.12)     (0.10)
              5.19      -2.64       4.35       4.24

  Largest Eigenvalue of B*B' (Stability Index) is   9.067

       Indirect Effects of ETA on ETA

             Aggre       Anch      Cyber     Switch      Spl P
          --------   --------   --------   --------   --------
  Aggre        - -      -2.39        - -        - -        - -
                       (0.85)
                        -2.81

   Anch        - -        - -        - -        - -        - -

  Cyber        - -        - -        - -        - -        - -

 Switch        - -      -0.97       1.22        - -        - -
                       (0.38)     (0.31)
                        -2.53       3.90

  Spl P       0.18      -0.43       0.54        - -        - -
            (0.03)     (0.16)     (0.12)
              5.19      -2.64       4.35

       Total Effects of ETA on Y

             Aggre       Anch      Cyber     Switch      Spl P
          --------   --------   --------   --------   --------
```

EXT FAC	- -	-1.20 (0.43) -2.82	1.51 (0.29) 5.29	- -	- -
ACT TAKE	- -	-2.24 (0.80) -2.81	2.82 (0.54) 5.27	- -	- -
IND CHAN	- -	-2.24 (0.79) -2.83	2.83 (0.53) 5.36	- -	- -
TECH DEV	- -	-2.97 (1.10) -2.71	3.75 (0.80) 4.67	- -	- -
MULTI SK	- -	-1.54 (0.55) -2.80	1.95 (0.37) 5.20	- -	- -
COMM FOC	- -	-1.78 (0.62) -2.86	2.25 (0.40) 5.58	- -	- -
CODEP NE	- -	-10.37 (3.65) -2.84	13.08 (2.40) 5.46	- -	- -
JOB ROLE	0.36 (0.07) 5.14	-0.85 (0.32) -2.64	1.08 (0.25) 4.32	0.88 (0.21) 4.24	- -
ROLE EXC	- -	-0.77 (0.29) -2.66	0.97 (0.22) 4.42	- -	- -

ICT NET	1.00	-2.39	3.01	- -	- -
		(0.85)	(0.57)		
		-2.81	5.24		
IOS	0.25	-0.59	0.74	- -	- -
	(0.04)	(0.21)	(0.15)		
	6.30	-2.75	4.90		
RICH MED	0.81	-1.93	2.43	- -	- -
	(0.54)	(1.43)	(1.65)		
	1.50	-1.35	1.47		
ICT INTD	0.20	-0.47	0.60	- -	- -
	(0.05)	(0.20)	(0.17)		
	3.90	-2.41	3.48		
ICT CORE	- -	-0.79	1.00	- -	- -
		(0.29)			
		-2.73			
ICT CONN	0.14	-0.34	0.42	- -	- -
	(0.06)	(0.18)	(0.19)		
	2.36	-1.87	2.25		
INDVID K	0.22	-0.53	0.67	0.55	- -
	(0.04)	(0.19)	(0.14)	(0.12)	
	6.04	-2.74	4.82	4.66	
RESTRUCU	- -	1.00	- -	- -	- -
MANG CHA	- -	1.07	- -	- -	- -
		(0.28)			
		3.80			
OUTSOURC	- -	-1.02	1.28	- -	- -
		(0.37)	(0.27)		

```
                   -2.74      4.81

 RULE CHA    - -    1.05       - -        - -        - -
                   (0.27)
                    3.86

 SHAR SYS    - -   -0.98      1.23        - -        - -
                   (0.36)    (0.25)
                   -2.76      4.92

 CUSTOM P   0.18   -0.43      0.54       0.44       1.00
           (0.03)  (0.16)    (0.12)     (0.10)
            5.19   -2.64      4.35       4.24

 LESS LEA   0.26   -0.63      0.79       0.65       1.48
           (0.05)  (0.23)    (0.17)     (0.15)     (0.22)
            5.63   -2.70      4.60       4.47       6.66

  SPECIAL   0.12   -0.29      0.36       0.30       0.67
           (0.03)  (0.11)    (0.09)     (0.08)     (0.12)
            4.64   -2.56      4.01       3.92       5.51

 COMP ADV   0.09   -0.22      0.28       0.23        - -
           (0.02)  (0.09)    (0.08)     (0.06)
            4.12   -2.46      3.66       3.62

 KNOW AND   0.41   -0.97      1.22       1.00        - -
           (0.09)  (0.38)    (0.31)
            4.46   -2.53      3.90

         Indirect Effects of ETA on Y

               Aggre      Anch      Cyber     Switch      Spl P
            --------  --------   --------   --------   --------
  EXT FAC        - -     -1.20        - -        - -        - -
```

		(0.43) -2.82			
ACT TAKE	- -	-2.24 (0.80) -2.81	- -	- -	- -
IND CHAN	- -	-2.24 (0.79) -2.83	- -	- -	- -
TECH DEV	- -	-2.97 (1.10) -2.71	- -	- -	- -
MULTI SK	- -	-1.54 (0.55) -2.80	- -	- -	- -
COMM FOC	- -	-1.78 (0.62) -2.86	- -	- -	- -
CODEP NE	- -	-10.37 (3.65) -2.84	- -	- -	- -
JOB ROLE	0.36 (0.07) 5.14	-0.85 (0.32) -2.64	1.08 (0.25) 4.32	- -	- -
ROLE EXC	- -	-0.77 (0.29) -2.66	- -	- -	- -
ICT NET	- -	-2.39	3.01	- -	- -

		(0.85)	(0.57)		
		-2.81	5.24		
IOS	- -	-0.59	0.74	- -	- -
		(0.21)	(0.15)		
		-2.75	4.90		
RICH MED	- -	-1.93	2.43	- -	- -
		(1.43)	(1.65)		
		-1.35	1.47		
ICT INTD	- -	-0.47	0.60	- -	- -
		(0.20)	(0.17)		
		-2.41	3.48		
ICT CORE	- -	-0.79	- -	- -	- -
		(0.29)			
		-2.73			
ICT CONN	- -	-0.34	0.42	- -	- -
		(0.18)	(0.19)		
		-1.87	2.25		
INDVID K	0.22	-0.53	0.67	- -	- -
	(0.04)	(0.19)	(0.14)		
	6.04	-2.74	4.82		
RESTRUCU	- -	- -	- -	- -	- -
MANG CHA	- -	- -	- -	- -	- -
OUTSOURC	- -	-1.02	- -	- -	- -
		(0.37)			
		-2.74			
RULE CHA	- -	- -	- -	- -	- -

```
SHAR SYS        - -      -0.98        - -        - -        - -
                         (0.36)
                         -2.76

CUSTOM P       0.18      -0.43       0.54       0.44        - -
              (0.03)     (0.16)     (0.12)     (0.10)
               5.19      -2.64       4.35       4.24

LESS LEA       0.26      -0.63       0.79       0.65        - -
              (0.05)     (0.23)     (0.17)     (0.15)
               5.63      -2.70       4.60       4.47

 SPECIAL       0.12      -0.29       0.36       0.30        - -
              (0.03)     (0.11)     (0.09)     (0.08)
               4.64      -2.56       4.01       3.92

COMP ADV       0.09      -0.22       0.28        - -        - -
              (0.02)     (0.09)     (0.08)
               4.12      -2.46       3.66

KNOW AND       0.41      -0.97       1.22        - -        - -
              (0.09)     (0.38)     (0.31)
               4.46      -2.53       3.90


        Total Effects of KSI on Y

                Inter
              --------
 EXT FAC        0.00
               (0.03)
               -0.12

ACT TAKE       -0.01
               (0.05)
```

	-0.12
IND CHAN	-0.01
	(0.05)
	-0.12
TECH DEV	-0.01
	(0.07)
	-0.12
MULTI SK	0.00
	(0.04)
	-0.12
COMM FOC	-0.01
	(0.04)
	-0.12
CODEP NE	-0.03
	(0.25)
	-0.12
JOB ROLE	0.00
	(0.02)
	-0.12
ROLE EXC	0.00
	(0.02)
	-0.12
ICT NET	-0.01
	(0.06)
	-0.12
IOS	0.00
	(0.01)

```
                -0.12

RICH MED        -0.01
                (0.05)
                -0.12

ICT INTD         0.00
                (0.01)
                -0.12

ICT CORE         0.00
                (0.02)
                -0.12

ICT CONN         0.00
                (0.01)
                -0.12

INDVID K         0.00
                (0.01)
                -0.12

RESTRUCU         0.00
                (0.02)
                 0.12

MANG CHA         0.00
                (0.03)
                 0.12

OUTSOURC         0.00
                (0.02)
                -0.12

RULE CHA         0.00
                (0.03)
```

```
                0.12

SHAR SYS        0.00
              (0.02)
               -0.12

CUSTOM P        0.00
              (0.01)
               -0.12

LESS LEA        0.00
              (0.02)
               -0.12

 SPECIAL        0.00
              (0.01)
               -0.12

COMP ADV        0.00
              (0.01)
               -0.12

KNOW AND        0.00
              (0.02)
               -0.12


Standardized Total and Indirect Effects

        Standardized Total Effects of KSI on ETA

               Inter
            --------
   Aggre        0.00
```

```
   Anch       0.01
  Cyber       0.00
 Switch       0.00
  Spl P       0.00

      Standardized Indirect Effects of KSI on ETA

               Inter
            --------
  Aggre       0.00
   Anch        - -
  Cyber       0.00
 Switch       0.00
  Spl P       0.00

      Standardized Total Effects of ETA on ETA

               Aggre       Anch      Cyber     Switch      Spl P
            --------   --------   --------   --------   --------
  Aggre        - -        -0.28       0.81        - -        - -
   Anch        - -          - -        - -        - -        - -
  Cyber        - -        -0.34        - -        - -        - -
 Switch       0.83        -0.23       0.68        - -        - -
  Spl P       0.63        -0.17       0.51       0.75        - -

      Standardized Indirect Effects of ETA on ETA

               Aggre       Anch      Cyber     Switch      Spl P
            --------   --------   --------   --------   --------
  Aggre        - -        -0.28        - -        - -        - -
   Anch        - -          - -        - -        - -        - -
  Cyber        - -          - -        - -        - -        - -
 Switch        - -        -0.23       0.68        - -        - -
  Spl P       0.63        -0.17       0.51        - -        - -

      Standardized Total Effects of ETA on Y
```

```
              Aggre       Anch      Cyber     Switch      Spl P
            --------   --------   --------   --------   --------
  EXT FAC      - -       -0.35       1.03       - -        - -
 ACT TAKE      - -       -0.66       1.92       - -        - -
 IND CHAN      - -       -0.66       1.92       - -        - -
 TECH DEV      - -       -0.87       2.55       - -        - -
 MULTI SK      - -       -0.45       1.32       - -        - -
 COMM FOC      - -       -0.52       1.53       - -        - -
 CODEP NE      - -       -3.04       8.89       - -        - -
 JOB ROLE     0.90       -0.25       0.73       1.08       - -
 ROLE EXC      - -       -0.23       0.66       - -        - -
  ICT NET     2.53       -0.70       2.05       - -        - -
      IOS     0.62       -0.17       0.50       - -        - -
 RICH MED     2.04       -0.56       1.65       - -        - -
 ICT INTD     0.50       -0.14       0.40       - -        - -
 ICT CORE      - -       -0.23       0.68       - -        - -
 ICT CONN     0.36       -0.10       0.29       - -        - -
 INDVID K     0.56       -0.16       0.46       0.67       - -
 RESTRUCU      - -        0.29       - -        - -        - -
 MANG CHA      - -        0.31       - -        - -        - -
 OUTSOURC      - -       -0.30       0.87       - -        - -
 RULE CHA      - -        0.31       - -        - -        - -
 SHAR SYS      - -       -0.29       0.84       - -        - -
 CUSTOM P     0.45       -0.12       0.36       0.54       0.72
 LESS LEA     0.66       -0.18       0.54       0.80       1.06
  SPECIAL     0.30       -0.08       0.25       0.36       0.48
 COMP ADV     0.23       -0.06       0.19       0.28       - -
 KNOW AND     1.02       -0.28       0.83       1.23       - -

         Completely Standardized Total Effects of ETA on Y

              Aggre       Anch      Cyber     Switch      Spl P
            --------   --------   --------   --------   --------
  EXT FAC      - -       -0.19       0.56       - -        - -
 ACT TAKE      - -       -0.19       0.55       - -        - -
```

```
IND CHAN        - -      -0.19       0.57        - -         - -
TECH DEV        - -      -0.15       0.45        - -         - -
MULTI SK        - -      -0.18       0.54        - -         - -
COMM FOC        - -      -0.21       0.62        - -         - -
CODEP NE        - -      -0.20       0.59        - -         - -
JOB ROLE       0.41      -0.11       0.34       0.50         - -
ROLE EXC        - -      -0.14       0.41        - -         - -
 ICT NET       0.65      -0.18       0.53        - -         - -
     IOS       0.56      -0.16       0.46        - -         - -
RICH MED       0.12      -0.03       0.10        - -         - -
ICT INTD       0.32      -0.09       0.26        - -         - -
ICT CORE        - -      -0.16       0.47        - -         - -
ICT CONN       0.19      -0.05       0.16        - -         - -
INDVID K       0.52      -0.15       0.42       0.63         - -
RESTRUCU        - -       0.62        - -        - -         - -
MANG CHA        - -       0.48        - -        - -         - -
OUTSOURC        - -      -0.16       0.47        - -         - -
RULE CHA        - -       0.55        - -        - -         - -
SHAR SYS        - -      -0.17       0.49        - -         - -
CUSTOM P       0.40      -0.11       0.32       0.48        0.64
LESS LEA       0.46      -0.13       0.37       0.55        0.74
 SPECIAL       0.32      -0.09       0.26       0.38        0.51
COMP ADV       0.31      -0.09       0.25       0.37         - -
KNOW AND       0.34      -0.09       0.28       0.41         - -

        Standardized Indirect Effects of ETA on Y

                  Aggre       Anch      Cyber     Switch      Spl P
               --------   --------   --------   --------   --------
 EXT FAC        - -      -0.35        - -        - -         - -
ACT TAKE        - -      -0.66        - -        - -         - -
IND CHAN        - -      -0.66        - -        - -         - -
TECH DEV        - -      -0.87        - -        - -         - -
MULTI SK        - -      -0.45        - -        - -         - -
COMM FOC        - -      -0.52        - -        - -         - -
CODEP NE        - -      -3.04        - -        - -         - -
```

```
 JOB ROLE      0.90      -0.25       0.73        - -        - -
 ROLE EXC       - -      -0.23        - -        - -        - -
  ICT NET       - -      -0.70       2.05        - -        - -
      IOS       - -      -0.17       0.50        - -        - -
 RICH MED       - -      -0.56       1.65        - -        - -
 ICT INTD       - -      -0.14       0.40        - -        - -
 ICT CORE       - -      -0.23        - -        - -        - -
 ICT CONN       - -      -0.10       0.29        - -        - -
 INDVID K      0.56      -0.16       0.46        - -        - -
 RESTRUCU       - -        - -        - -        - -        - -
 MANG CHA       - -        - -        - -        - -        - -
 OUTSOURC       - -      -0.30        - -        - -        - -
 RULE CHA       - -        - -        - -        - -        - -
 SHAR SYS       - -      -0.29        - -        - -        - -
 CUSTOM P      0.45      -0.12       0.36       0.54        - -
 LESS LEA      0.66      -0.18       0.54       0.80        - -
  SPECIAL      0.30      -0.08       0.25       0.36        - -
 COMP ADV      0.23      -0.06       0.19        - -        - -
 KNOW AND      1.02      -0.28       0.83        - -        - -

         Completely Standardized Indirect Effects of ETA on Y

              Aggre       Anch      Cyber     Switch      Spl P
           --------   --------   --------   --------   --------
  EXT FAC       - -      -0.19        - -        - -        - -
 ACT TAKE       - -      -0.19        - -        - -        - -
 IND CHAN       - -      -0.19        - -        - -        - -
 TECH DEV       - -      -0.15        - -        - -        - -
 MULTI SK       - -      -0.18        - -        - -        - -
 COMM FOC       - -      -0.21        - -        - -        - -
 CODEP NE       - -      -0.20        - -        - -        - -
 JOB ROLE      0.41      -0.11       0.34        - -        - -
 ROLE EXC       - -      -0.14        - -        - -        - -
  ICT NET       - -      -0.18       0.53        - -        - -
      IOS       - -      -0.16       0.46        - -        - -
 RICH MED       - -      -0.03       0.10        - -        - -
```

```
ICT INTD         - -       -0.09       0.26        - -        - -
ICT CORE         - -       -0.16        - -        - -        - -
ICT CONN         - -       -0.05       0.16        - -        - -
INDVID K        0.52       -0.15       0.42        - -        - -
RESTRUCU         - -        - -         - -        - -        - -
MANG CHA         - -        - -         - -        - -        - -
OUTSOURC         - -       -0.16        - -        - -        - -
RULE CHA         - -        - -         - -        - -        - -
SHAR SYS         - -       -0.17        - -        - -        - -
CUSTOM P        0.40       -0.11       0.32       0.48        - -
LESS LEA        0.46       -0.13       0.37       0.55        - -
 SPECIAL        0.32       -0.09       0.26       0.38        - -
COMP ADV        0.31       -0.09       0.25        - -        - -
KNOW AND        0.34       -0.09       0.28        - -        - -

        Standardized Total Effects of KSI on Y

               Inter
            --------
 EXT FAC       -0.01
ACT TAKE       -0.01
IND CHAN       -0.01
TECH DEV       -0.01
MULTI SK       -0.01
COMM FOC       -0.01
CODEP NE       -0.04
JOB ROLE        0.00
ROLE EXC        0.00
 ICT NET       -0.01
     IOS        0.00
RICH MED       -0.01
ICT INTD        0.00
ICT CORE        0.00
ICT CONN        0.00
INDVID K        0.00
RESTRUCU        0.00
```

```
MANG CHA       0.00
OUTSOURC       0.00
RULE CHA       0.00
SHAR SYS       0.00
CUSTOM P       0.00
LESS LEA       0.00
 SPECIAL       0.00
COMP ADV       0.00
KNOW AND       0.00

        Completely Standardized Total Effects of KSI on Y

                 Inter
              --------
 EXT FAC       0.00
ACT TAKE       0.00
IND CHAN       0.00
TECH DEV       0.00
MULTI SK       0.00
COMM FOC       0.00
CODEP NE       0.00
JOB ROLE       0.00
ROLE EXC       0.00
 ICT NET       0.00
     IOS       0.00
RICH MED       0.00
ICT INTD       0.00
ICT CORE       0.00
ICT CONN       0.00
INDVID K       0.00
RESTRUCU       0.01
MANG CHA       0.01
OUTSOURC       0.00
RULE CHA       0.01
SHAR SYS       0.00
CUSTOM P       0.00
```

```
LESS LEA       0.00
 SPECIAL       0.00
COMP ADV       0.00
KNOW AND       0.00
```

UTAUT - OLS Data Set

```
Covariance Matrix

               BI1A       BI2A       BI3A        U6A       RA1A       RA5A
           --------   --------   --------   --------   --------   --------
     BI1A    31.764
     BI2A    11.831     17.672
     BI3A    15.882     11.846     31.764
      U6A     5.234      3.824      4.755      7.246
     RA1A     4.341      3.178      3.916      3.409      9.039
     RA5A     3.204      2.356      2.923      2.795      3.316      6.052
     OE7A     5.321      3.965      5.236      2.952      3.397      2.752
    EOU3A    20.439     15.939     20.861      9.480      7.169      8.824
    EOU5A    23.719     18.004     23.967      9.349      8.156      7.410
    EOU6A     7.684      5.827      7.709      3.135      2.938      2.575
     EU4A    15.157     11.496     15.145      6.056      5.923      4.998
     SN1A     3.073      1.941      1.830      2.310      0.477      0.087
     SN2A     3.122      1.976      1.872      2.263      0.632     -0.001
     SF2A     3.584      2.879      4.340      0.700      0.179      0.031
     SF4A     4.033      3.719      6.469      7.631      6.123      2.657
    PBC2A     1.991      1.566      2.312      1.212      0.234      0.848
    PBC3A    11.400      7.976     11.513      4.624      2.203      4.915
    PBC5A     0.269     -0.113     -0.012      0.363      0.039      0.990
     FC3A    -1.885     -0.810     -1.566      0.570     -0.346     -0.147

Covariance Matrix

               OE7A      EOU3A      EOU5A      EOU6A       EU4A       SN1A
           --------   --------   --------   --------   --------   --------
     OE7A     7.246
    EOU3A    10.954    145.664
    EOU5A    10.952     70.200    171.866
    EOU6A     3.360     23.299     27.968     18.665
     EU4A     6.630     46.492     56.998     19.011     77.450
     SN1A     0.459      4.067      2.873      1.297      2.762     20.998
```

```
    SN2A       0.348       3.433       2.406       1.096       2.617      10.499
    SF2A       0.302       5.888       5.022       1.745       3.445       3.017
    SF4A       3.106       2.210      -6.426      -1.218      -4.173       8.974
   PBC2A       0.954       4.760       4.078       1.471      -0.089       1.343
   PBC3A       7.277      26.908      33.582       9.109      20.440      -3.559
   PBC5A       1.010       4.474       3.818       1.354       2.298       0.100
    FC3A      -0.674       0.930      -0.786      -0.164      -0.687      -0.233

Covariance Matrix

                SN2A        SF2A        SF4A       PBC2A       PBC3A       PBC5A
            --------    --------    --------    --------    --------    --------
    SN2A      20.998
    SF2A       3.168      11.875
    SF4A       9.520       7.136     144.648
   PBC2A       0.504       0.322      -1.033       6.182
   PBC3A      -4.367       1.972     -12.634       5.641      80.848
   PBC5A      -0.380      -0.628      -2.142       1.314       5.151       2.000
    FC3A      -0.426      -0.295      -1.828      -1.214       0.661       0.543

Covariance Matrix

                FC3A
            --------
    FC3A      10.329



 Parameter Specifications

         LAMBDA-Y

              BEHAVE
            --------
    BI1A           0
```

```
         BI2A          1
         BI3A          2

            LAMBDA-X

                PERFORM     EFFORT     SOCIAL      FACIL
               --------   --------   --------   --------
          U6A         0          0          0          0
         RA1A         3          0          0          0
         RA5A         4          0          0          0
         OE7A         5          0          0          0
        EOU3A         0          0          0          0
        EOU5A         0          6          0          0
        EOU6A         0          7          0          0
         EU4A         0          8          0          0
         SN1A         0          0          9          0
         SN2A         0          0         10          0
         SF2A         0          0          0          0
         SF4A         0          0         11          0
        PBC2A         0          0          0          0
        PBC3A         0          0          0         12
        PBC5A         0          0          0         13
         FC3A         0          0          0         14

            GAMMA

                PERFORM     EFFORT     SOCIAL      FACIL
               --------   --------   --------   --------
       BEHAVE        15         16         17          0

            PHI

                PERFORM     EFFORT     SOCIAL      FACIL
               --------   --------   --------   --------
      PERFORM        18
       EFFORT        19         20
```

```
SOCIAL         21         22         23
 FACIL         24         25         26         27

      PSI

           BEHAVE
         --------
               28

      THETA-EPS

             BI1A       BI2A       BI3A
         --------   --------   --------
               29         30         31

      THETA-DELTA

              U6A       RA1A       RA5A       OE7A      EOU3A      EOU5A
         --------   --------   --------   --------   --------   --------
               32         33         34         35         36         37

      THETA-DELTA

            EOU6A       EU4A       SN1A       SN2A       SF2A       SF4A
         --------   --------   --------   --------   --------   --------
               38         39         40         41         42         43

      THETA-DELTA

            PBC2A      PBC3A      PBC5A       FC3A
         --------   --------   --------   --------
               44         45         46         47
```

```
Number of Iterations = 32

LISREL Estimates (Maximum Likelihood)

       LAMBDA-Y

             BEHAVE
            --------
    BI1A      1.000

    BI2A      0.744
            (0.067)
             11.120

    BI3A      0.982
            (0.089)
             11.012


       LAMBDA-X

            PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
     U6A      1.000       - -        - -        - -

    RA1A      1.035       - -        - -        - -
            (0.110)
              9.421

    RA5A      0.881       - -        - -        - -
            (0.091)
              9.694
```

OE7A	1.036 (0.102) 10.173	- -	- -	- -
EOU3A	- -	1.000	- -	- -
EOU5A	- -	1.168 (0.108) 10.782	- -	- -
EOU6A	- -	0.386 (0.036) 10.794	- -	- -
EU4A	- -	0.767 (0.072) 10.624	- -	- -
SN1A	- -	- -	2.789 (0.590) 4.729	- -
SN2A	- -	- -	2.987 (0.641) 4.657	- -
SF2A	- -	- -	1.000	- -
SF4A	- -	- -	3.062 (0.878) 3.489	- -
PBC2A	- -	- -	- -	1.000

```
   PBC3A       - -         - -         - -       5.313
                                                (0.860)
                                                 6.180

   PBC5A       - -         - -         - -       0.837
                                                (0.135)
                                                 6.180

    FC3A       - -         - -         - -       0.091
                                                (0.182)
                                                 0.500


         GAMMA

             PERFORM      EFFORT      SOCIAL       FACIL
            --------    --------    --------    --------
  BEHAVE       0.836       0.206       0.479        - -
             (0.191)     (0.042)     (0.240)
               4.374       4.861       1.991


         Covariance Matrix of ETA and KSI

              BEHAVE     PERFORM      EFFORT      SOCIAL       FACIL
            --------    --------    --------    --------    --------
  BEHAVE      16.098
 PERFORM       4.501       3.157
  EFFORT      20.264       8.217      62.134
  SOCIAL       1.108       0.343       1.177       1.207
   FACIL       1.525       0.845       4.268      -0.132       1.223

         PHI
```

```
             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
 PERFORM       3.157
             (0.495)
               6.380

  EFFORT       8.217     62.134
             (1.254)    (9.602)
               6.555      6.471

  SOCIAL       0.343      1.177      1.207
             (0.158)    (0.657)    (0.462)
               2.177      1.792      2.610

   FACIL       0.845      4.268     -0.132      1.223
             (0.192)    (0.897)    (0.100)    (0.332)
               4.391      4.760     -1.322      3.680


         PSI

              BEHAVE
            --------
               7.619
             (1.347)
               5.658


         Squared Multiple Correlations for Structural Equations

              BEHAVE
            --------
               0.527

         Squared Multiple Correlations for Reduced Form
```

```
         BEHAVE
       --------
          0.527

 THETA-EPS

           BI1A       BI2A       BI3A
       --------   --------   --------
         15.666      8.763     16.254
        (1.587)    (0.884)    (1.600)
          9.870      9.913     10.156


 Squared Multiple Correlations for Y - Variables

           BI1A       BI2A       BI3A
       --------   --------   --------
          0.507      0.504      0.488

 THETA-DELTA

            U6A       RA1A       RA5A       OE7A      EOU3A      EOU5A
       --------   --------   --------   --------   --------   --------
          4.088      5.656      3.603      3.859     83.530     87.110
        (0.380)    (0.494)    (0.324)    (0.373)    (7.347)    (8.211)
         10.754     11.450     11.125     10.336     11.370     10.610


 THETA-DELTA

          EOU6A       EU4A       SN1A       SN2A       SF2A       SF4A
       --------   --------   --------   --------   --------   --------
          9.431     40.854     11.610     10.235     10.669    133.333
        (0.891)    (3.760)    (1.670)    (1.803)    (0.818)   (10.080)
```

```
     10.589     10.865      6.954      5.676     13.037     13.227

 THETA-DELTA

      PBC2A      PBC3A      PBC5A       FC3A
   --------   --------   --------   --------
      4.960     46.341      1.144     10.319
    (0.410)    (5.542)    (0.137)    (0.749)
     12.095      8.361      8.339     13.778


 Squared Multiple Correlations for X - Variables

        U6A       RA1A       RA5A       OE7A      EOU3A      EOU5A
   --------   --------   --------   --------   --------   --------
      0.436      0.374      0.405      0.467      0.427      0.493

 Squared Multiple Correlations for X - Variables

      EOU6A       EU4A       SN1A       SN2A       SF2A       SF4A
   --------   --------   --------   --------   --------   --------
      0.495      0.473      0.447      0.513      0.102      0.078

 Squared Multiple Correlations for X - Variables

      PBC2A      PBC3A      PBC5A       FC3A
   --------   --------   --------   --------
      0.198      0.427      0.428      0.001


                           Goodness of Fit Statistics

                             Degrees of Freedom = 143
                Minimum Fit Function Chi-Square = 297.659 (P = 0.00)
```

```
  Normal Theory Weighted Least Squares Chi-Square = 288.816 (P = 0.00)
           Estimated Non-centrality Parameter (NCP) = 145.816
      90 Percent Confidence Interval for NCP = (101.163 ; 198.248)

                   Minimum Fit Function Value = 0.783
           Population Discrepancy Function Value (F0) = 0.384
        90 Percent Confidence Interval for F0 = (0.266 ; 0.522)
        Root Mean Square Error of Approximation (RMSEA) = 0.0518
      90 Percent Confidence Interval for RMSEA = (0.0431 ; 0.0604)
          P-Value for Test of Close Fit (RMSEA < 0.05) = 0.355

             Expected Cross-Validation Index (ECVI) = 1.007
       90 Percent Confidence Interval for ECVI = (0.890 ; 1.145)
                    ECVI for Saturated Model = 1.000
                  ECVI for Independence Model = 9.139

Chi-Square for Independence Model with 171 Degrees of Freedom = 3434.758
                       Independence AIC = 3472.758
                           Model AIC = 382.816
                         Saturated AIC = 380.000
                       Independence CAIC = 3566.671
                           Model CAIC = 615.128
                        Saturated CAIC = 1319.132

                     Normed Fit Index (NFI) = 0.913
                  Non-Normed Fit Index (NNFI) = 0.943
               Parsimony Normed Fit Index (PNFI) = 0.764
                  Comparative Fit Index (CFI) = 0.953
                  Incremental Fit Index (IFI) = 0.953
                    Relative Fit Index (RFI) = 0.896

                        Critical N (CN) = 237.503
```

```
                    Root Mean Square Residual (RMR) = 1.889
                           Standardized RMR = 0.0596
                      Goodness of Fit Index (GFI) = 0.926
                  Adjusted Goodness of Fit Index (AGFI) = 0.902
                  Parsimony Goodness of Fit Index (PGFI) = 0.697


            Fitted Covariance Matrix

                    BI1A        BI2A        BI3A         U6A        RA1A        RA5A
                --------    --------    --------    --------    --------    --------
      BI1A        31.764
      BI2A        11.975      17.672
      BI3A        15.801      11.754      31.764
       U6A         4.501       3.349       4.419       7.246
      RA1A         4.660       3.467       4.574       3.268       9.039
      RA5A         3.964       2.949       3.891       2.781       2.879       6.052
      OE7A         4.662       3.468       4.576       3.270       3.385       2.880
     EOU3A        20.264      15.074      19.890       8.217       8.507       7.237
     EOU5A        23.667      17.606      23.231       9.597       9.935       8.452
     EOU6A         7.812       5.811       7.668       3.168       3.279       2.790
      EU4A        15.552      11.569      15.265       6.306       6.528       5.554
      SN1A         3.089       2.298       3.032       0.957       0.990       0.842
      SN2A         3.308       2.461       3.247       1.024       1.060       0.902
      SF2A         1.108       0.824       1.087       0.343       0.355       0.302
      SF4A         3.391       2.523       3.329       1.050       1.087       0.925
     PBC2A         1.525       1.134       1.497       0.845       0.875       0.744
     PBC3A         8.101       6.026       7.952       4.491       4.649       3.955
     PBC5A         1.276       0.949       1.252       0.707       0.732       0.623
      FC3A         0.139       0.103       0.136       0.077       0.080       0.068

            Fitted Covariance Matrix

                    OE7A       EOU3A       EOU5A       EOU6A        EU4A        SN1A
                --------    --------    --------    --------    --------    --------
```

```
  OE7A      7.246
 EOU3A      8.510    145.664
 EOU5A      9.939     72.569    171.866
 EOU6A      3.281     23.954     27.976     18.665
  EU4A      6.531     47.685     55.693     18.383     77.450
  SN1A      0.991      3.284      3.835      1.266      2.520     20.998
  SN2A      1.061      3.516      4.107      1.356      2.698     10.052
  SF2A      0.355      1.177      1.375      0.454      0.904      3.366
  SF4A      1.088      3.605      4.211      1.390      2.767     10.306
 PBC2A      0.875      4.268      4.985      1.645      3.276     -0.369
 PBC3A      4.651     22.675     26.483      8.741     17.402     -1.958
 PBC5A      0.732      3.571      4.171      1.377      2.740     -0.308
  FC3A      0.080      0.388      0.453      0.150      0.298     -0.034

     Fitted Covariance Matrix

              SN2A       SF2A       SF4A      PBC2A      PBC3A      PBC5A
          --------   --------   --------   --------   --------   --------
  SN2A     20.998
  SF2A      3.604     11.875
  SF4A     11.035      3.695    144.648
 PBC2A     -0.395     -0.132     -0.405      6.182
 PBC3A     -2.097     -0.702     -2.150      6.495     80.848
 PBC5A     -0.330     -0.111     -0.339      1.023      5.434      2.000
  FC3A     -0.036     -0.012     -0.037      0.111      0.590      0.093

     Fitted Covariance Matrix

              FC3A
          --------
  FC3A     10.329

     Fitted Residuals

              BI1A       BI2A       BI3A        U6A       RA1A       RA5A
          --------   --------   --------   --------   --------   --------
```

```
     BI1A     0.000
     BI2A    -0.144     0.000
     BI3A     0.081     0.092     0.000
      U6A     0.733     0.476     0.337     0.000
     RA1A    -0.319    -0.289    -0.659     0.140     0.000
     RA5A    -0.760    -0.593    -0.969     0.015     0.437     0.000
     OE7A     0.659     0.497     0.660    -0.318     0.012    -0.128
    EOU3A     0.175     0.865     0.971     1.263    -1.338     1.587
    EOU5A     0.052     0.398     0.736    -0.248    -1.779    -1.042
    EOU6A    -0.128     0.016     0.041    -0.033    -0.341    -0.215
     EU4A    -0.395    -0.073    -0.120    -0.250    -0.606    -0.556
     SN1A    -0.016    -0.357    -1.202     1.353    -0.514    -0.755
     SN2A    -0.186    -0.485    -1.375     1.238    -0.428    -0.903
     SF2A     2.476     2.055     3.253     0.357    -0.176    -0.271
     SF4A     0.642     1.196     3.140     6.581     5.036     1.732
    PBC2A     0.466     0.431     0.816     0.367    -0.641     0.103
    PBC3A     3.299     1.950     3.561     0.133    -2.446     0.960
    PBC5A    -1.007    -1.062    -1.264    -0.344    -0.693     0.367
     FC3A    -2.024    -0.913    -1.702     0.493    -0.425    -0.215

         Fitted Residuals

                 OE7A      EOU3A      EOU5A      EOU6A       EU4A       SN1A
             --------   --------   --------   --------   --------   --------
     OE7A     0.000
    EOU3A     2.444     0.000
    EOU5A     1.013    -2.369     0.000
    EOU6A     0.079    -0.655    -0.008     0.000
     EU4A     0.099    -1.193     1.305     0.628     0.000
     SN1A    -0.532     0.783    -0.963     0.031     0.242     0.000
     SN2A    -0.713    -0.083    -1.701    -0.259    -0.081     0.447
     SF2A    -0.053     4.711     3.647     1.292     2.541    -0.348
     SF4A     2.019    -1.395   -10.637    -2.608    -6.940    -1.332
    PBC2A     0.079     0.492    -0.907    -0.175    -3.365     1.711
    PBC3A     2.626     4.233     7.099     0.367     3.038    -1.600
    PBC5A     0.278     0.903    -0.352    -0.023    -0.442     0.408
```

```
    FC3A     -0.754      0.542     -1.239     -0.314     -0.985     -0.199

        Fitted Residuals

                SN2A       SF2A       SF4A      PBC2A      PBC3A      PBC5A
            --------   --------   --------   --------   --------   --------
    SN2A       0.000
    SF2A      -0.436      0.000
    SF4A      -1.516      3.441      0.000
   PBC2A       0.898      0.454     -0.628      0.000
   PBC3A      -2.271      2.674    -10.484     -0.854      0.000
   PBC5A      -0.049     -0.517     -1.804      0.291     -0.284      0.000
    FC3A      -0.390     -0.283     -1.791     -1.325      0.071      0.450

        Fitted Residuals

                FC3A
            --------
    FC3A       0.000

Summary Statistics for Fitted Residuals

Smallest Fitted Residual =  -10.637
  Median Fitted Residual =    0.000
 Largest Fitted Residual =    7.099

Stemleaf Plot

-10|65
- 9|
- 8|
- 7|
- 6|9
- 5|
- 4|
- 3|4
```

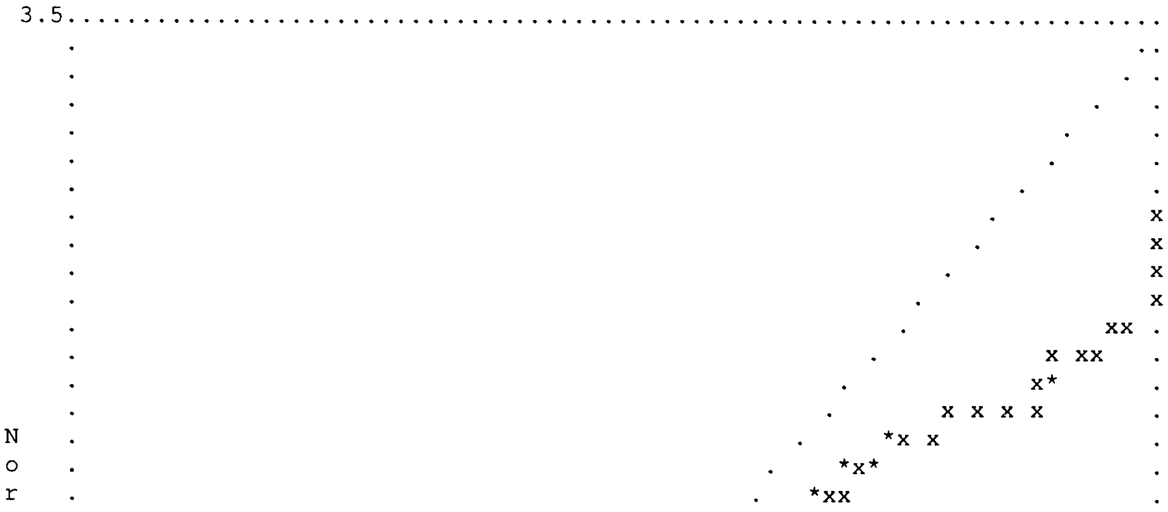
```
- 2|64430
- 1|8887765443333222100000
- 0|99998887777666665555444444443333333333332222222111111110000000000000000+12
  0|1111111111223334444444445555555566777788999
  1|0002233346779
  2|0145567
  3|0133466
  4|27
  5|0
  6|6
  7|1

        Standardized Residuals

                BI1A       BI2A       BI3A        U6A       RA1A       RA5A
            --------   --------   --------   --------   --------   --------
     BI1A     - -
     BI2A   -0.452       - -
     BI3A    0.180      0.271       - -
      U6A    1.502      1.304      0.678       - -
     RA1A   -0.553     -0.668     -1.123      0.781       - -
     RA5A   -1.654     -1.725     -2.074      0.105      2.513       - -
     OE7A    1.394      1.405      1.371     -2.398      0.072     -0.987
    EOU3A    0.078      0.515      0.425      1.074     -0.976      1.444
    EOU5A    0.023      0.233      0.316     -0.205     -1.250     -0.916
    EOU6A   -0.170      0.028      0.054     -0.084     -0.728     -0.575
     EU4A   -0.252     -0.062     -0.075     -0.303     -0.625     -0.717
     SN1A   -0.018     -0.513     -1.271      2.798     -0.908     -1.669
     SN2A   -0.212     -0.740     -1.538      2.686     -0.786     -2.081
     SF2A    2.692      2.995      3.527      0.794     -0.348     -0.658
     SF4A    0.197      0.493      0.963      4.149      2.824      1.191
    PBC2A    0.729      0.903      1.270      1.277     -1.947      0.388
    PBC3A    1.570      1.243      1.682      0.153     -2.376      1.170
    PBC5A   -3.048     -4.307     -3.798     -2.511     -4.283      2.848
     FC3A   -2.282     -1.380     -1.916      1.184     -0.906     -0.563
```

```
        Standardized Residuals

                  OE7A       EOU3A       EOU5A       EOU6A        EU4A        SN1A
              --------    --------    --------    --------    --------    --------
     OE7A         - -
    EOU3A       2.126         - -
    EOU5A       0.858      -0.759         - -
    EOU6A       0.204      -0.639      -0.009         - -
     EU4A       0.123      -0.546       0.630       0.923         - -
     SN1A      -1.128       0.350      -0.416       0.041       0.153         - -
     SN2A      -1.597      -0.039      -0.776      -0.360      -0.054       5.033
     SF2A      -0.118       2.320       1.666       1.791       1.726      -0.990
     SF4A       1.277      -0.195      -1.376      -1.024      -1.335      -0.993
    PBC2A       0.278       0.387      -0.678      -0.396      -3.709       3.307
    PBC3A       3.102       1.090       1.798       0.283       1.122      -1.028
    PBC5A       2.086       1.480      -0.568      -0.112      -1.040       1.668
     FC3A      -1.819       0.296      -0.632      -0.486      -0.744      -0.265

        Standardized Residuals

                  SN2A        SF2A        SF4A       PBC2A       PBC3A       PBC5A
              --------    --------    --------    --------    --------    --------
     SN2A         - -
     SF2A      -1.495         - -
     SF4A      -1.355       1.876         - -
    PBC2A       1.770       1.060      -0.418         - -
    PBC3A      -1.553       1.782      -1.976      -1.820         - -
    PBC5A      -0.215      -2.193      -2.162       3.955      -2.430         - -
     FC3A      -0.518      -0.499      -0.904      -3.848       0.079       3.195

        Standardized Residuals

                  FC3A
              --------
     FC3A         - -
```

```
Summary Statistics for Standardized Residuals

Smallest Standardized Residual =   -4.307
  Median Standardized Residual =    0.000
 Largest Standardized Residual =    5.033

Stemleaf Plot

- 4|33
- 3|887
- 3|0
- 2|5
- 2|444322110
- 1|99887776655
- 1|444332110000000
- 0|999988877777776666666555555
- 0|44443333222221111100000000000000000000000000
  0|111111222222333333444
  0|5567788999
  1|01111222233334444
  1|556777788889
  2|113
  2|577888
  3|0123
  3|5
  4|01
  4|
  5|0
Largest Negative Standardized Residuals
Residual for    PBC2A and     EU4A  -3.709
Residual for    PBC5A and     BI1A  -3.048
Residual for    PBC5A and     BI2A  -4.307
Residual for    PBC5A and     BI3A  -3.798
Residual for    PBC5A and     RA1A  -4.283
Residual for     FC3A and    PBC2A  -3.848
Largest Positive Standardized Residuals
```

```
Residual for     SN1A and      U6A   2.798
Residual for     SN2A and      U6A   2.686
Residual for     SN2A and     SN1A   5.033
Residual for     SF2A and     BI1A   2.692
Residual for     SF2A and     BI2A   2.995
Residual for     SF2A and     BI3A   3.527
Residual for     SF4A and      U6A   4.149
Residual for     SF4A and     RA1A   2.824
Residual for    PBC2A and     SN1A   3.307
Residual for    PBC3A and     OE7A   3.102
Residual for    PBC5A and     RA5A   2.848
Residual for    PBC5A and    PBC2A   3.955
Residual for     FC3A and    PBC5A   3.195
```

Qplot of Standardized Residuals



```
m   .                                          .  x**                       .
a   .                                        *x*x*                          .
l   .                                     xxx                               .
    .                                   *xx                                 .
Q   .                                  *x                                   .
u   .                                *xx                                    .
a   .                             x*x.                                      .
n   .                            *x.                                        .
t   .                          ***.                                         .
i   .                        x* .                                           .
l   .                    xx **.                                             .
e   .                 xxx*   .                                              .
s   .              xxxx    .                                                .
    .            x*x     .                                                  .
    .          xxx      .                                                   .
    .        x*       .                                                     .
    x    x           .                                                      .
    x               .                                                       .
    x             .                                                         .
    x           .                                                           .
    x          .                                                            .
    .        .                                                              .
    .      .                                                                .
    .     .                                                                 .
    .   .                                                                   .
    . .                                                                     .
-3.5.........................................................................
  -3.5                                                                     3.5
                           Standardized Residuals


Modification Indices and Expected Change

No Non-Zero Modification Indices for LAMBDA-Y
```

```
         Modification Indices for LAMBDA-X

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
     U6A       - -        0.123     19.739      1.810
    RA1A       - -        4.207      0.119     21.159
    RA5A       - -        0.288      6.507      6.670
    OE7A       - -        4.051      2.622     13.014
   EOU3A     3.536         - -       0.313      3.064
   EOU5A     0.265         - -       0.487      0.257
   EOU6A     0.242         - -       0.001      0.010
    EU4A     0.558         - -       0.053      1.869
    SN1A     0.099        0.000        - -      1.949
    SN2A     1.192        0.739        - -      0.513
    SF2A     0.623        6.837        - -      0.383
    SF4A     6.089        0.883        - -      3.348
   PBC2A     0.070        1.500      8.246        - -
   PBC3A     3.396        7.038      1.797        - -
   PBC5A     3.954        2.513      0.415        - -
    FC3A     1.275        0.928      0.676        - -

         Expected Change for LAMBDA-X

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
     U6A       - -        0.009      0.610     -0.218
    RA1A       - -       -0.058     -0.053     -0.840
    RA5A       - -       -0.012     -0.322      0.384
    OE7A       - -        0.051     -0.222      0.583
   EOU3A     0.918         - -       0.330      1.298
   EOU5A    -0.271         - -      -0.439      0.402
   EOU6A    -0.085         - -      -0.008     -0.026
    EU4A    -0.265         - -       0.098     -0.730
    SN1A    -0.048        0.001        - -      0.347
    SN2A    -0.175       -0.030        - -     -0.186
    SF2A     0.089        0.065        - -      0.118
```

```
 SF4A      0.976     -0.081       - -      -1.227
PBC2A      0.026     -0.028      0.393       - -
PBC3A      0.746      0.266     -0.688       - -
PBC5A     -0.127     -0.025     -0.052       - -
 FC3A     -0.142     -0.028     -0.151       - -

     Standardized Expected Change for LAMBDA-X

         PERFORM     EFFORT     SOCIAL      FACIL
        --------   --------   --------   --------
  U6A       - -      0.070      0.670     -0.241
 RA1A       - -     -0.457     -0.059     -0.928
 RA5A       - -     -0.098     -0.353      0.424
 OE7A       - -      0.405     -0.243      0.644
EOU3A      1.631       - -      0.363      1.436
EOU5A     -0.481       - -     -0.482      0.444
EOU6A     -0.152       - -     -0.008     -0.028
 EU4A     -0.470       - -      0.107     -0.808
 SN1A     -0.085      0.005       - -      0.384
 SN2A     -0.311     -0.234       - -     -0.206
 SF2A      0.158      0.508       - -      0.131
 SF4A      1.734     -0.641       - -     -1.357
PBC2A      0.045     -0.220      0.432       - -
PBC3A      1.325      2.093     -0.755       - -
PBC5A     -0.225     -0.197     -0.057       - -
 FC3A     -0.253     -0.223     -0.165       - -

     Completely Standardized Expected Change for LAMBDA-X

         PERFORM     EFFORT     SOCIAL      FACIL
        --------   --------   --------   --------
  U6A       - -      0.026      0.249     -0.089
 RA1A       - -     -0.152     -0.020     -0.309
 RA5A       - -     -0.040     -0.144      0.172
 OE7A       - -      0.150     -0.090      0.239
EOU3A      0.135       - -      0.030      0.119
```

```
    EOU5A    -0.037       - -      -0.037      0.034
    EOU6A    -0.035       - -      -0.002     -0.007
     EU4A    -0.053       - -       0.012     -0.092
     SN1A    -0.019     0.001        - -       0.084
     SN2A    -0.068    -0.051        - -      -0.045
     SF2A     0.046     0.148        - -       0.038
     SF4A     0.144    -0.053        - -      -0.113
    PBC2A     0.018    -0.089      0.174        - -
    PBC3A     0.147     0.233     -0.084        - -
    PBC5A    -0.159    -0.139     -0.040        - -
     FC3A    -0.079    -0.069     -0.051        - -

 No Non-Zero Modification Indices for BETA

         Modification Indices for GAMMA

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
   BEHAVE      - -        - -        - -       2.092

         Expected Change for GAMMA

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
   BEHAVE      - -        - -        - -      -0.432

         Standardized Expected Change for GAMMA

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
   BEHAVE      - -        - -        - -      -0.119

 No Non-Zero Modification Indices for PHI

 No Non-Zero Modification Indices for PSI
         Modification Indices for THETA-EPS
```

```
            BI1A       BI2A       BI3A
        --------   --------   --------
 BI1A       - -
 BI2A      0.204       - -
 BI3A      0.032      0.073       - -

    Expected Change for THETA-EPS

            BI1A       BI2A       BI3A
        --------   --------   --------
 BI1A       - -
 BI2A     -0.511       - -
 BI3A      0.268      0.300       - -

    Completely Standardized Expected Change for THETA-EPS

            BI1A       BI2A       BI3A
        --------   --------   --------
 BI1A       - -
 BI2A     -0.022       - -
 BI3A      0.008      0.013       - -

    Modification Indices for THETA-DELTA-EPS

            BI1A       BI2A       BI3A
        --------   --------   --------
  U6A      0.606      0.375      0.000
 RA1A      0.002      0.011      0.282
 RA5A      0.702      0.698      1.229
 OE7A      0.272      0.461      0.979
EOU3A      0.089      0.043      0.004
EOU5A      0.005      0.049      0.101
EOU6A      0.003      0.005      0.006
 EU4A      0.006      0.002      0.000
 SN1A      0.037      0.127      1.104
```

```
        SN2A      0.064       0.122       1.192
        SF2A      0.495       1.698       5.664
        SF4A      0.284       0.001       0.920
       PBC2A      0.087       0.843       1.538
       PBC3A      1.124       1.112       1.978
       PBC5A      1.449       9.373       7.044
        FC3A      2.229       0.009       0.890

         Expected Change for THETA-DELTA-EPS

                  BI1A        BI2A        BI3A
                --------    --------    --------
         U6A      0.403       0.236       0.009
        RA1A     -0.023      -0.047      -0.317
        RA5A     -0.401      -0.298      -0.534
        OE7A      0.266       0.259       0.509
       EOU3A     -0.682       0.354       0.143
       EOU5A      0.178       0.398       0.770
       EOU6A     -0.044       0.043       0.062
        EU4A     -0.131       0.050      -0.023
        SN1A      0.179      -0.247      -0.979
        SN2A      0.234      -0.241      -1.016
        SF2A      0.537       0.743       1.833
        SF4A     -1.432       0.070       2.599
       PBC2A      0.157       0.365       0.666
       PBC3A      1.901       1.413       2.544
       PBC5A     -0.339      -0.645      -0.755
        FC3A     -1.099      -0.052      -0.700

         Completely Standardized Expected Change for THETA-DELTA-EPS

                  BI1A        BI2A        BI3A
                --------    --------    --------
         U6A      0.027       0.021       0.001
        RA1A     -0.001      -0.004      -0.019
        RA5A     -0.029      -0.029      -0.039
```

```
   OE7A      0.018       0.023       0.034
  EOU3A     -0.010       0.007       0.002
  EOU5A      0.002       0.007       0.010
  EOU6A     -0.002       0.002       0.003
   EU4A     -0.003       0.001       0.000
   SN1A      0.007      -0.013      -0.038
   SN2A      0.009      -0.013      -0.039
   SF2A      0.028       0.051       0.094
   SF4A     -0.021       0.001       0.038
  PBC2A      0.011       0.035       0.047
  PBC3A      0.038       0.037       0.050
  PBC5A     -0.043      -0.108      -0.095
   FC3A     -0.061      -0.004      -0.039

     Modification Indices for THETA-DELTA

                U6A        RA1A        RA5A        OE7A       EOU3A       EOU5A
           --------    --------    --------    --------    --------    --------
    U6A       - -
   RA1A      0.609        - -
   RA5A      0.011       6.313        - -
   OE7A      5.751       0.005       0.974        - -
  EOU3A      0.113       1.396       1.960       1.007        - -
  EOU5A      0.063       0.090       0.610       0.166       0.576        - -
  EOU6A      0.006       0.223       0.077       0.396       0.408       0.000
   EU4A      0.063       0.482       0.130       0.288       0.298       0.397
   SN1A      2.621       1.157       0.400       0.250       0.021       0.047
   SN2A      2.476       0.225       0.532       0.500       0.001       0.020
   SF2A      0.384       0.902       0.769       0.220       1.200       0.094
   SF4A      9.535       4.910       0.146       0.013       0.129       1.205
  PBC2A      4.380       1.565       0.236       0.921       0.531       0.066
  PBC3A      0.009       2.383       0.597       2.579       0.478       1.025
  PBC5A      4.117       7.273      14.335       5.014       3.750       0.095
   FC3A      6.005       0.144       0.003       3.213       0.983       0.024

     Modification Indices for THETA-DELTA
```

```
            EOU6A       EU4A       SN1A       SN2A       SF2A       SF4A
         --------   --------   --------   --------   --------   --------
 EOU6A      - -
  EU4A     0.852       - -
  SN1A     0.008      0.006       - -
  SN2A     0.001      0.113     25.328       - -
  SF2A     0.106      0.043      0.980      2.235       - -
  SF4A     0.483      1.518      0.987      1.837      3.520       - -
 PBC2A     0.120     16.134      5.942      0.303      0.065      0.166
 PBC3A     1.007      1.347      3.549      1.493      6.671      1.640
 PBC5A     0.614      0.005      6.011      0.506     13.941      2.937
  FC3A     0.004      0.083      0.067      0.002      0.103      0.503

      Modification Indices for THETA-DELTA

            PBC2A      PBC3A      PBC5A       FC3A
         --------   --------   --------   --------
 PBC2A      - -
 PBC3A     3.313       - -
 PBC5A    15.638      5.906       - -
  FC3A    14.811      0.006     10.211       - -

      Expected Change for THETA-DELTA

              U6A       RA1A       RA5A       OE7A      EOU3A      EOU5A
         --------   --------   --------   --------   --------   --------
   U6A      - -
  RA1A     0.265       - -
  RA5A     0.029      0.774       - -
  OE7A    -0.751      0.025     -0.279       - -
 EOU3A     0.379     -1.530      1.463      1.116       - -
 EOU5A    -0.296     -0.408     -0.857      0.476     -4.660       - -
 EOU6A    -0.030      0.211     -0.100     -0.242     -1.293     -0.019
  EU4A    -0.202      0.640     -0.268     -0.426     -2.242      2.848
  SN1A     0.736     -0.561     -0.266     -0.225      0.294     -0.460
```

```
   SN2A      0.714     -0.247     -0.306     -0.317     -0.061     -0.301
   SF2A     -0.235     -0.414     -0.308     -0.175      1.843      0.540
   SF4A      4.113      3.395      0.472      0.152      2.123     -6.808
  PBC2A      0.555     -0.381     -0.120     -0.251      0.859     -0.317
  PBC3A      0.087     -1.599     -0.647      1.435     -2.775      4.281
  PBC5A     -0.289     -0.439      0.498      0.315      1.222     -0.205
   FC3A      0.895     -0.160     -0.018     -0.645      1.611     -0.262

         Expected Change for THETA-DELTA

               EOU6A       EU4A       SN1A       SN2A       SF2A       SF4A
            --------   --------   --------   --------   --------   --------
  EOU6A        - -
   EU4A      1.376        - -
   SN1A      0.062      0.109        - -
   SN2A      0.023      0.480     17.712        - -
   SF2A      0.189      0.249     -0.917     -1.472        - -
   SF4A     -1.419     -5.187     -3.019     -4.352      3.829        - -
  PBC2A      0.141     -3.371      1.159      0.260      0.101     -0.569
  PBC3A     -1.397      3.325     -3.096     -2.016      3.459     -6.030
  PBC5A      0.172      0.033      0.634      0.185     -0.786     -1.269
   FC3A      0.037     -0.334      0.169     -0.028     -0.176     -1.368

         Expected Change for THETA-DELTA

               PBC2A      PBC3A      PBC5A       FC3A
            --------   --------   --------   --------
  PBC2A        - -
  PBC3A     -2.346        - -
  PBC5A      0.803     -2.906        - -
   FC3A     -1.505      0.110      0.705        - -

         Completely Standardized Expected Change for THETA-DELTA

                 U6A       RA1A       RA5A       OE7A      EOU3A      EOU5A
            --------   --------   --------   --------   --------   --------
```

```
     U6A       - -
    RA1A     0.033       - -
    RA5A     0.004     0.105       - -
    OE7A    -0.104     0.003    -0.042       - -
   EOU3A     0.012    -0.042     0.049     0.034       - -
   EOU5A    -0.008    -0.010    -0.027     0.013    -0.029       - -
   EOU6A    -0.003     0.016    -0.009    -0.021    -0.025     0.000
    EU4A    -0.009     0.024    -0.012    -0.018    -0.021     0.025
    SN1A     0.060    -0.041    -0.024    -0.018     0.005    -0.008
    SN2A     0.058    -0.018    -0.027    -0.026    -0.001    -0.005
    SF2A    -0.025    -0.040    -0.036    -0.019     0.044     0.012
    SF4A     0.127     0.094     0.016     0.005     0.015    -0.043
   PBC2A     0.083    -0.051    -0.020    -0.038     0.029    -0.010
   PBC3A     0.004    -0.059    -0.029     0.059    -0.026     0.036
   PBC5A    -0.076    -0.103     0.143     0.083     0.072    -0.011
    FC3A     0.104    -0.017    -0.002    -0.075     0.042    -0.006

     Completely Standardized Expected Change for THETA-DELTA

             EOU6A      EU4A      SN1A      SN2A      SF2A      SF4A
          --------  --------  --------  --------  --------  --------
   EOU6A       - -
    EU4A     0.036       - -
    SN1A     0.003     0.003       - -
    SN2A     0.001     0.012     0.843       - -
    SF2A     0.013     0.008    -0.058    -0.093       - -
    SF4A    -0.027    -0.049    -0.055    -0.079     0.092       - -
   PBC2A     0.013    -0.154     0.102     0.023     0.012    -0.019
   PBC3A    -0.036     0.042    -0.075    -0.049     0.112    -0.056
   PBC5A     0.028     0.003     0.098     0.029    -0.161    -0.075
    FC3A     0.003    -0.012     0.011    -0.002    -0.016    -0.035

     Completely Standardized Expected Change for THETA-DELTA

             PBC2A     PBC3A     PBC5A      FC3A
          --------  --------  --------  --------
```

```
   PBC2A      - -
   PBC3A     -0.105       - -
   PBC5A      0.228     -0.229       - -
    FC3A     -0.188      0.004      0.155       - -

Maximum Modification Index is   25.33 for Element (10, 9) of THETA-DELTA



Standardized Solution

        LAMBDA-Y

             BEHAVE
            --------
    BI1A      4.012
    BI2A      2.985
    BI3A      3.938

        LAMBDA-X

            PERFORM    EFFORT     SOCIAL      FACIL
            --------  --------   --------   --------
     U6A      1.777       - -        - -        - -
    RA1A      1.839       - -        - -        - -
    RA5A      1.565       - -        - -        - -
    OE7A      1.840       - -        - -        - -
   EOU3A       - -      7.883        - -        - -
   EOU5A       - -      9.206        - -        - -
   EOU6A       - -      3.039        - -        - -
    EU4A       - -      6.049        - -        - -
    SN1A       - -        - -      3.064        - -
    SN2A       - -        - -      3.281        - -
    SF2A       - -        - -      1.099        - -
    SF4A       - -        - -      3.364        - -
   PBC2A       - -        - -        - -      1.106
```

```
   PBC3A       - -         - -         - -       5.874
   PBC5A       - -         - -         - -       0.925
    FC3A       - -         - -         - -       0.101

         GAMMA

              PERFORM      EFFORT      SOCIAL       FACIL
             --------    --------    --------    --------
  BEHAVE        0.370       0.406       0.131        - -

         Correlation Matrix of ETA and KSI

               BEHAVE     PERFORM      EFFORT      SOCIAL       FACIL
             --------    --------    --------    --------    --------
  BEHAVE        1.000
 PERFORM        0.631       1.000
  EFFORT        0.641       0.587       1.000
  SOCIAL        0.251       0.176       0.136       1.000
   FACIL        0.344       0.430       0.490      -0.109       1.000

         PSI

               BEHAVE
             --------
                0.473

         Regression Matrix ETA on KSI (Standardized)

              PERFORM      EFFORT      SOCIAL       FACIL
             --------    --------    --------    --------
  BEHAVE        0.370       0.406       0.131        - -


 Completely Standardized Solution
        LAMBDA-Y
```

```
              BEHAVE
             --------
    BI1A       0.712
    BI2A       0.710
    BI3A       0.699

        LAMBDA-X

              PERFORM     EFFORT      SOCIAL      FACIL
             --------    --------    --------    --------
     U6A       0.660        - -         - -         - -
    RA1A       0.612        - -         - -         - -
    RA5A       0.636        - -         - -         - -
    OE7A       0.684        - -         - -         - -
   EOU3A        - -       0.653         - -         - -
   EOU5A        - -       0.702         - -         - -
   EOU6A        - -       0.703         - -         - -
    EU4A        - -       0.687         - -         - -
    SN1A        - -         - -       0.669         - -
    SN2A        - -         - -       0.716         - -
    SF2A        - -         - -       0.319         - -
    SF4A        - -         - -       0.280         - -
   PBC2A        - -         - -         - -       0.445
   PBC3A        - -         - -         - -       0.653
   PBC5A        - -         - -         - -       0.654
    FC3A        - -         - -         - -       0.031

        GAMMA

              PERFORM     EFFORT      SOCIAL      FACIL
             --------    --------    --------    --------
  BEHAVE       0.370       0.406       0.131        - -

        Correlation Matrix of ETA and KSI
```

```
                BEHAVE    PERFORM     EFFORT     SOCIAL      FACIL
              --------   --------   --------   --------   --------
    BEHAVE       1.000
   PERFORM       0.631      1.000
    EFFORT       0.641      0.587      1.000
    SOCIAL       0.251      0.176      0.136      1.000
     FACIL       0.344      0.430      0.490     -0.109      1.000

         PSI

                BEHAVE
              --------
                 0.473

         THETA-EPS

                  BI1A       BI2A       BI3A
              --------   --------   --------
                 0.493      0.496      0.512

         THETA-DELTA

                   U6A       RA1A       RA5A       OE7A      EOU3A      EOU5A
              --------   --------   --------   --------   --------   --------
                 0.564      0.626      0.595      0.533      0.573      0.507

         THETA-DELTA

                 EOU6A       EU4A       SN1A       SN2A       SF2A       SF4A
              --------   --------   --------   --------   --------   --------
                 0.505      0.527      0.553      0.487      0.898      0.922

         THETA-DELTA

                 PBC2A      PBC3A      PBC5A        FC3A
              --------   --------   --------   --------
```

```
                0.802      0.573      0.572      0.999

        Regression Matrix ETA on KSI (Standardized)

              PERFORM     EFFORT     SOCIAL      FACIL
             --------   --------   --------   --------
  BEHAVE        0.370      0.406      0.131       - -



Total and Indirect Effects

        Total Effects of KSI on ETA

              PERFORM     EFFORT     SOCIAL      FACIL
             --------   --------   --------   --------
  BEHAVE        0.836      0.206      0.479       - -
              (0.191)    (0.042)    (0.240)
                4.374      4.861      1.991


        Total Effects of ETA on Y

               BEHAVE
             --------
    BI1A        1.000

    BI2A        0.744
              (0.067)
               11.120

    BI3A        0.982
              (0.089)
               11.012
```

```
        Total Effects of KSI on Y

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
 BI1A         0.836      0.206      0.479       - -
            (0.191)    (0.042)    (0.240)
              4.374      4.861      1.991

 BI2A         0.622      0.154      0.356       - -
            (0.142)    (0.032)    (0.179)
              4.372      4.859      1.991

 BI3A         0.821      0.203      0.470       - -
            (0.188)    (0.042)    (0.236)
              4.363      4.846      1.990



Standardized Total and Indirect Effects

        Standardized Total Effects of KSI on ETA

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
 BEHAVE       0.370      0.406      0.131       - -

        Standardized Total Effects of ETA on Y

             BEHAVE
           --------
 BI1A         4.012
 BI2A         2.985
 BI3A         3.938
```

```
    Completely Standardized Total Effects of ETA on Y

           BEHAVE
          --------
BI1A       0.712
BI2A       0.710
BI3A       0.699

    Standardized Total Effects of KSI on Y

          PERFORM     EFFORT     SOCIAL      FACIL
          --------   --------   --------   --------
BI1A       1.486      1.627      0.526       - -
BI2A       1.106      1.211      0.391       - -
BI3A       1.459      1.597      0.516       - -

    Completely Standardized Total Effects of KSI on Y

          PERFORM     EFFORT     SOCIAL      FACIL
          --------   --------   --------   --------
BI1A       0.264      0.289      0.093       - -
BI2A       0.263      0.288      0.093       - -
BI3A       0.259      0.283      0.092       - -
```

Appendices (2)

(An Empirical Investigation of Organisational Virtualness and End User Accepetnace of Technology – Genefa Murphy 19722)

Volume 3 of 3

DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed .... (candidate)

Date 09. 03. 2009 ....

STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated. Where correction services have been used, the extent and nature of the correction is clearly marked in a footnote(s).

Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

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Date 09. 03. 2009 ....

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I hereby give consent for my thesis, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

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Appendix K cont....

UTAUT – OBT Data Set

```
Covariance Matrix

               BI1B       BI2B       BI3B        U6B       RA1B       RA5B
           --------   --------   --------   --------   --------   --------
    BI1B      6.163
    BI2B      4.720     53.980
    BI3B      1.321      4.251      2.000
     U6B      1.190      3.709      0.261      7.221
    RA1B      0.191      1.528      0.060      3.155      7.221
    RA5B      0.898      4.644      0.895      3.114      3.331      7.221
    OE7B      1.054      6.299      1.043      3.326      3.461      3.394
   EOU3B      4.869     20.453      4.219      9.527      6.945      8.839
   EOU5B      4.035     28.447      3.725      9.282      7.703      8.363
   EOU6B      1.455      7.568      1.210      3.115      2.712      2.810
    EU4B     -0.166     17.374      2.176      5.955      5.614      5.563
    SN1B      6.328     19.063      3.351     13.390     11.005     10.530
    SN2B      1.092      1.007      0.260      1.726      1.263      1.190
    SF2B      0.276      0.121     -0.307      1.229      1.120      0.833
    SF4B      8.759     50.486      9.059     29.746     18.140     21.795
   PBC2B      1.301     -2.419      0.161      2.269      0.441      0.094
   PBC3B      0.480     -3.067     -0.324      2.236      0.602      0.031
   PBC5B      0.342      0.956     -0.586      0.714      0.043     -0.032
    FC3B     -1.085     -9.681     -3.344      7.938      5.573      3.038
```

```
 Covariance Matrix

                 OE7B      EOU3B      EOU5B      EOU6B       EU4B       SN1B
             --------   --------   --------   --------   --------   --------
      OE7B      9.009
     EOU3B     12.250    145.094
     EOU5B     11.819     70.188    171.068
     EOU6B      3.681     23.298     27.857     18.587
      EU4B      7.340     46.349     56.758     18.909     77.106
      SN1B     13.375     45.062     44.713     14.987     29.805    182.486
      SN2B      1.078     -0.765      1.374      0.459      0.724      6.778
      SF2B      0.571     -0.531      1.246      0.533      0.900      4.775
      SF4B     29.507    114.950    143.170     47.297     94.561    140.530
     PBC2B      0.542      4.329      2.662      1.240      2.562     11.596
     PBC3B      0.437      3.726      2.308      1.072      2.500     11.199
     PBC5B      0.223      5.751      4.916      1.762      3.372      4.714
      FC3B      4.285      4.353     -5.431     -0.837     -2.777     34.613

Covariance Matrix

                 SN2B       SF2B       SF4B      PBC2B      PBC3B      PBC5B
             --------   --------   --------   --------   --------   --------
      SN2B     17.562
      SF2B      7.084     13.434
      SF4B     17.736     24.465   1549.960
     PBC2B      1.684      1.098     23.458     20.550
     PBC3B      1.692      1.369     20.940     10.275     20.550
     PBC5B     -0.465      0.178      7.856      2.938      3.274     11.829
      FC3B      8.274      8.212     33.888      8.943      9.554      7.271

Covariance Matrix

                 FC3B
             --------
      FC3B    143.920
```

```
! A ONE

Parameter Specifications

        LAMBDA-Y

               BEHAVE
             --------
    BI1B          0
    BI2B          1
    BI3B          2

        LAMBDA-X

              PERFORM     EFFORT     SOCIAL      FACIL
             --------   --------   --------   --------
     U6B          0          0          0          0
    RA1B          3          0          0          0
    RA5B          4          0          0          0
    OE7B          5          0          0          0
   EOU3B          0          0          0          0
   EOU5B          0          6          0          0
   EOU6B          0          7          0          0
    EU4B          0          8          0          0
    SN1B          0          0          9          0
    SN2B          0          0         10          0
    SF2B          0          0          0          0
    SF4B          0          0         11          0
   PBC2B          0          0          0          0
   PBC3B          0          0          0         12
   PBC5B          0          0          0         13
    FC3B          0          0          0         14

        GAMMA
```

```
         PERFORM     EFFORT     SOCIAL      FACIL
        --------   --------   --------   --------
 BEHAVE       15         16         17          0

      PHI

         PERFORM     EFFORT     SOCIAL      FACIL
        --------   --------   --------   --------
PERFORM       18
 EFFORT       19         20
 SOCIAL       21         22         23
  FACIL       24         25         26         27

      PSI

          BEHAVE
        --------
              28

      THETA-EPS

            BI1B       BI2B       BI3B
        --------   --------   --------
              29         30         31

      THETA-DELTA

             U6B       RA1B       RA5B       OE7B      EOU3B      EOU5B
        --------   --------   --------   --------   --------   --------
              32         33         34         35         36         37

      THETA-DELTA

           EOU6B       EU4B       SN1B       SN2B       SF2B       SF4B
        --------   --------   --------   --------   --------   --------
```

```
          38         39         40         41         42         43

     THETA-DELTA

            PBC2B      PBC3B      PBC5B       FC3B
         --------   --------   --------   --------
               44         45         46         47


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 Number of Iterations = 66

 LISREL Estimates (Maximum Likelihood)

     LAMBDA-Y

           BEHAVE
         --------
   BI1B     1.000

   BI2B     4.052
          (0.638)
            6.355

   BI3B     0.816
          (0.128)
            6.358


     LAMBDA-X

          PERFORM     EFFORT     SOCIAL      FACIL
         --------   --------   --------   --------
```

U6B	1.000	- -	- -	- -
RA1B	0.947 (0.096) 9.841	- -	- -	- -
RA5B	0.981 (0.097) 10.099	- -	- -	- -
OE7B	1.108 (0.109) 10.175	- -	- -	- -
EOU3B	- -	1.000	- -	- -
EOU5B	- -	1.172 (0.110) 10.618	- -	- -
EOU6B	- -	0.387 (0.036) 10.629	- -	- -
EU4B	- -	0.772 (0.074) 10.485	- -	- -
SN1B	- -	- -	10.594 (3.138) 3.376	- -
SN2B	- -	- -	1.201 (0.469)	- -

```
                                     2.561

   SF2B       - -        - -         1.000        - -

   SF4B       - -        - -        24.490        - -
                                    (7.483)
                                     3.273

  PBC2B       - -        - -         - -         1.000

  PBC3B       - -        - -         - -         1.043
                                                (0.157)
                                                 6.654

  PBC5B       - -        - -         - -         0.336
                                                (0.074)
                                                 4.557

   FC3B       - -        - -         - -         1.153
                                                (0.256)
                                                 4.498

        GAMMA

            PERFORM      EFFORT      SOCIAL       FACIL
           --------    --------    --------    --------
 BEHAVE      0.227       0.065      -0.354        - -
           (0.111)     (0.018)     (0.316)
             2.046       3.542      -1.119

        Covariance Matrix of ETA and KSI
```

```
            BEHAVE    PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------   --------
 BEHAVE      1.339
PERFORM      0.869      3.222
 EFFORT      4.445      8.114     61.254
 SOCIAL      0.306      1.103      3.890      0.559
  FACIL      0.012      0.958      3.064      1.144      9.516

         PHI

           PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
PERFORM      3.222
           (0.494)
             6.521

 EFFORT      8.114     61.254
           (1.244)    (9.584)
             6.520      6.391

 SOCIAL      1.103      3.890      0.559
           (0.338)    (1.226)    (0.321)
             3.267      3.173      1.742

  FACIL      0.958      3.064      1.144      9.516
           (0.413)    (1.740)    (0.395)    (1.840)
             2.317      1.761      2.894      5.170


         PSI

            BEHAVE
           --------
             0.961
           (0.260)
```

```
      3.693


Squared Multiple Correlations for Structural Equations

     BEHAVE
   --------
      0.282

Squared Multiple Correlations for Reduced Form

     BEHAVE
   --------
      0.282

THETA-EPS

       BI1B        BI2B        BI3B
   --------    --------    --------
      4.824      31.988       1.109
    (0.407)     (3.681)     (0.140)
     11.855       8.690       7.927


Squared Multiple Correlations for Y - Variables

       BI1B        BI2B        BI3B
   --------    --------    --------
      0.217       0.407       0.445

THETA-DELTA

        U6B        RA1B        RA5B        OE7B       EOU3B       EOU5B
   --------    --------    --------    --------    --------    --------
      3.999       4.329       4.118       5.055      83.840      86.883
```

```
    (0.372)    (0.383)    (0.376)    (0.466)    (7.419)    (8.297)
     10.763     11.289     10.963     10.854     11.301     10.472


 THETA-DELTA

      EOU6B       EU4B       SN1B       SN2B       SF2B       SF4B
   --------   --------   --------   --------   --------   --------
      9.411     40.575    119.700     16.754     12.875   1214.440
    (0.901)    (3.789)   (11.953)    (1.235)    (0.948)   (99.829)
     10.450     10.710     10.015     13.563     13.585     12.165


 THETA-DELTA

      PBC2B      PBC3B      PBC5B       FC3B
   --------   --------   --------   --------
     11.034     10.195     10.758    131.269
    (1.564)    (1.633)    (0.818)    (9.965)
      7.055      6.244     13.152     13.173


 Squared Multiple Correlations for X - Variables

        U6B       RA1B       RA5B       OE7B      EOU3B      EOU5B
   --------   --------   --------   --------   --------   --------
      0.446      0.400      0.430      0.439      0.422      0.492

 Squared Multiple Correlations for X - Variables

      EOU6B       EU4B       SN1B       SN2B       SF2B       SF4B
   --------   --------   --------   --------   --------   --------
      0.494      0.474      0.344      0.046      0.042      0.216

 Squared Multiple Correlations for X - Variables
```

```
          PBC2B      PBC3B      PBC5B       FC3B
       --------   --------   --------   --------
          0.463      0.504      0.091      0.088


                      Goodness of Fit Statistics

                        Degrees of Freedom = 143
          Minimum Fit Function Chi-Square = 327.405 (P = 0.00)
  Normal Theory Weighted Least Squares Chi-Square = 328.394 (P = 0.00)
           Estimated Non-centrality Parameter (NCP) = 185.394
      90 Percent Confidence Interval for NCP = (136.483 ; 242.027)

                   Minimum Fit Function Value = 0.862
           Population Discrepancy Function Value (F0) = 0.488
        90 Percent Confidence Interval for F0 = (0.359 ; 0.637)
        Root Mean Square Error of Approximation (RMSEA) = 0.0584
      90 Percent Confidence Interval for RMSEA = (0.0501 ; 0.0667)
         P-Value for Test of Close Fit (RMSEA < 0.05) = 0.0477

             Expected Cross-Validation Index (ECVI) = 1.112
       90 Percent Confidence Interval for ECVI = (0.983 ; 1.261)
                    ECVI for Saturated Model = 1.000
                  ECVI for Independence Model = 7.791

Chi-Square for Independence Model with 171 Degrees of Freedom = 2922.605
                      Independence AIC = 2960.605
                          Model AIC = 422.394
                        Saturated AIC = 380.000
                      Independence CAIC = 3054.518
                          Model CAIC = 654.706
                       Saturated CAIC = 1319.132

                     Normed Fit Index (NFI) = 0.888
```

```
               Non-Normed Fit Index (NNFI) = 0.920
           Parsimony Normed Fit Index (PNFI) = 0.743
               Comparative Fit Index (CFI) = 0.933
               Incremental Fit Index (IFI) = 0.934
                 Relative Fit Index (RFI) = 0.866

                    Critical N (CN) = 216.015


           Root Mean Square Residual (RMR) = 4.554
                    Standardized RMR = 0.0650
               Goodness of Fit Index (GFI) = 0.917
          Adjusted Goodness of Fit Index (AGFI) = 0.889
          Parsimony Goodness of Fit Index (PGFI) = 0.690

! A ONE

         Fitted Covariance Matrix

                BI1B       BI2B       BI3B        U6B       RA1B       RA5B
            --------   --------   --------   --------   --------   --------
     BI1B      6.163
     BI2B      5.427     53.980
     BI3B      1.092      4.426      2.000
      U6B      0.869      3.523      0.709      7.221
     RA1B      0.823      3.337      0.672      3.052      7.221
     RA5B      0.853      3.457      0.696      3.162      2.995      7.221
     OE7B      0.963      3.902      0.785      3.569      3.381      3.502
    EOU3B      4.445     18.013      3.625      8.114      7.686      7.962
    EOU5B      5.211     21.117      4.250      9.512      9.011      9.334
    EOU6B      1.720      6.972      1.403      3.140      2.975      3.082
     EU4B      3.433     13.911      2.800      6.266      5.936      6.149
     SN1B      3.237     13.116      2.640     11.687     11.071     11.468
     SN2B      0.367      1.487      0.299      1.325      1.255      1.301
     SF2B      0.306      1.238      0.249      1.103      1.045      1.083
```

```
     SF4B      7.482     30.320      6.102     27.016     25.592     26.510
    PBC2B      0.012      0.048      0.010      0.958      0.907      0.940
    PBC3B      0.012      0.050      0.010      0.999      0.946      0.980
    PBC5B      0.004      0.016      0.003      0.321      0.304      0.315
     FC3B      0.014      0.056      0.011      1.104      1.046      1.084

         Fitted Covariance Matrix

                OE7B      EOU3B      EOU5B      EOU6B       EU4B       SN1B
            --------   --------   --------   --------   --------   --------
     OE7B      9.009
    EOU3B      8.988    145.094
    EOU5B     10.536     71.810    171.068
    EOU6B      3.479     23.708     27.794     18.587
     EU4B      6.941     47.304     55.456     18.309     77.106
     SN1B     12.945     41.214     48.316     15.951     31.827    182.486
     SN2B      1.468      4.674      5.479      1.809      3.610      7.120
     SF2B      1.222      3.890      4.561      1.506      3.004      5.927
     SF4B     29.926     95.273    111.691     36.875     73.575    145.141
    PBC2B      1.061      3.064      3.593      1.186      2.367     12.122
    PBC3B      1.107      3.197      3.748      1.237      2.469     12.645
    PBC5B      0.356      1.028      1.205      0.398      0.794      4.067
     FC3B      1.223      3.533      4.142      1.368      2.729     13.977

         Fitted Covariance Matrix

                SN2B       SF2B       SF4B      PBC2B      PBC3B      PBC5B
            --------   --------   --------   --------   --------   --------
     SN2B     17.562
     SF2B      0.672     13.434
     SF4B     16.460     13.701   1549.961
    PBC2B      1.375      1.144     28.022     20.550
    PBC3B      1.434      1.194     29.232      9.927     20.550
    PBC5B      0.461      0.384      9.403      3.193      3.331     11.829
     FC3B      1.585      1.319     32.310     10.972     11.446      3.681
```

```
    Fitted Covariance Matrix

              FC3B
          --------
 FC3B      143.920

    Fitted Residuals

              BI1B         BI2B         BI3B          U6B         RA1B         RA5B
          --------     --------     --------     --------     --------     --------
 BI1B        0.000
 BI2B       -0.707        0.000
 BI3B        0.229       -0.175        0.000
  U6B        0.320        0.186       -0.448        0.000
 RA1B       -0.632       -1.808       -0.612        0.103        0.000
 RA5B        0.045        1.188        0.199       -0.048        0.336        0.000
 OE7B        0.091        2.397        0.257       -0.242        0.080       -0.108
EOU3B        0.423        2.440        0.593        1.413       -0.741        0.877
EOU5B       -1.176        7.330       -0.525       -0.230       -1.307       -0.971
EOU6B       -0.265        0.596       -0.193       -0.026       -0.263       -0.272
 EU4B       -3.599        3.463       -0.624       -0.311       -0.321       -0.586
 SN1B        3.092        5.947        0.711        1.703       -0.066       -0.938
 SN2B        0.725       -0.481       -0.039        0.400        0.008       -0.110
 SF2B       -0.030       -1.117       -0.557        0.126        0.075       -0.250
 SF4B        1.277       20.166        2.957        2.730       -7.452       -4.715
PBC2B        1.289       -2.467        0.151        1.312       -0.467       -0.845
PBC3B        0.468       -3.117       -0.334        1.237       -0.345       -0.949
PBC5B        0.338        0.940       -0.589        0.393       -0.262       -0.348
 FC3B       -1.099       -9.737       -3.356        6.834        4.527        1.954

    Fitted Residuals

              OE7B        EOU3B        EOU5B        EOU6B         EU4B         SN1B
          --------     --------     --------     --------     --------     --------
 OE7B        0.000
EOU3B        3.262        0.000
```

```
 EOU5B      1.283      -1.622       0.000
 EOU6B      0.202      -0.410       0.063       0.000
  EU4B      0.400      -0.955       1.302       0.600       0.000
  SN1B      0.430       3.848      -3.603      -0.964      -2.022       0.000
  SN2B     -0.390      -5.439      -4.106      -1.351      -2.886      -0.342
  SF2B     -0.651      -4.422      -3.314      -0.973      -2.104      -1.152
  SF4B     -0.419      19.677      31.479      10.422      20.986      -4.611
 PBC2B     -0.518       1.265      -0.931       0.054       0.195      -0.526
 PBC3B     -0.669       0.530      -1.439      -0.165       0.031      -1.446
 PBC5B     -0.133       4.723       3.711       1.364       2.578       0.647
  FC3B      3.061       0.819      -9.573      -2.204      -5.506      20.636

     Fitted Residuals

              SN2B        SF2B        SF4B       PBC2B       PBC3B       PBC5B
           --------    --------    --------    --------    --------    --------
  SN2B      0.000
  SF2B      6.411       0.000
  SF4B      1.276      10.764      -0.001
 PBC2B      0.309      -0.046      -4.564       0.000
 PBC3B      0.258       0.175      -8.292       0.348       0.000
 PBC5B     -0.926      -0.206      -1.547      -0.254      -0.057       0.000
  FC3B      6.689       6.892       1.578      -2.028      -1.892       3.590

     Fitted Residuals

              FC3B
           --------
  FC3B      0.000

Summary Statistics for Fitted Residuals

Smallest Fitted Residual =   -9.737
  Median Fitted Residual =    0.000
 Largest Fitted Residual =   31.479
```

```
Stemleaf Plot

- 8|763
- 6|5
- 4|5476641
- 2|66431952100
- 0|986544432211000099998777666666555554443333333333322222221111100000000+18
  0|1111111222222233333334444455666667789922333333334467
  2|0446701135678
  4|579
  6|47893
  8|
 10|48
 12|
 14|
 16|
 18|7
 20|260
 22|
 24|
 26|
 28|
 30|5

      Standardized Residuals

                BI1B       BI2B       BI3B        U6B       RA1B       RA5B
              --------   --------   --------   --------   --------   --------
    BI1B        - -
    BI2B      -1.884       - -
    BI3B       3.533     -1.841       - -
     U6B       1.130      0.257     -3.317       - -
    RA1B      -2.188     -2.407     -4.340      0.670       - -
    RA5B       0.156      1.620      1.450     -0.330      2.122       - -
    OE7B       0.287      2.950      1.694     -1.530      0.463     -0.657
   EOU3B       0.339      0.761      0.987      1.202     -0.611      0.738
```

```
 EOU5B    -0.897     2.252    -0.866    -0.190    -1.042    -0.793
 EOU6B    -0.614     0.557    -0.966    -0.065    -0.638    -0.673
  EU4B    -4.050     1.556    -1.501    -0.377    -0.376    -0.702
  SN1B     2.081     1.537     0.981     1.631    -0.059    -0.878
  SN2B     1.405    -0.324    -0.138     0.925     0.017    -0.251
  SF2B    -0.066    -0.858    -2.232     0.331     0.191    -0.649
  SF4B     0.280     1.619     1.253     0.782    -2.037    -1.328
 PBC2B     2.493    -1.821     0.595     2.784    -0.955    -1.770
 PBC3B     0.915    -2.363    -1.360     2.708    -0.724    -2.046
 PBC5B     0.787     0.753    -2.461     0.872    -0.578    -0.771
  FC3B    -0.733    -2.234    -4.013     4.348     2.865     1.241

      Standardized Residuals

              OE7B     EOU3B     EOU5B     EOU6B      EU4B      SN1B
          --------  --------  --------  --------  --------  --------
  OE7B       - -
 EOU3B     2.472       - -
 EOU5B     0.944    -0.531       - -
 EOU6B     0.452    -0.409     0.068       - -
  EU4B     0.432    -0.447     0.653     0.917       - -
  SN1B     0.365     0.696    -0.648    -0.527    -0.530       - -
  SN2B    -0.802    -2.492    -1.788    -1.786    -1.856    -0.172
  SF2B    -1.525    -2.309    -1.645    -1.466    -1.543    -0.655
  SF4B    -0.107     1.090     1.692     1.702     1.657    -0.414
 PBC2B    -0.979     0.575    -0.411     0.073     0.127    -0.280
 PBC3B    -1.302     0.247    -0.657    -0.229     0.021    -0.805
 PBC5B    -0.265     2.320     1.691     1.886     1.746     0.307
  FC3B     1.742     0.115    -1.249    -0.873    -1.068     2.803

      Standardized Residuals

              SN2B      SF2B      SF4B     PBC2B     PBC3B     PBC5B
          --------  --------  --------  --------  --------  --------
  SN2B       - -
  SF2B     8.652       - -
```

```
   SF4B      0.187       1.795       - -
  PBC2B      0.359      -0.061      -0.680        - -
  PBC3B      0.302       0.233      -1.264       3.553        - -
  PBC5B     -1.288      -0.327      -0.241      -0.693      -0.173        - -
   FC3B      2.666       3.137       0.071      -1.571      -1.638       1.959

        Standardized Residuals

               FC3B
            --------
   FC3B       - -

Summary Statistics for Standardized Residuals

Smallest Standardized Residual =   -4.340
  Median Standardized Residual =    0.000
 Largest Standardized Residual =    8.652

Stemleaf Plot

- 4|300
- 3|3
- 2|5544322200
- 1|99888886665555543333210000
- 0|99999888877777777766666655544444433333322222111111000000000000000000000
  0|11111222223333333444556667777888899999
  1|00112234456666777777789
  2|011335577889
  3|0156
  4|3
  5|
  6|
  7|
  8|7
Largest Negative Standardized Residuals
Residual for      U6B and     BI3B  -3.317
```

```
Residual for     RA1B and     BI3B  -4.340
Residual for     EU4B and     BI1B  -4.050
Residual for     FC3B and     BI3B  -4.013
Largest Positive Standardized Residuals
Residual for     BI3B and     BI1B   3.533
Residual for     OE7B and     BI2B   2.950
Residual for     SF2B and     SN2B   8.652
Residual for    PBC2B and      U6B   2.784
Residual for    PBC3B and      U6B   2.708
Residual for    PBC3B and    PBC2B   3.553
Residual for     FC3B and      U6B   4.348
Residual for     FC3B and     RA1B   2.865
Residual for     FC3B and     SN1B   2.803
Residual for     FC3B and     SN2B   2.666
Residual for     FC3B and     SF2B   3.137

! A ONE

                         Qplot of Standardized Residuals

 3.5.........................................................................
    .                                                                      ..
    .                                                                     . .
    .                                                                   .   .
    .                                                                 .     .
    .                                                                .      .
    .                                                              .        .
    .                                                            .          x
    .                                                           .           x
    .                                                         .             x
    .                                                       .               x
    .                                                      .          x x   .
    .                                                    .           x      .
    .                                                  .         x xx       .
    .                                                 .       xxxx          .
N   .                                               .     xxxx              .
```

```
o   .                                              .     *x                  .
r   .                                             .  *xxxx                   .
m   .                                           . x**                        .
a   .                                         xx**                           .
l   .                                       xxx                              .
    .                                     *xx                                .
Q   .                                  x*xx                                  .
u   .                                xx*.                                    .
a   .                              ***.                                      .
n   .                             *x.                                        .
t   .                           x*x.                                         .
i   .                         *x*.                                           .
l   .                     xx xx.                                             .
e   .                  x**    .                                              .
s   .                x*x    .                                                .
    .              * *    .                                                  .
    .            *x      .                                                   .
    .          x*      .                                                     .
    .          *     .                                                       .
    . x             .                                                        .
    x             .                                                          .
    x           .                                                            .
    x          .                                                             .
    .        .                                                               .
    .      .                                                                 .
    .     .                                                                  .
    .   .                                                                    .
    . .                                                                      .
-3.5..........................................................................
  -3.5                                                                      3.5
                            Standardized Residuals

! A ONE

Modification Indices and Expected Change
```

```
No Non-Zero Modification Indices for LAMBDA-Y

        Modification Indices for LAMBDA-X

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
    U6B       - -        0.028     18.136     21.345
   RA1B       - -        2.888      1.522      0.360
   RA5B       - -        0.340      7.766      6.122
   OE7B       - -        4.130      0.128      1.541
  EOU3B      2.754        - -       1.930      0.774
  EOU5B      0.234        - -       0.531      0.408
  EOU6B      0.215        - -       0.082      0.006
   EU4B      0.350        - -       0.070      0.048
   SN1B      0.959       0.040       - -       0.016
   SN2B      0.006       7.786       - -       0.692
   SF2B      0.797       7.083       - -       0.851
   SF4B      0.328       8.215       - -       1.530
  PBC2B      0.143       0.003      0.142       - -
  PBC3B      0.992       0.487      1.209       - -
  PBC5B      0.001       4.419      0.412       - -
   FC3B      9.371       0.404      6.645       - -

        Expected Change for LAMBDA-X

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
    U6B       - -        0.004      1.935      0.223
   RA1B       - -       -0.042     -0.561     -0.029
   RA5B       - -       -0.014     -1.266     -0.120
   OE7B       - -        0.056     -0.181     -0.067
  EOU3B      0.784        - -       1.807      0.184
  EOU5B     -0.246        - -      -1.020     -0.142
  EOU6B     -0.078        - -      -0.132      0.006
   EU4B     -0.203        - -      -0.249      0.033
   SN1B      1.317      -0.040       - -      -0.051
```

```
 SN2B     -0.024     -0.135       - -       0.084
 SF2B     -0.251     -0.112       - -       0.081
 SF4B     -1.885      1.406       - -      -1.244
PBC2B     -0.057      0.002     -0.167       - -
PBC3B     -0.155     -0.024     -0.503       - -
PBC5B      0.004      0.052      0.204       - -
 FC3B      1.189     -0.055      2.857       - -

    Standardized Expected Change for LAMBDA-X

         PERFORM     EFFORT     SOCIAL      FACIL
        --------   --------   --------   --------
  U6B       - -       0.032      1.448      0.689
 RA1B       - -      -0.329     -0.419     -0.090
 RA5B       - -      -0.113     -0.947     -0.370
 OE7B       - -       0.439     -0.136     -0.207
EOU3B      1.407       - -       1.351      0.568
EOU5B     -0.442       - -      -0.763     -0.438
EOU6B     -0.140       - -      -0.099      0.018
 EU4B     -0.364       - -      -0.186      0.101
 SN1B      2.364     -0.315       - -      -0.158
 SN2B     -0.043     -1.055       - -       0.259
 SF2B     -0.450     -0.879       - -       0.251
 SF4B     -3.384     11.005       - -      -3.838
PBC2B     -0.102      0.013     -0.125       - -
PBC3B     -0.278     -0.186     -0.376       - -
PBC5B      0.007      0.410      0.152       - -
 FC3B      2.135     -0.433      2.137       - -

    Completely Standardized Expected Change for LAMBDA-X

         PERFORM     EFFORT     SOCIAL      FACIL
        --------   --------   --------   --------
  U6B       - -       0.012      0.539      0.257
 RA1B       - -      -0.122     -0.156     -0.034
 RA5B       - -      -0.042     -0.352     -0.138
```

```
      OE7B        - -       0.146     -0.045     -0.069
     EOU3B      0.117        - -       0.112      0.047
     EOU5B     -0.034        - -      -0.058     -0.033
     EOU6B     -0.032        - -      -0.023      0.004
      EU4B     -0.041        - -      -0.021      0.012
      SN1B      0.175     -0.023        - -      -0.012
      SN2B     -0.010     -0.252        - -       0.062
      SF2B     -0.123     -0.240        - -       0.069
      SF4B     -0.086      0.280        - -      -0.097
     PBC2B     -0.023      0.003     -0.028        - -
     PBC3B     -0.061     -0.041     -0.083        - -
     PBC5B      0.002      0.119      0.044        - -
      FC3B      0.178     -0.036      0.178        - -

 No Non-Zero Modification Indices for BETA

         Modification Indices for GAMMA

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
    BEHAVE      - -        - -        - -       8.605

         Expected Change for GAMMA

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
    BEHAVE      - -        - -        - -      -0.234

         Standardized Expected Change for GAMMA

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
    BEHAVE      - -        - -        - -      -0.623

 No Non-Zero Modification Indices for PHI
```

```
No Non-Zero Modification Indices for PSI

        Modification Indices for THETA-EPS

               BI1B       BI2B       BI3B
           --------   --------   --------
    BI1B       - -
    BI2B     3.551        - -
    BI3B    12.483      3.389        - -

        Expected Change for THETA-EPS

               BI1B       BI2B       BI3B
           --------   --------   --------
    BI1B       - -
    BI2B    -2.038        - -
    BI3B     0.768     -1.810        - -

        Completely Standardized Expected Change for THETA-EPS

               BI1B       BI2B       BI3B
           --------   --------   --------
    BI1B       - -
    BI2B    -0.112        - -
    BI3B     0.219     -0.174        - -

        Modification Indices for THETA-DELTA-EPS

               BI1B       BI2B       BI3B
           --------   --------   --------
     U6B     4.813      0.099     10.181
    RA1B     1.823      2.885      6.977
    RA5B     0.231      0.106      4.422
    OE7B     0.554      2.619      2.762
   EOU3B     1.127      1.004      1.829
   EOU5B     0.053      2.517      0.761
```

```
 EOU6B      0.265       0.231       0.161
  EU4B     16.927       3.046       0.345
  SN1B      2.614       0.245       0.774
  SN2B      2.688       0.177       0.050
  SF2B      0.362       0.000       2.679
  SF4B      0.471       0.597       1.208
 PBC2B      3.930       3.621       3.429
 PBC3B      0.012       1.568       0.012
 PBC5B      0.211       3.409      11.952
  FC3B      0.051       0.437      13.672

     Expected Change for THETA-DELTA-EPS

              BI1B        BI2B        BI3B
          --------    --------    --------
   U6B      0.572       0.231      -0.448
  RA1B     -0.359      -1.271      -0.378
  RA5B     -0.126       0.241       0.298
  OE7B     -0.217       1.331       0.262
 EOU3B      1.246      -3.312       0.856
 EOU5B     -0.283       5.522      -0.581
 EOU6B      0.209      -0.551      -0.088
  EU4B     -3.432       4.110      -0.265
  SN1B      2.250       1.948       0.663
  SN2B      0.798      -0.571       0.058
  SF2B      0.257       0.006      -0.372
  SF4B     -2.933       9.268       2.523
 PBC2B      0.914      -2.471       0.461
 PBC3B      0.051      -1.623      -0.027
 PBC5B      0.181       2.029      -0.726
  FC3B     -0.309      -2.538      -2.710

     Completely Standardized Expected Change for THETA-DELTA-EPS

              BI1B        BI2B        BI3B
          --------    --------    --------
```

```
      U6B       0.086      0.012     -0.118
     RA1B      -0.054     -0.064     -0.100
     RA5B      -0.019      0.012      0.078
     OE7B      -0.029      0.060      0.062
    EOU3B       0.042     -0.037      0.050
    EOU5B      -0.009      0.057     -0.031
    EOU6B       0.020     -0.017     -0.014
     EU4B      -0.157      0.064     -0.021
     SN1B       0.067      0.020      0.035
     SN2B       0.077     -0.019      0.010
     SF2B       0.028      0.000     -0.072
     SF4B      -0.030      0.032      0.045
    PBC2B       0.081     -0.074      0.072
    PBC3B       0.005     -0.049     -0.004
    PBC5B       0.021      0.080     -0.149
     FC3B      -0.010     -0.029     -0.160

         Modification Indices for THETA-DELTA

                  U6B       RA1B       RA5B       OE7B      EOU3B      EOU5B
             --------   --------   --------   --------   --------   --------
      U6B       - -
     RA1B       0.449       - -
     RA5B       0.109      4.504       - -
     OE7B       2.340      0.214      0.431       - -
    EOU3B       0.518      0.689      0.214      2.571       - -
    EOU5B       0.015      0.050      0.333      0.183      0.282       - -
    EOU6B       0.004      0.148      0.163      0.123      0.167      0.005
     EU4B       0.114      0.649      0.143      0.063      0.200      0.426
     SN1B       0.229      0.002      0.248      0.074      0.148      0.215
     SN2B       0.607      0.019      0.003      0.754      3.244      0.315
     SF2B       0.168      0.355      0.053      1.980      2.657      0.204
     SF4B       0.083      3.655      0.673      0.016      0.109      0.773
    PBC2B       2.084      0.855      0.678      0.200      0.056      0.073
    PBC3B       2.198      0.019      0.672      0.341      0.010      0.009
    PBC5B       0.024      0.486      0.306      0.014      2.078      0.664
```

```
    FC3B      7.848      3.577      0.005      0.113      0.214      1.454

         Modification Indices for THETA-DELTA

                EOU6B       EU4B       SN1B       SN2B       SF2B       SF4B
             --------   --------   --------   --------   --------   --------
   EOU6B        - -
    EU4B      0.840        - -
    SN1B      0.236      0.247        - -
    SN2B      0.365      0.540      0.029        - -
    SF2B      0.068      0.162      0.429     74.859        - -
    SF4B      0.584      0.554      0.172      0.035      3.221        - -
   PBC2B      0.001      0.000      0.017      0.002      0.539        - -
   PBC3B      0.003      0.144      0.310      0.006      0.075      0.385
   PBC5B      0.890      0.507      0.002      2.753      0.419      0.086
    FC3B      0.621      1.246      4.370      5.089      7.582      0.491

         Modification Indices for THETA-DELTA

                PBC2B      PBC3B      PBC5B       FC3B
             --------   --------   --------   --------
   PBC2B        - -
   PBC3B     12.621        - -
   PBC5B      0.480      0.030        - -
    FC3B      2.469      2.684      3.837        - -

         Expected Change for THETA-DELTA

                  U6B       RA1B       RA5B       OE7B      EOU3B      EOU5B
             --------   --------   --------   --------   --------   --------
     U6B        - -
    RA1B      0.199        - -
    RA5B     -0.099      0.629        - -
    OE7B     -0.513      0.153     -0.219        - -
   EOU3B      0.807     -0.950      0.522      2.013        - -
   EOU5B     -0.145     -0.268     -0.684      0.563     -3.331        - -
```

```
EOU6B      0.023      0.152     -0.157     -0.152     -0.845      0.156
 EU4B     -0.269      0.655     -0.303     -0.224     -1.876      3.038
 SN1B      0.672      0.066     -0.702      0.426      2.341     -2.982
 SN2B      0.366      0.066     -0.025     -0.457     -3.776     -1.233
 SF2B      0.169      0.250     -0.095     -0.649     -2.993     -0.870
 SF4B      1.215     -8.198     -3.482      0.589     -6.124     17.172
PBC2B      0.638     -0.417     -0.367     -0.222      0.471     -0.562
PBC3B      0.654     -0.062     -0.364     -0.288      0.194     -0.202
PBC5B      0.058     -0.268     -0.209     -0.050      2.437      1.442
 FC3B      3.670      2.534     -0.097      0.493      2.731     -7.449

     Expected Change for THETA-DELTA

           EOU6B       EU4B       SN1B       SN2B       SF2B       SF4B
        --------   --------   --------   --------   --------   --------
EOU6B       - -
 EU4B      1.407       - -
 SN1B     -1.030     -2.160       - -
 SN2B     -0.438     -1.094     -0.454       - -
 SF2B     -0.165     -0.525     -1.511      6.628       - -
 SF4B      4.914      9.833    -14.237      1.466     12.312       - -
PBC2B      0.017      0.009     -0.343     -0.035     -0.537       - -
PBC3B      0.037      0.533     -1.503     -0.067     -0.199     -4.806
PBC5B      0.550      0.854      0.089     -1.170     -0.399     -1.824
 FC3B     -1.603     -4.674     14.768      5.551      5.936    -15.170

     Expected Change for THETA-DELTA

           PBC2B      PBC3B      PBC5B       FC3B
        --------   --------   --------   --------
PBC2B       - -
PBC3B     10.722       - -
PBC5B     -0.590     -0.152       - -
 FC3B     -4.639     -4.997      3.972       - -

     Completely Standardized Expected Change for THETA-DELTA
```

```
              U6B        RA1B        RA5B        OE7B       EOU3B       EOU5B
          --------    --------    --------    --------    --------    --------
     U6B     - -
    RA1B    0.028        - -
    RA5B   -0.014       0.087        - -
    OE7B   -0.064       0.019      -0.027        - -
   EOU3B    0.025      -0.029       0.016       0.056        - -
   EOU5B   -0.004      -0.008      -0.019       0.014      -0.021        - -
   EOU6B    0.002       0.013      -0.014      -0.012      -0.016       0.003
    EU4B   -0.011       0.028      -0.013      -0.008      -0.018       0.026
    SN1B    0.019       0.002      -0.019       0.011       0.014      -0.017
    SN2B    0.033       0.006      -0.002      -0.036      -0.075      -0.022
    SF2B    0.017       0.025      -0.010      -0.059      -0.068      -0.018
    SF4B    0.011      -0.077      -0.033       0.005      -0.013       0.033
   PBC2B    0.052      -0.034      -0.030      -0.016       0.009      -0.009
   PBC3B    0.054      -0.005      -0.030      -0.021       0.004      -0.003
   PBC5B    0.006      -0.029      -0.023      -0.005       0.059       0.032
    FC3B    0.114       0.079      -0.003       0.014       0.019      -0.047

         Completely Standardized Expected Change for THETA-DELTA

            EOU6B        EU4B        SN1B        SN2B        SF2B        SF4B
          --------    --------    --------    --------    --------    --------
   EOU6B     - -
    EU4B    0.037        - -
    SN1B   -0.018      -0.018        - -
    SN2B   -0.024      -0.030      -0.008        - -
    SF2B   -0.010      -0.016      -0.031       0.431        - -
    SF4B    0.029       0.028      -0.027       0.009       0.085        - -
   PBC2B    0.001       0.000      -0.006      -0.002      -0.032        - -
   PBC3B    0.002       0.013      -0.025      -0.004      -0.012      -0.027
   PBC5B    0.037       0.028       0.002      -0.081      -0.032      -0.013
    FC3B   -0.031      -0.044       0.091       0.110       0.135      -0.032

         Completely Standardized Expected Change for THETA-DELTA
```

```
            PBC2B      PBC3B      PBC5B       FC3B
         --------   --------   --------   --------
   PBC2B     - -
   PBC3B    0.522       - -
   PBC5B   -0.038     -0.010       - -
    FC3B   -0.085     -0.092      0.096       - -

Maximum Modification Index is   74.86 for Element (11,10) of THETA-DELTA

! A ONE

Standardized Solution

        LAMBDA-Y

           BEHAVE
         --------
    BI1B    1.157
    BI2B    4.690
    BI3B    0.944

        LAMBDA-X

          PERFORM     EFFORT     SOCIAL      FACIL
         --------   --------   --------   --------
     U6B    1.795       - -        - -        - -
    RA1B    1.700       - -        - -        - -
    RA5B    1.761       - -        - -        - -
    OE7B    1.988       - -        - -        - -
   EOU3B     - -       7.827       - -        - -
   EOU5B     - -       9.175       - -        - -
   EOU6B     - -       3.029       - -        - -
    EU4B     - -       6.044       - -        - -
    SN1B     - -        - -       7.924       - -
    SN2B     - -        - -       0.899       - -
```

```
      SF2B       - -        - -       0.748       - -
      SF4B       - -        - -      18.317       - -
     PBC2B       - -        - -        - -       3.085
     PBC3B       - -        - -        - -       3.218
     PBC5B       - -        - -        - -       1.035
      FC3B       - -        - -        - -       3.557

         GAMMA

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
    BEHAVE     0.353      0.439     -0.229       - -

         Correlation Matrix of ETA and KSI

              BEHAVE    PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------   --------
    BEHAVE     1.000
   PERFORM     0.418      1.000
    EFFORT     0.491      0.578      1.000
    SOCIAL     0.353      0.822      0.665      1.000
     FACIL     0.003      0.173      0.127      0.496      1.000

         PSI

              BEHAVE
            --------
               0.718

         Regression Matrix ETA on KSI (Standardized)

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
    BEHAVE     0.353      0.439     -0.229       - -

  ! A ONE
```

```
Completely Standardized Solution

        LAMBDA-Y

             BEHAVE
            --------
    BI1B       0.466
    BI2B       0.638
    BI3B       0.667

        LAMBDA-X

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
     U6B       0.668       - -        - -        - -
    RA1B       0.633       - -        - -        - -
    RA5B       0.656       - -        - -        - -
    OE7B       0.662       - -        - -        - -
   EOU3B        - -      0.650        - -        - -
   EOU5B        - -      0.702        - -        - -
   EOU6B        - -      0.703        - -        - -
    EU4B        - -      0.688        - -        - -
    SN1B        - -        - -      0.587        - -
    SN2B        - -        - -      0.214        - -
    SF2B        - -        - -      0.204        - -
    SF4B        - -        - -      0.465        - -
   PBC2B        - -        - -        - -      0.680
   PBC3B        - -        - -        - -      0.710
   PBC5B        - -        - -        - -      0.301
    FC3B        - -        - -        - -      0.296

        GAMMA

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
```

```
  BEHAVE      0.353      0.439     -0.229       - -

        Correlation Matrix of ETA and KSI

             BEHAVE    PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------   --------
  BEHAVE      1.000
 PERFORM      0.418      1.000
  EFFORT      0.491      0.578      1.000
  SOCIAL      0.353      0.822      0.665      1.000
   FACIL      0.003      0.173      0.127      0.496      1.000

        PSI

             BEHAVE
           --------
              0.718

        THETA-EPS

               BI1B       BI2B       BI3B
           --------   --------   --------
              0.783      0.593      0.555

        THETA-DELTA

                U6B       RA1B       RA5B       OE7B      EOU3B      EOU5B
           --------   --------   --------   --------   --------   --------
              0.554      0.600      0.570      0.561      0.578      0.508

        THETA-DELTA

              EOU6B       EU4B       SN1B       SN2B       SF2B       SF4B
           --------   --------   --------   --------   --------   --------
              0.506      0.526      0.656      0.954      0.958      0.784
```

```
        THETA-DELTA

              PBC2B      PBC3B      PBC5B       FC3B
           --------   --------   --------   --------
              0.537      0.496      0.909      0.912

        Regression Matrix ETA on KSI (Standardized)

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
  BEHAVE      0.353      0.439     -0.229       - -

! A ONE

Total and Indirect Effects

        Total Effects of KSI on ETA

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
  BEHAVE      0.227      0.065     -0.354       - -
            (0.111)    (0.018)    (0.316)
              2.046      3.542     -1.119


        Total Effects of ETA on Y

             BEHAVE
           --------
    BI1B      1.000

    BI2B      4.052
            (0.638)
              6.355
```

```
    BI3B      0.816
            (0.128)
              6.358

        Total Effects of KSI on Y

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
    BI1B      0.227      0.065     -0.354        - -
            (0.111)    (0.018)    (0.316)
              2.046      3.542     -1.119

    BI2B      0.922      0.263     -1.434        - -
            (0.443)    (0.070)    (1.275)
              2.082      3.737     -1.124

    BI3B      0.186      0.053     -0.289        - -
            (0.089)    (0.014)    (0.256)
              2.087      3.771     -1.125

! A ONE

Standardized Total and Indirect Effects

        Standardized Total Effects of KSI on ETA

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
  BEHAVE      0.353      0.439     -0.229        - -

        Standardized Total Effects of ETA on Y

              BEHAVE
```

```
          --------
BI1B         1.157
BI2B         4.690
BI3B         0.944

    Completely Standardized Total Effects of ETA on Y

            BEHAVE
          --------
BI1B         0.466
BI2B         0.638
BI3B         0.667

    Standardized Total Effects of KSI on Y

           PERFORM     EFFORT     SOCIAL      FACIL
          --------   --------   --------   --------
BI1B         0.408      0.508     -0.265       - -
BI2B         1.655      2.059     -1.072       - -
BI3B         0.333      0.414     -0.216       - -

    Completely Standardized Total Effects of KSI on Y

           PERFORM     EFFORT     SOCIAL      FACIL
          --------   --------   --------   --------
BI1B         0.164      0.205     -0.107       - -
BI2B         0.225      0.280     -0.146       - -
BI3B         0.235      0.293     -0.153       - -
```

UTAUT- SSK Data Set

```
Covariance Matrix

             BI1D       BI2D       BI3D        U6D       RA1D       RA5D
           --------   --------   --------   --------   --------   --------
    BI1D     4.627
    BI2D     3.147     30.132
    BI3D     1.190      3.111      2.000
     U6D     3.363     11.110      2.565     91.336
    RA1D     0.189      3.618      0.849     37.942     91.336
    RA5D     3.503     12.573      1.885     38.992     41.360     91.336
    OE7D     1.315      4.676      0.770     13.718     13.511     13.594
   EOU3D     1.031      3.626      1.093      7.521      7.182      7.877
   EOU5D     2.965     13.203      1.334     26.462     25.486     28.463
   EOU6D     1.228      3.796      0.600      9.943     10.616     10.074
    EU4D     0.466      4.967      0.459     11.425     12.602     12.238
    SN1D     3.263      6.052      1.633     22.256     18.579     17.198
    SN2D     0.657      0.302      0.088      3.219      2.185      1.726
    SF2D    -0.257      0.092      0.015      1.872      2.034      1.034
    SF4D     1.746      9.128      0.817     35.603     28.156     29.056
   PBC2D     0.912     -2.220     -0.311      5.899      2.221      0.924
   PBC3D     0.355     -2.320     -0.426      5.371      2.253      0.773
   PBC5D    -0.010      3.556      0.614      3.736      1.614      2.595
    FC3D    -0.970     -1.808     -0.600     15.020      8.530      4.945
```

```
Covariance Matrix

                OE7D      EOU3D      EOU5D      EOU6D       EU4D       SN1D
            --------   --------   --------   --------   --------   --------
     OE7D     11.354
    EOU3D      3.135      6.838
    EOU5D     11.614     10.040     83.460
    EOU6D      3.994      3.824     14.965     11.354
     EU4D      4.698      4.629     18.681      7.070     17.722
     SN1D      7.495      5.030     16.709      6.535      7.551     51.178
     SN2D      0.553     -0.355      0.401      0.173      0.305      2.671
     SF2D      0.110      0.028      0.978      0.513      0.746      1.024
     SF4D     12.117      7.423     34.109     12.621     15.335     25.067
    PBC2D      1.076      0.293      1.206      0.732      0.972      5.602
    PBC3D      0.912      0.238      1.044      0.650      1.014      5.091
    PBC5D      0.844      2.438      2.913      1.403      1.706      5.325
     FC3D      2.547      0.222     -2.926     -0.377     -0.535      7.791

Covariance Matrix

                SN2D       SF2D       SF4D      PBC2D      PBC3D      PBC5D
            --------   --------   --------   --------   --------   --------
     SN2D     12.476
     SF2D      5.429     11.126
     SF4D      4.461      7.888    180.170
    PBC2D      2.030      1.512      7.959     14.647
    PBC3D      1.907      1.483      7.394      7.165     14.020
    PBC5D     -0.074      1.050      5.391      2.059      2.490     24.942
     FC3D      5.091      5.177      6.758      5.481      5.456      9.300

Covariance Matrix

                FC3D
            --------
     FC3D     71.844
```

```
Parameter Specifications

         LAMBDA-Y

              BEHAVE
            --------
     BI1D          0
     BI2D          1
     BI3D          2

         LAMBDA-X

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
      U6D          0          0          0          0
     RA1D          3          0          0          0
     RA5D          4          0          0          0
     OE7D          5          0          0          0
    EOU3D          0          0          0          0
    EOU5D          0          6          0          0
    EOU6D          0          7          0          0
     EU4D          0          8          0          0
     SN1D          0          0          9          0
     SN2D          0          0         10          0
     SF2D          0          0          0          0
     SF4D          0          0         11          0
    PBC2D          0          0          0         12
    PBC3D          0          0          0          0
    PBC5D          0          0          0         13
     FC3D          0          0          0         14

         GAMMA

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
```

```
 BEHAVE        15         16         17          0

       PHI

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
PERFORM        18
 EFFORT        19         20
 SOCIAL        21         22         23
  FACIL        24         25         26         27

       PSI

              BEHAVE
            --------
               28

       THETA-EPS

                BI1D       BI2D       BI3D
            --------   --------   --------
               29         30         31

       THETA-DELTA

                 U6D       RA1D       RA5D       OE7D      EOU3D      EOU5D
            --------   --------   --------   --------   --------   --------
               32         33         34         35         36         37

       THETA-DELTA

               EOU6D       EU4D       SN1D       SN2D       SF2D       SF4D
            --------   --------   --------   --------   --------   --------
               38         39         40         41         42         43

       THETA-DELTA
```

```
          PBC2D      PBC3D      PBC5D       FC3D
       --------   --------   --------   --------
             44         45         46         47

Number of Iterations = 45

LISREL Estimates (Maximum Likelihood)

        LAMBDA-Y

            BEHAVE
          --------
 BI1D      1.000

 BI2D      3.077
          (0.469)
           6.561

 BI3D      0.854
          (0.130)
           6.555


        LAMBDA-X

           PERFORM     EFFORT     SOCIAL      FACIL
          --------   --------   --------   --------
  U6D      1.000        - -        - -        - -

 RA1D      0.957        - -        - -        - -
          (0.098)
           9.778
```

RA5D	0.991 (0.099) 10.037	- -	- -	- -
OE7D	0.362 (0.035) 10.300	- -	- -	- -
EOU3D	- -	1.000	- -	- -
EOU5D	- -	3.814 (0.368) 10.357	- -	- -
EOU6D	- -	1.433 (0.137) 10.481	- -	- -
EU4D	- -	1.728 (0.169) 10.241	- -	- -
SN1D	- -	- -	6.189 (2.001) 3.093	- -
SN2D	- -	- -	1.099 (0.471) 2.334	- -
SF2D	- -	- -	1.000	- -
SF4D	- -	- -	10.376 (3.400)	- -

```
                                     3.052

   PBC2D       - -         - -         - -       1.013
                                                (0.152)
                                                 6.652

   PBC3D       - -         - -         - -       1.000

   PBC5D       - -         - -         - -       0.394
                                                (0.122)
                                                 3.236

    FC3D       - -         - -         - -       0.931
                                                (0.213)
                                                 4.366


        GAMMA

             PERFORM      EFFORT      SOCIAL       FACIL
            --------    --------    --------    --------
  BEHAVE       0.062       0.227      -0.421        - -
             (0.030)     (0.092)     (0.308)
               2.050       2.470      -1.370


Covariance Matrix of ETA and KSI

              BEHAVE     PERFORM      EFFORT      SOCIAL       FACIL
            --------    --------    --------    --------    --------
  BEHAVE       1.208
 PERFORM       2.820      39.289
  EFFORT       0.775       7.460       2.740
  SOCIAL       0.187       3.073       0.727       0.397
   FACIL      -0.111       3.194       0.415       0.954       6.857
```

```
         PHI

                PERFORM     EFFORT     SOCIAL      FACIL
               --------   --------   --------   --------
    PERFORM      39.289
                (6.115)
                  6.425

     EFFORT       7.460      2.740
                (1.038)    (0.441)
                  7.187      6.213

     SOCIAL       3.073      0.727      0.397
                (1.022)    (0.245)    (0.248)
                  3.008      2.964      1.600

      FACIL       3.194      0.415      0.954      6.857
                (1.240)    (0.312)    (0.338)    (1.303)
                  2.576      1.328      2.821      5.260


         PSI

                 BEHAVE
               --------
                  0.937
                (0.233)
                  4.027

Squared Multiple Correlations for Structural Equations

                 BEHAVE
               --------
                  0.224
```

```
Squared Multiple Correlations for Reduced Form

          BEHAVE
        --------
           0.224

        THETA-EPS

            BI1D       BI2D       BI3D
        --------   --------   --------
           3.419     18.695      1.119
         (0.306)    (2.067)    (0.143)
          11.171      9.044      7.817


        Squared Multiple Correlations for Y - Variables

            BI1D       BI2D       BI3D
        --------   --------   --------
           0.261      0.380      0.440

        THETA-DELTA

             U6D       RA1D       RA5D       OE7D      EOU3D      EOU5D
        --------   --------   --------   --------   --------   --------
          52.047     55.362     52.748      6.196      4.098     43.603
         (4.690)    (4.823)    (4.717)    (0.573)    (0.354)    (4.054)
          11.098     11.479     11.182     10.815     11.584     10.756


        THETA-DELTA

           EOU6D       EU4D       SN1D       SN2D       SF2D       SF4D
        --------   --------   --------   --------   --------   --------
```

```
       5.729      9.537     35.957     11.996     10.728    137.384
     (0.544)    (0.871)    (3.367)    (0.883)    (0.789)   (11.722)
      10.528     10.944     10.679     13.590     13.605     11.720


 THETA-DELTA

       PBC2D      PBC3D      PBC5D       FC3D
    --------   --------   --------   --------
       7.612      7.164     23.875     65.902
     (1.136)    (1.098)    (1.768)    (4.988)
       6.701      6.527     13.503     13.213


 Squared Multiple Correlations for X - Variables

         U6D       RA1D       RA5D       OE7D      EOU3D      EOU5D
    --------   --------   --------   --------   --------   --------
       0.430      0.394      0.422      0.454      0.401      0.478

 Squared Multiple Correlations for X - Variables

       EOU6D       EU4D       SN1D       SN2D       SF2D       SF4D
    --------   --------   --------   --------   --------   --------
       0.495      0.462      0.297      0.038      0.036      0.237

 Squared Multiple Correlations for X - Variables

       PBC2D      PBC3D      PBC5D       FC3D
    --------   --------   --------   --------
       0.480      0.489      0.043      0.083

                     Goodness of Fit Statistics
```

```
                        Degrees of Freedom = 143
          Minimum Fit Function Chi-Square = 295.065 (P = 0.00)
  Normal Theory Weighted Least Squares Chi-Square = 290.255 (P = 0.00)
           Estimated Non-centrality Parameter (NCP) = 147.255
      90 Percent Confidence Interval for NCP = (102.441 ; 199.846)

                   Minimum Fit Function Value = 0.776
           Population Discrepancy Function Value (F0) = 0.388
        90 Percent Confidence Interval for F0 = (0.270 ; 0.526)
        Root Mean Square Error of Approximation (RMSEA) = 0.0521
      90 Percent Confidence Interval for RMSEA = (0.0434 ; 0.0606)
          P-Value for Test of Close Fit (RMSEA < 0.05) = 0.337

             Expected Cross-Validation Index (ECVI) = 1.011
       90 Percent Confidence Interval for ECVI = (0.893 ; 1.150)
                    ECVI for Saturated Model = 1.000
                  ECVI for Independence Model = 7.863

Chi-Square for Independence Model with 171 Degrees of Freedom = 2950.060
                      Independence AIC = 2988.060
                          Model AIC = 384.255
                        Saturated AIC = 380.000
                      Independence CAIC = 3081.973
                          Model CAIC = 616.567
                       Saturated CAIC = 1319.132

                     Normed Fit Index (NFI) = 0.900
                  Non-Normed Fit Index (NNFI) = 0.935
               Parsimony Normed Fit Index (PNFI) = 0.753
                  Comparative Fit Index (CFI) = 0.945
                  Incremental Fit Index (IFI) = 0.946
                    Relative Fit Index (RFI) = 0.880

                       Critical N (CN) = 239.582
```

```
               Root Mean Square Residual (RMR) = 1.886
                      Standardized RMR = 0.0619
                 Goodness of Fit Index (GFI) = 0.926
              Adjusted Goodness of Fit Index (AGFI) = 0.901
              Parsimony Goodness of Fit Index (PGFI) = 0.697


 Fitted Covariance Matrix

                BI1D       BI2D       BI3D        U6D       RA1D       RA5D
            --------   --------   --------   --------   --------   --------
     BI1D      4.627
     BI2D      3.717     30.132
     BI3D      1.032      3.174      2.000
      U6D      2.820      8.677      2.408     91.336
     RA1D      2.698      8.303      2.304     37.595     91.336
     RA5D      2.795      8.599      2.386     38.937     37.258     91.336
     OE7D      1.022      3.144      0.872     14.235     13.622     14.108
    EOU3D      0.775      2.385      0.662      7.460      7.139      7.393
    EOU5D      2.956      9.096      2.524     28.453     27.226     28.198
    EOU6D      1.111      3.417      0.948     10.689     10.228     10.593
     EU4D      1.340      4.122      1.144     12.894     12.338     12.779
     SN1D      1.156      3.557      0.987     19.019     18.199     18.849
     SN2D      0.205      0.632      0.175      3.378      3.232      3.347
     SF2D      0.187      0.575      0.160      3.073      2.941      3.046
     SF4D      1.938      5.964      1.655     31.888     30.514     31.603
    PBC2D     -0.112     -0.345     -0.096      3.235      3.096      3.206
    PBC3D     -0.111     -0.341     -0.095      3.194      3.056      3.165
    PBC5D     -0.044     -0.134     -0.037      1.260      1.206      1.249
     FC3D     -0.103     -0.317     -0.088      2.973      2.845      2.947

 Fitted Covariance Matrix
```

```
              OE7D      EOU3D      EOU5D      EOU6D       EU4D       SN1D
          --------   --------   --------   --------   --------   --------
    OE7D    11.354
   EOU3D     2.703      6.838
   EOU5D    10.309     10.450     83.460
   EOU6D     3.873      3.926     14.973     11.354
    EU4D     4.672      4.736     18.062      6.785     17.722
    SN1D     6.891      4.496     17.149      6.443      7.772     51.178
    SN2D     1.224      0.798      3.045      1.144      1.380      2.703
    SF2D     1.114      0.727      2.771      1.041      1.256      2.459
    SF4D    11.554      7.539     28.753     10.802     13.030     25.519
   PBC2D     1.172      0.420      1.603      0.602      0.726      5.978
   PBC3D     1.157      0.415      1.582      0.594      0.717      5.902
   PBC5D     0.456      0.164      0.624      0.234      0.283      2.328
    FC3D     1.077      0.386      1.473      0.553      0.667      5.494

Fitted Covariance Matrix

              SN2D       SF2D       SF4D      PBC2D      PBC3D      PBC5D
          --------   --------   --------   --------   --------   --------
    SN2D    12.476
    SF2D     0.437     11.126
    SF4D     4.532      4.124    180.170
   PBC2D     1.062      0.966     10.023     14.647
   PBC3D     1.048      0.954      9.895      6.945     14.020
   PBC5D     0.413      0.376      3.903      2.739      2.704     24.942
    FC3D     0.976      0.888      9.211      6.465      6.383      2.518

Fitted Covariance Matrix

              FC3D
          --------
    FC3D    71.844

Fitted Residuals
```

```
             BI1D       BI2D       BI3D        U6D       RA1D       RA5D
           --------   --------   --------   --------   --------   --------
    BI1D     0.000
    BI2D    -0.570      0.000
    BI3D     0.158     -0.063      0.000
     U6D     0.543      2.433      0.157      0.000
    RA1D    -2.509     -4.685     -1.455      0.347      0.000
    RA5D     0.708      3.974     -0.502      0.055      4.102      0.000
    OE7D     0.293      1.532     -0.103     -0.517     -0.111     -0.514
   EOU3D     0.256      1.241      0.431      0.061      0.044      0.484
   EOU5D     0.009      4.107     -1.190     -1.991     -1.740      0.265
   EOU6D     0.118      0.379     -0.348     -0.746      0.388     -0.519
    EU4D    -0.874      0.845     -0.685     -1.469      0.264     -0.541
    SN1D     2.107      2.494      0.646      3.237      0.380     -1.651
    SN2D     0.452     -0.330     -0.087     -0.159     -1.047     -1.622
    SF2D    -0.444     -0.482     -0.145     -1.202     -0.907     -2.011
    SF4D    -0.192      3.163     -0.838      3.715     -2.358     -2.547
   PBC2D     1.024     -1.875     -0.215      2.663     -0.875     -2.283
   PBC3D     0.466     -1.979     -0.332      2.177     -0.803     -2.392
   PBC5D     0.033      3.690      0.651      2.476      0.408      1.346
    FC3D    -0.866     -1.490     -0.512     12.047      5.685      1.998

Fitted Residuals

             OE7D      EOU3D      EOU5D      EOU6D       EU4D       SN1D
           --------   --------   --------   --------   --------   --------
    OE7D     0.000
   EOU3D     0.432      0.000
   EOU5D     1.305     -0.410      0.000
   EOU6D     0.121     -0.102     -0.008      0.000
    EU4D     0.026     -0.106      0.619      0.284      0.000
    SN1D     0.604      0.533     -0.440      0.093     -0.220      0.000
    SN2D    -0.671     -1.153     -2.645     -0.971     -1.075     -0.032
    SF2D    -1.004     -0.698     -1.793     -0.528     -0.509     -1.436
    SF4D     0.563     -0.116      5.356      1.819      2.305     -0.452
   PBC2D    -0.096     -0.127     -0.397      0.130      0.246     -0.375
```

```
   PBC3D     -0.245      -0.177      -0.539       0.056       0.297      -0.811
   PBC5D      0.387       2.274       2.289       1.168       1.423       2.998
    FC3D      1.470      -0.164      -4.399      -0.930      -1.203       2.297

Fitted Residuals

                SN2D        SF2D        SF4D       PBC2D       PBC3D       PBC5D
            --------    --------    --------    --------    --------    --------
    SN2D      0.000
    SF2D      4.993       0.000
    SF4D     -0.071       3.764       0.000
   PBC2D      0.968       0.546      -2.064       0.000
   PBC3D      0.859       0.530      -2.501       0.220       0.000
   PBC5D     -0.487       0.674       1.488      -0.681      -0.214       0.000
    FC3D      4.116       4.289      -2.453      -0.984      -0.927       6.783

Fitted Residuals

                FC3D
            --------
    FC3D      0.000

Summary Statistics for Fitted Residuals

Smallest Fitted Residual =   -4.685
Median Fitted Residual =     0.000
Largest Fitted Residual =   12.047

Stemleaf Plot

 - 4|74
 - 3|
 - 2|655554431000
 - 1|987765554222210000
 - 0|99999988877777655555555555544444333222222221111111111100000000000000000+07
   0|11111112222333333344444445555555666677789
```

```
  1|00223345558
  2|01233334557
  3|022778
  4|01113
  5|047
  6|8
  7|
  8|
  9|
 10|
 11|
 12|0

Standardized Residuals

            BI1D       BI2D       BI3D        U6D       RA1D       RA5D
          --------   --------   --------   --------   --------   --------
    BI1D    - -
    BI2D   -2.653       - -
    BI3D    3.464     -0.846       - -
     U6D    0.635      1.222      0.320       - -
    RA1D   -2.884     -2.289     -2.873      0.168       - -
    RA5D    0.825      1.985     -1.016      0.028      1.955       - -
    OE7D    0.985      2.226     -0.608     -0.795     -0.159     -0.778
   EOU3D    1.081      2.226      3.118      0.072      0.050      0.570
   EOU5D    0.011      2.240     -2.651     -0.723     -0.611      0.095
   EOU6D    0.405      0.569     -2.141     -0.747      0.375     -0.516
    EU4D   -2.364      0.988     -3.261     -1.141      0.198     -0.417
    SN1D    3.056      1.514      1.575      1.485      0.167     -0.751
    SN2D    1.192     -0.345     -0.357     -0.117     -0.752     -1.187
    SF2D   -1.239     -0.533     -0.626     -0.934     -0.688     -1.556
    SF4D   -0.145      0.982     -1.037      0.855     -0.524     -0.582
   PBC2D    2.812     -2.195     -1.029      1.899     -0.605     -1.617
   PBC3D    1.311     -2.381     -1.630      1.597     -0.570     -1.742
   PBC5D    0.061      2.670      1.834      1.043      0.172      0.567
    FC3D   -0.948     -0.646     -0.865      3.047      1.432      0.505
```

```
Standardized Residuals

              OE7D      EOU3D      EOU5D      EOU6D       EU4D       SN1D
          --------   --------   --------   --------   --------   --------
    OE7D      - -
   EOU3D     1.481       - -
   EOU5D     1.375     -0.811       - -
   EOU6D     0.353     -0.565     -0.015       - -
    EU4D     0.058     -0.443      0.855      1.109       - -
    SN1D     0.809      0.811     -0.207      0.120     -0.221       - -
    SN2D    -1.423     -2.900     -1.979     -1.988     -1.732     -0.034
    SF2D    -2.249     -1.857     -1.417     -1.143     -0.867     -1.591
    SF4D     0.377     -0.089      1.260      1.180      1.160     -0.224
   PBC2D    -0.198     -0.314     -0.299      0.270      0.396     -0.459
   PBC3D    -0.522     -0.448     -0.417      0.119      0.493     -1.021
   PBC5D     0.464      3.462      1.001      1.387      1.350      1.814
    FC3D     1.057     -0.150     -1.156     -0.664     -0.685      0.840

Standardized Residuals

              SN2D       SF2D       SF4D      PBC2D      PBC3D      PBC5D
          --------   --------   --------   --------   --------   --------
    SN2D      - -
    SF2D     8.705       - -
    SF4D    -0.037      2.068       - -
   PBC2D     1.637      0.974     -1.198       - -
   PBC3D     1.490      0.969     -1.493      3.510       - -
   PBC5D    -0.550      0.804      0.470     -1.388     -0.457       - -
    FC3D     2.767      3.050     -0.467     -1.318     -1.298      3.445

Standardized Residuals

              FC3D
          --------
    FC3D      - -
```

```
Summary Statistics for Standardized Residuals

Smallest Standardized Residual =   -3.261
Median Standardized Residual =    0.000
Largest Standardized Residual =    8.705

Stemleaf Plot

 - 3|3
 - 2|9997744322100
 - 1|97766665444332222110000
 - 0|999988888877777666666665555555544444333222221111000000000000000000000000
   0|111111122223344444555566668888899
   1|00000011122223334445555666889
   2|001222788
   3|00114555
   4|
   5|
   6|
   7|
   8|7
 Largest Negative Standardized Residuals
 Residual for     BI2D and     BI1D  -2.653
 Residual for     RA1D and     BI1D  -2.884
 Residual for     RA1D and     BI3D  -2.873
 Residual for    EOU5D and     BI3D  -2.651
 Residual for     EU4D and     BI3D  -3.261
 Residual for     SN2D and    EOU3D  -2.900
 Largest Positive Standardized Residuals
 Residual for     BI3D and     BI1D   3.464
 Residual for    EOU3D and     BI3D   3.118
 Residual for     SN1D and     BI1D   3.056
 Residual for     SF2D and     SN2D   8.705
 Residual for    PBC2D and     BI1D   2.812
 Residual for    PBC3D and    PBC2D   3.510
```

```
Residual for    PBC5D and     BI2D   2.670
Residual for    PBC5D and    EOU3D   3.462
Residual for     FC3D and      U6D   3.047
Residual for     FC3D and     SN2D   2.767
Residual for     FC3D and     SF2D   3.050
Residual for     FC3D and    PBC5D   3.445


                        Qplot of Standardized Residuals

 3.5.........................................................................
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    .                                                           .           x
    .                                                         .             x
    .                                                       .               x
    .                                                      .            x  x.
    .                                                    .             x    .
    .                                                  .           xxx      .
    .                                                 .      x x            .
N   .                                               .    xx**               .
o   .                                             .   x**                   .
r   .                                            .  x*x                     .
m   .                                          .  xxx                       .
a   .                                        .x x *                         .
l   .                                       *x                              .
    .                                    ***                                .
Q   .                                  xxx                                  .
u   .                               x**x                                    .
a   .                              xx.                                      .
```

```
n   .                             *x.                                        .
t   .                            xx.                                         .
i   .                          **x                                           .
l   .                       ***.                                             .
e   .                     x** .                                              .
s   .                 xxxx  .                                                .
    .               *xx   .                                                  .
    .            x*      .                                                   .
    .           *x     .                                                     .
    .        *       .                                                       .
    .      x        .                                                        .
    .     x       .                                                          .
    .     x     .                                                            .
    . x        .                                                             .
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    . .                                                                      .
-3.5..........................................................................
  -3.5                                                                      3.5
                            Standardized Residuals


Modification Indices and Expected Change

No Non-Zero Modification Indices for LAMBDA-Y

Modification Indices for LAMBDA-X

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
     U6D        - -       1.273      5.860      8.914
    RA1D        - -       0.165      0.101      0.131
    RA5D        - -       0.026      5.540      4.474
```

```
      OE7D        - -       2.691      0.044      0.084
     EOU3D      1.405        - -       0.005      0.058
     EOU5D      0.000        - -       0.135      0.285
     EOU6D      0.095        - -       0.033      0.112
      EU4D      0.659        - -       0.062      0.407
      SN1D      2.220      0.581        - -      0.530
      SN2D      4.481     11.162        - -      6.726
      SF2D      7.280      5.435        - -      4.502
      SF4D      0.417      3.122        - -      2.812
     PBC2D      0.085      0.010      0.072        - -
     PBC3D      0.665      0.204      0.647        - -
     PBC5D      2.042      5.196      3.525        - -
      FC3D      2.310      0.102      1.075        - -

 Expected Change for LAMBDA-X

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
       U6D       - -     -0.634      4.099      0.611
      RA1D       - -     -0.227     -0.540     -0.074
      RA5D       - -     -0.090     -3.986     -0.433
      OE7D       - -      0.327      0.125     -0.021
     EOU3D     0.047       - -      -0.025     -0.013
     EOU5D     0.003       - -      -0.459     -0.098
     EOU6D    -0.016       - -       0.084      0.023
      EU4D    -0.052       - -       0.143      0.054
      SN1D     0.256      0.391       - -      -0.191
      SN2D    -0.144     -0.684       - -       0.280
      SF2D    -0.173     -0.450       - -       0.216
      SF4D     0.191      1.558       - -      -0.759
     PBC2D    -0.011     -0.014     -0.132       - -
     PBC3D    -0.030     -0.059     -0.392       - -
     PBC5D     0.067      0.392      1.122       - -
      FC3D     0.120     -0.092      1.043       - -

 Standardized Expected Change for LAMBDA-X
```

```
            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
     U6D       - -      -1.050      2.584      1.599
    RA1D       - -      -0.377     -0.341     -0.195
    RA5D       - -      -0.148     -2.513     -1.134
    OE7D       - -       0.541      0.079     -0.055
   EOU3D     0.294        - -      -0.016     -0.034
   EOU5D     0.019        - -      -0.289     -0.258
   EOU6D    -0.099        - -       0.053      0.059
    EU4D    -0.324        - -       0.090      0.142
    SN1D     1.607       0.647        - -     -0.501
    SN2D    -0.902      -1.132        - -      0.732
    SF2D    -1.085      -0.746        - -      0.565
    SF4D     1.196       2.578        - -     -1.988
   PBC2D    -0.068      -0.022     -0.083        - -
   PBC3D    -0.188      -0.098     -0.247        - -
   PBC5D     0.419       0.648      0.707        - -
    FC3D     0.750      -0.153      0.658        - -

Completely Standardized Expected Change for LAMBDA-X

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
     U6D       - -      -0.110      0.270      0.167
    RA1D       - -      -0.039     -0.036     -0.020
    RA5D       - -      -0.016     -0.263     -0.119
    OE7D       - -       0.161      0.023     -0.016
   EOU3D     0.112        - -      -0.006     -0.013
   EOU5D     0.002        - -      -0.032     -0.028
   EOU6D    -0.029        - -       0.016      0.018
    EU4D    -0.077        - -       0.021      0.034
    SN1D     0.225       0.090        - -     -0.070
    SN2D    -0.255      -0.321        - -      0.207
    SF2D    -0.325      -0.224        - -      0.170
    SF4D     0.089       0.192        - -     -0.148
```

```
   PBC2D     -0.018     -0.006     -0.022        - -
   PBC3D     -0.050     -0.026     -0.066        - -
   PBC5D      0.084      0.130      0.142        - -
    FC3D      0.089     -0.018      0.078        - -

No Non-Zero Modification Indices for BETA

Modification Indices for GAMMA

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
  BEHAVE       - -        - -        - -       4.963

Expected Change for GAMMA

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
  BEHAVE       - -        - -        - -      -0.251

Standardized Expected Change for GAMMA

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
  BEHAVE       - -        - -        - -      -0.598

No Non-Zero Modification Indices for PHI

No Non-Zero Modification Indices for PSI

Modification Indices for THETA-EPS

               BI1D       BI2D       BI3D
           --------   --------   --------
    BI1D       - -
    BI2D      7.038       - -
    BI3D     11.997      0.716        - -
```

```
Expected Change for THETA-EPS

               BI1D       BI2D       BI3D
           --------   --------   --------
     BI1D       - -
     BI2D    -2.078       - -
     BI3D     0.763     -0.624       - -

Completely Standardized Expected Change for THETA-EPS

               BI1D       BI2D       BI3D
           --------   --------   --------
     BI1D       - -
     BI2D    -0.176       - -
     BI3D     0.251     -0.080       - -

Modification Indices for THETA-DELTA-EPS

               BI1D       BI2D       BI3D
           --------   --------   --------
      U6D     0.150      0.017      1.495
     RA1D     6.526      4.997      0.354
     RA5D     0.413      1.659      0.971
     OE7D     0.482      1.780      0.324
    EOU3D     0.016      0.103     15.196
    EOU5D     0.080      3.284      5.712
    EOU6D     1.208      0.351      1.341
     EU4D     5.466      1.347      3.742
     SN1D     4.367      0.002      1.990
     SN2D     2.135      0.084      0.016
     SF2D     1.227      0.002      0.161
     SF4D     0.849      1.085      0.635
    PBC2D     7.485      3.640      0.219
    PBC3D     0.405      2.055      0.459
    PBC5D     2.719      5.977      1.065
```

```
     FC3D      2.138      0.017      0.155

 Expected Change for THETA-DELTA-EPS

               BI1D        BI2D        BI3D
            --------    --------    --------
      U6D      0.309       0.255       0.618
     RA1D     -2.074      -4.495      -0.305
     RA5D      0.515       2.557      -0.500
     OE7D      0.193       0.921      -0.100
    EOU3D      0.027      -0.175       0.542
    EOU5D      0.209       3.325      -1.121
    EOU6D      0.297      -0.398      -0.199
     EU4D     -0.803       0.989      -0.421
     SN1D      1.348       0.072       0.577
     SN2D      0.514      -0.252       0.028
     SF2D     -0.369       0.035       0.084
     SF4D     -1.142       3.195      -0.624
    PBC2D      0.911      -1.577      -0.099
    PBC3D      0.207      -1.159      -0.140
    PBC5D     -0.820       2.996       0.322
     FC3D     -1.218       0.267      -0.206

 Completely Standardized Expected Change for THETA-DELTA-EPS

               BI1D        BI2D        BI3D
            --------    --------    --------
      U6D      0.015       0.005       0.046
     RA1D     -0.101      -0.086      -0.023
     RA5D      0.025       0.049      -0.037
     OE7D      0.027       0.050      -0.021
    EOU3D      0.005      -0.012       0.147
    EOU5D      0.011       0.066      -0.087
    EOU6D      0.041      -0.022      -0.042
     EU4D     -0.089       0.043      -0.071
     SN1D      0.088       0.002       0.057
```

```
    SN2D      0.068     -0.013      0.006
    SF2D     -0.051      0.002      0.018
    SF4D     -0.040      0.043     -0.033
   PBC2D      0.111     -0.075     -0.018
   PBC3D      0.026     -0.056     -0.026
   PBC5D     -0.076      0.109      0.046
    FC3D     -0.067      0.006     -0.017

Modification Indices for THETA-DELTA

                U6D       RA1D       RA5D        OE7D      EOU3D      EOU5D
            --------   --------   --------   --------   --------   --------
     U6D        - -
    RA1D      0.028        - -
    RA5D      0.001      3.823        - -
    OE7D      0.632      0.025      0.605        - -
   EOU3D      0.000      0.058      0.100      0.691        - -
   EOU5D      0.229      0.414      0.038      1.314      0.658        - -
   EOU6D      0.131      0.686      0.262      0.024      0.319      0.000
    EU4D      0.508      0.576      0.027      0.079      0.196      0.731
    SN1D      0.426      0.015      0.462      0.187      0.571      0.208
    SN2D      0.274      0.004      0.138      0.654      3.648      0.372
    SF2D      0.036      0.050      0.333      2.374      1.276      0.212
    SF4D      0.058      0.530      0.126      0.030      0.585      0.763
   PBC2D      1.030      0.326      0.733      0.010      0.079        - -
   PBC3D      0.626      0.035      0.513      0.012      0.087      0.004
   PBC5D      0.019      0.590        - -      0.249      9.620      0.258
    FC3D      6.296      0.913        - -      0.117      0.009      1.860

Modification Indices for THETA-DELTA

              EOU6D       EU4D       SN1D       SN2D       SF2D       SF4D
            --------   --------   --------   --------   --------   --------
   EOU6D        - -
    EU4D      1.229        - -
    SN1D      0.059      0.446        - -
```

```
       SN2D      0.399      0.158      0.001       - -
       SF2D      0.017      0.021      2.531     75.777       - -
       SF4D      0.354      0.350      0.050      0.001      4.275       - -
      PBC2D      0.091      0.060      0.006      0.278      0.011      0.252
      PBC3D      0.092      0.477      0.424      0.122      0.006      0.544
      PBC5D      0.011      0.017      1.807      1.373      0.091       - -
       FC3D      0.669      0.814      0.390      5.178      7.112      0.448

 Modification Indices for THETA-DELTA

                PBC2D      PBC3D      PBC5D       FC3D
             --------   --------   --------   --------
      PBC2D       - -
      PBC3D     12.322       - -
      PBC5D      1.926      0.209       - -
       FC3D      1.736      1.686     11.870       - -

 Expected Change for THETA-DELTA

                  U6D       RA1D       RA5D       OE7D      EOU3D      EOU5D
             --------   --------   --------   --------   --------   --------
        U6D       - -
       RA1D      0.615       - -
       RA5D      0.103      7.162       - -
       OE7D     -1.037     -0.206     -1.013       - -
      EOU3D      0.017     -0.215      0.279      0.256       - -
      EOU5D     -1.421     -1.944      0.584      1.188     -0.754       - -
      EOU6D     -0.394      0.915     -0.558     -0.059     -0.194     -0.018
       EU4D     -0.983      1.064     -0.225     -0.135     -0.190      1.292
       SN1D      1.740     -0.327     -1.817      0.404      0.547     -1.119
       SN2D      0.739     -0.090     -0.526     -0.398     -0.742     -0.797
       SF2D     -0.255      0.303     -0.773     -0.717     -0.415     -0.569
       SF4D      1.226     -3.747     -1.806      0.306     -1.059      4.085
      PBC2D      1.353     -0.773     -1.145      0.047     -0.103       - -
      PBC3D      1.031     -0.248     -0.937     -0.050     -0.106      0.072
      PBC5D     -0.276     -1.548       - -      -0.344      1.697     -0.932
```

```
     FC3D      8.311      3.224       - -       0.394      0.085     -4.187

 Expected Change for THETA-DELTA

               EOU6D       EU4D       SN1D       SN2D       SF2D       SF4D
            --------   --------   --------   --------   --------   --------
    EOU6D       - -
     EU4D      0.621       - -
     SN1D     -0.217     -0.759       - -
     SN2D     -0.302     -0.241     -0.040       - -
     SF2D     -0.058      0.084     -1.790      5.141       - -
     SF4D      1.019      1.284     -1.448     -0.084      4.406       - -
    PBC2D      0.137      0.141     -0.094      0.316     -0.059     -1.167
    PBC3D      0.134      0.387     -0.808      0.205     -0.042     -1.680
    PBC5D     -0.069     -0.111      2.172     -1.031      0.250       - -
     FC3D     -0.918     -1.288      1.696      3.353      3.715     -3.485

 Expected Change for THETA-DELTA

               PBC2D      PBC3D      PBC5D       FC3D
            --------   --------   --------   --------
    PBC2D       - -
    PBC3D      8.041       - -
    PBC5D     -1.353     -0.438       - -
     FC3D     -2.329     -2.261      7.246       - -

 Completely Standardized Expected Change for THETA-DELTA

                 U6D       RA1D       RA5D       OE7D      EOU3D      EOU5D
            --------   --------   --------   --------   --------   --------
      U6D       - -
     RA1D      0.007       - -
     RA5D      0.001      0.078       - -
     OE7D     -0.032     -0.006     -0.031       - -
    EOU3D      0.001     -0.009      0.011      0.029       - -
    EOU5D     -0.016     -0.022      0.007      0.039     -0.032       - -
```

```
    EOU6D    -0.012      0.028     -0.017     -0.005     -0.022     -0.001
     EU4D    -0.024      0.026     -0.006     -0.010     --0.017      0.034
     SN1D     0.025     -0.005     -0.027      0.017      0.029     -0.017
     SN2D     0.022     -0.003     -0.016     -0.033     -0.080     -0.025
     SF2D    -0.008      0.009     -0.024     -0.064     -0.048     -0.019
     SF4D     0.010     -0.029     -0.014      0.007     -0.030      0.033
    PBC2D     0.037     -0.021     -0.031      0.004     -0.010       - -
    PBC3D     0.029     -0.007     -0.026     -0.004     -0.011      0.002
    PBC5D    -0.006     -0.032       - -      -0.020      0.130     -0.020
     FC3D     0.103      0.040       - -       0.014      0.004     -0.054

Completely Standardized Expected Change for THETA-DELTA

            EOU6D       EU4D       SN1D       SN2D       SF2D       SF4D
         --------   --------   --------   --------   --------   --------
    EOU6D    - -
     EU4D     0.044      - -
     SN1D    -0.009     -0.025      - -
     SN2D    -0.025     -0.016     -0.002      - -
     SF2D    -0.005      0.006     -0.075      0.436      - -
     SF4D     0.023      0.023     -0.015     -0.002      0.098      - -
    PBC2D     0.011      0.009     -0.003      0.023     -0.005     -0.023
    PBC3D     0.011      0.025     -0.030      0.015     --0.003     -0.033
    PBC5D    -0.004     -0.005      0.061     -0.058      0.015       - -
     FC3D    -0.032     -0.036      0.028      0.112      0.131     -0.031

Completely Standardized Expected Change for THETA-DELTA

            PBC2D      PBC3D      PBC5D       FC3D
         --------   --------   --------   --------
    PBC2D    - -
    PBC3D     0.561      - -
    PBC5D    -0.071     -0.023      - -
     FC3D    -0.072     -0.071      0.171      - -

Maximum Modification Index is   75.78 for Element (11,10) of THETA-DELTA
```

```
Standardized Solution

        LAMBDA-Y

             BEHAVE
           --------
    BI1D      1.099
    BI2D      3.382
    BI3D      0.939

        LAMBDA-X

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
     U6D      6.268       - -        - -        - -
    RA1D      5.998       - -        - -        - -
    RA5D      6.212       - -        - -        - -
    OE7D      2.271       - -        - -        - -
   EOU3D       - -      1.655        - -        - -
   EOU5D       - -      6.313        - -        - -
   EOU6D       - -      2.372        - -        - -
    EU4D       - -      2.861        - -        - -
    SN1D       - -        - -      3.901        - -
    SN2D       - -        - -      0.693        - -
    SF2D       - -        - -      0.630        - -
    SF4D       - -        - -      6.541        - -
   PBC2D       - -        - -        - -      2.652
   PBC3D       - -        - -        - -      2.619
   PBC5D       - -        - -        - -      1.033
    FC3D       - -        - -        - -      2.438

        GAMMA
```

```
            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
  BEHAVE      0.352      0.341     -0.242       - -

Correlation Matrix of ETA and KSI

             BEHAVE    PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------   --------
  BEHAVE      1.000
 PERFORM      0.409      1.000
  EFFORT      0.426      0.719      1.000
  SOCIAL      0.270      0.778      0.696      1.000
   FACIL     -0.038      0.195      0.096      0.578      1.000

        PSI

             BEHAVE
           --------
              0.776

Regression Matrix ETA on KSI (Standardized)

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
  BEHAVE      0.352      0.341     -0.242       - -


Completely Standardized Solution

        LAMBDA-Y

             BEHAVE
           --------
    BI1D      0.511
    BI2D      0.616
```

```
    BI3D      0.664

        LAMBDA-X

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
     U6D       0.656       - -        - -        - -
    RA1D       0.628       - -        - -        - -
    RA5D       0.650       - -        - -        - -
    OE7D       0.674       - -        - -        - -
   EOU3D        - -      0.633        - -        - -
   EOU5D        - -      0.691        - -        - -
   EOU6D        - -      0.704        - -        - -
    EU4D        - -      0.680        - -        - -
    SN1D        - -       - -       0.545        - -
    SN2D        - -       - -       0.196        - -
    SF2D        - -       - -       0.189        - -
    SF4D        - -       - -       0.487        - -
   PBC2D        - -       - -        - -       0.693
   PBC3D        - -       - -        - -       0.699
   PBC5D        - -       - -        - -       0.207
    FC3D        - -       - -        - -       0.288

        GAMMA

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
  BEHAVE       0.352      0.341     -0.242        - -

Correlation Matrix of ETA and KSI

              BEHAVE    PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------   --------
  BEHAVE       1.000
 PERFORM       0.409      1.000
  EFFORT       0.426      0.719      1.000
```

```
    SOCIAL      0.270       0.778       0.696       1.000
     FACIL     -0.038       0.195       0.096       0.578       1.000

         PSI

              BEHAVE
            --------
               0.776

         THETA-EPS

                BI1D        BI2D        BI3D
            --------    --------    --------
               0.739       0.620       0.560

         THETA-DELTA

                 U6D        RA1D        RA5D        OE7D       EOU3D       EOU5D
            --------    --------    --------    --------    --------    --------
               0.570       0.606       0.578       0.546       0.599       0.522

         THETA-DELTA

               EOU6D        EU4D        SN1D        SN2D        SF2D        SF4D
            --------    --------    --------    --------    --------    --------
               0.505       0.538       0.703       0.962       0.964       0.763

         THETA-DELTA

               PBC2D       PBC3D       PBC5D        FC3D
            --------    --------    --------    --------
               0.520       0.511       0.957       0.917

 Regression Matrix ETA on KSI (Standardized)

             PERFORM      EFFORT      SOCIAL       FACIL
```

```
              --------  --------  --------  --------
   BEHAVE        0.352     0.341    -0.242       - -


 Total and Indirect Effects

 Total Effects of KSI on ETA

               PERFORM    EFFORT    SOCIAL     FACIL
              --------  --------  --------  --------
   BEHAVE        0.062     0.227    -0.421       - -
               (0.030)   (0.092)   (0.308)
                 2.050     2.470    -1.370


 Total Effects of ETA on Y

                BEHAVE
              --------
     BI1D        1.000

     BI2D        3.077
               (0.469)
                 6.561

     BI3D        0.854
               (0.130)
                 6.555


 Total Effects of KSI on Y

               PERFORM    EFFORT    SOCIAL     FACIL
              --------  --------  --------  --------
```

```
     BI1D      0.062      0.227     -0.421        - -
              (0.030)    (0.092)    (0.308)
                2.050      2.470     -1.370

     BI2D      0.190      0.697     -1.297        - -
              (0.092)    (0.279)    (0.943)
                2.069      2.504     -1.375

     BI3D      0.053      0.194     -0.360        - -
              (0.025)    (0.077)    (0.261)
                2.079      2.520     -1.378


 Standardized Total and Indirect Effects

 Standardized Total Effects of KSI on ETA

             PERFORM     EFFORT     SOCIAL      FACIL
            --------   --------   --------   --------
   BEHAVE      0.352      0.341     -0.242        - -

 Standardized Total Effects of ETA on Y

              BEHAVE
            --------
     BI1D      1.099
     BI2D      3.382
     BI3D      0.939

 Completely Standardized Total Effects of ETA on Y

              BEHAVE
            --------
```

```
         BI1D      0.511
         BI2D      0.616
         BI3D      0.664

 Standardized Total Effects of KSI on Y

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
   BI1D       0.387      0.375     -0.266       - -
   BI2D       1.190      1.154     -0.818       - -
   BI3D       0.330      0.320     -0.227       - -

 Completely Standardized Total Effects of KSI on Y

            PERFORM     EFFORT     SOCIAL      FACIL
           --------   --------   --------   --------
   BI1D       0.180      0.174     -0.124       - -
   BI2D       0.217      0.210     -0.149       - -
   BI3D       0.234      0.227     -0.160       - -
```

Appendix L

ISSAAC V1 – (Complete Data Set)

```
Measurement Equations      Unstandardised
                           parameter
                           estimate

EXT FAC = 1.49*Cyber, Errorvar.= 2.46 , R² = 0.28
          (0.29)                 (0.26)
 t-value   5.12     Standard-error  9.32

ACT TAKE = 2.85*Cyber, Errorvar.= 8.54 , R² = 0.30
           (0.55)                 (0.92)
            5.19                   9.28

IND CHAN = 2.82*Cyber, Errorvar.= 7.90 , R² = 0.31
           (0.54)                 (0.86)
            5.24                   9.23

TECH DEV = 3.75*Cyber, Errorvar.= 26.02, R² = 0.19
           (0.82)                 (2.71)
            4.57                   9.60

MULTI SK = 1.96*Cyber, Errorvar.= 4.36 , R² = 0.28
```

```
           (0.38)                 (0.47)
            5.11                   9.33

COMM FOC = 2.32*Cyber, Errorvar.= 3.76 , R² = 0.39
           (0.42)                 (0.42)
            5.54                   8.90

CODEP NE = 13.35*Cyber, Errorvar.= 149.59, R² = 0.34
           (2.48)                  (16.46)
            5.39                    9.09

JOB ROLE = 0.85*Switch, Errorvar.= 3.75 , R² = 0.21
           (0.21)                  (0.41)
            4.04                    9.14

ROLE EXC = 1.03*Cyber, Errorvar.= 2.07 , R² = 0.19
           (0.23)                 (0.22)
            4.52                   9.62

ICT NET = 1.00*Aggre, Errorvar.= 7.47 , R² = 0.50
                                  (1.23)
                                   6.05

IOS = 0.24*Aggre, Errorvar.= 0.78  , R² = 0.35
           (0.038)                (0.098)
            6.27                   7.96

RICH MED = 0.99*Aggre, Errorvar.= 276.76, R² = 0.026
           (0.51)                 (27.87)
            1.93                   9.93

ICT INTD = 0.20*Aggre, Errorvar.= 2.06 , R² = 0.13
           (0.048)                (0.22)
            4.15                   9.49
```

```
ICT CORE = 1.00*Cyber, Errorvar.= 1.69 , R² = 0.21
                                  (0.18)
                                   9.56

ICT CONN = 0.16*Aggre, Errorvar.= 3.23 , R² = 0.059
           (0.057)                (0.33)
            2.89                   9.80

INDVID K = 0.62*Switch, Errorvar.= 0.60  , R² = 0.48
           (0.13)                  (0.088)
            4.69                    6.80

SOCIAL K = 0.55*Switch, Errorvar.= 1.57 , R² = 0.21
           (0.14)                  (0.17)
            4.04                    9.15

ALT TASK = 0.96*Inter, Errorvar.= 1.93 , R² = 0.082
           (0.62)                 (0.20)
            1.55                   9.63

RESTRUCU = 1.00*Anch, Errorvar.= 0.14  , R² = 0.36
                                 (0.023)
                                  6.13

MANG CHA = 1.16*Anch, Errorvar.= 0.33  , R² = 0.24
           (0.28)                (0.042)
            4.09                  7.82

OUTSOURC = 1.30*Cyber, Errorvar.= 2.70 , R² = 0.22
           (0.27)                 (0.28)
            4.74                   9.54

RULE CHA = 1.12*Anch, Errorvar.= 0.21  , R² = 0.32
```

```
           (0.27)                (0.031)
            4.20                  6.69

SHAR SYS = 1.31*Cyber, Errorvar.= 2.19 , R² = 0.26
           (0.26)                 (0.23)
            4.98                   9.41

SHAR S A = 0.59*Anch, Errorvar.= 0.44  , R² = 0.060
           (0.23)                (0.045)
            2.51                  9.61

MUTUAL D = 1.00*Inter, Errorvar.= 9.92 , R² = 0.019
                                  (1.00)
                                   9.96

MUTUAL A = 1.57*Inter, Errorvar.= 4.86 , R² = 0.087
           (1.01)                 (0.51)
            1.55                   9.60

SHAR STR = 7.77*Inter, Errorvar.= 4.31 , R² = 0.72
           (4.86)                 (2.95)
            1.60                   1.46

TRUST RE =  - 0.023*Spl P, Errorvar.= 0.54  , R² = 0.00053
              (0.081)                 (0.054)
               -0.28                   10.02

CUSTOM P = 1.00*Spl P, Errorvar.= 0.72 , R² = 0.43
                                  (0.10)
                                   7.15

LESS LEA = 1.39*Spl P, Errorvar.= 0.99 , R² = 0.52
           (0.21)                 (0.17)
            6.75                   5.98
```

```
SPECIAL = 0.65*Spl P, Errorvar.= 0.68  , R² = 0.25
           (0.12)                 (0.077)
            5.54                   8.80

COMP ADV = 0.22*Switch, Errorvar.= 0.49  , R² = 0.12
           (0.064)                 (0.051)
            3.44                    9.58

KNOW AND = 1.00*Switch, Errorvar.= 7.50 , R² = 0.16
                                   (0.80)
                                    9.43


Structural Equations


Aggre = 3.00*Cyber, Errorvar.= 3.51 , R² = 0.53
           (0.59)                 (1.10)
            5.07                   3.20

Anch =  - 0.12*Inter, Errorvar.= 0.074 , R² = 0.077
              (0.12)                 (0.024)
              -1.01                   3.10

Cyber =  - 0.56*Anch, Errorvar.= 0.40 , R² = 0.10
              (0.33)                (0.13)
              -1.69                  3.09

Switch = 0.12*Aggre + 1.00*Cyber, Errorvar.= 0.53 , R² = 0.62
           (0.077)      (0.36)                 (0.25)
            1.56         2.76                   2.17

Inter = 0.36*Cyber, Errorvar.= 0.12 , R² = 0.33
```

```
          (0.24)                  (0.15)
           1.53                    0.85

Spl P = 0.033*Aggre + 0.17*Cyber + 0.30*Switch, Errorvar.= 0.28  , R² = 0.49
          (0.050)      (0.23)       (0.15)                 (0.081)
           0.66         0.77         2.07                    3.51
```

ISSAAC V2 – (Insignificant items removed)

```
Measurement Equations


EXT FAC = 1.46*Cyber, Errorvar.= 2.47 , R² = 0.28
          (0.28)                  (0.27)
           5.16                    9.31

ACT TAKE = 2.83*Cyber, Errorvar.= 8.51 , R² = 0.30
          (0.54)                  (0.92)
           5.24                    9.25

IND CHAN = 2.78*Cyber, Errorvar.= 7.91 , R² = 0.31
          (0.53)                  (0.86)
           5.28                    9.22

TECH DEV = 3.66*Cyber, Errorvar.= 26.15, R² = 0.19
          (0.80)                  (2.72)
           4.57                    9.61

MULTI SK = 1.93*Cyber, Errorvar.= 4.37 , R² = 0.28
          (0.38)                  (0.47)
```

```
           5.15                   9.32

COMM FOC = 2.29*Cyber, Errorvar.= 3.76 , R² = 0.39
           (0.41)                (0.42)
           5.60                   8.88

CODEP NE = 13.15*Cyber, Errorvar.= 149.96, R² = 0.34
           (2.42)                 (16.52)
           5.43                    9.08

JOB ROLE = 0.88*Switch, Errorvar.= 3.54 , R² = 0.26
           (0.21)                 (0.41)
           4.30                    8.71

ROLE EXC = 1.02*Cyber, Errorvar.= 2.07 , R² = 0.19
           (0.22)                (0.22)
           4.55                   9.61

ICT NET = 1.00*Aggre, Errorvar.= 7.31 , R² = 0.51
                                 (1.24)
                                  5.87

IOS = 0.23*Aggre, Errorvar.= 0.79  , R² = 0.34
           (0.037)               (0.099)
           6.23                   8.03

RICH MED = 0.95*Aggre, Errorvar.= 277.19, R² = 0.024
           (0.51)                (27.90)
           1.87                   9.94

ICT INTD = 0.20*Aggre, Errorvar.= 2.06 , R² = 0.13
           (0.048)               (0.22)
           4.15                   9.49
```

```
ICT CORE = 1.00*Cyber, Errorvar.= 1.68 , R² = 0.21
                                 (0.18)
                                  9.54

ICT CONN = 0.16*Aggre, Errorvar.= 3.23 , R² = 0.060
           (0.056)               (0.33)
            2.91                  9.79

INDVID K = 0.55*Switch, Errorvar.= 0.67  , R² = 0.42
           (0.12)                 (0.095)
            4.72                   7.04

ALT TASK = 0.97*Inter, Errorvar.= 1.93 , R² = 0.078
           (0.64)                (0.20)
            1.51                  9.67

RESTRUCU = 1.00*Anch, Errorvar.= 0.14  , R² = 0.37
                                (0.024)
                                 5.70

MANG CHA = 1.12*Anch, Errorvar.= 0.33  , R² = 0.24
           (0.29)               (0.043)
            3.92                 7.79

OUTSOURC = 1.29*Cyber, Errorvar.= 2.69 , R² = 0.22
           (0.27)                (0.28)
            4.79                  9.52

RULE CHA = 1.06*Anch, Errorvar.= 0.21  , R² = 0.31
           (0.27)               (0.032)
            3.99                 6.77

SHAR SYS = 1.28*Cyber, Errorvar.= 2.20 , R² = 0.25
           (0.26)                (0.23)
```

```
            5.01                    9.41

MUTUAL D = 1.00*Inter, Errorvar.= 9.93 , R² = 0.017
                                 (1.00)
                                  9.97

MUTUAL A = 1.60*Inter, Errorvar.= 4.88 , R² = 0.083
           (1.05)                (0.51)
            1.52                  9.63

SHAR STR = 8.19*Inter, Errorvar.= 3.92 , R² = 0.75
           (5.27)                (3.10)
            1.55                  1.26

CUSTOM P = 1.00*Spl P, Errorvar.= 0.74 , R² = 0.42
                                 (0.10)
                                  7.30

LESS LEA = 1.42*Spl P, Errorvar.= 0.98 , R² = 0.53
           (0.21)                (0.17)
            6.76                  5.90

SPECIAL = 0.66*Spl P, Errorvar.= 0.68  , R² = 0.26
           (0.12)                (0.077)
            5.57                  8.78

COMP ADV = 0.22*Switch, Errorvar.= 0.48  , R² = 0.14
           (0.061)                (0.051)
            3.63                   9.43

KNOW AND = 1.00*Switch, Errorvar.= 7.33 , R² = 0.18
                                  (0.79)
                                   9.23
```

```
Structural Equations


Aggre = 2.99*Cyber, Errorvar.= 3.60 , R² = 0.53
           (0.58)                (1.12)
            5.13                  3.21

Anch =  - 0.14*Inter, Errorvar.= 0.075 , R² = 0.094
              (0.13)                (0.025)
              -1.11                  3.01

Cyber =  - 0.56*Anch, Errorvar.= 0.40 , R² = 0.11
              (0.34)               (0.13)
              -1.67                 3.12

Switch = 0.13*Aggre + 1.00*Cyber, Errorvar.= 0.65 , R² = 0.59
           (0.085)     (0.38)                 (0.29)
            1.50        2.63                   2.20

Inter = 0.33*Cyber, Errorvar.= 0.12 , R² = 0.33
           (0.22)                (0.14)
            1.48                  0.82

Spl P = 0.026*Aggre + 0.14*Cyber + 0.32*Switch, Errorvar.= 0.26  , R² = 0.52
           (0.050)       (0.22)       (0.14)                  (0.079)
```

```
     0.53          0.65          2.24                    3.28
```

ISSAAC V3 – (Modified Model M^4)

```
Measurement Equations


EXT FAC = 1.51*Cyber, Errorvar.= 2.38 , R² = 0.31
          (0.29)                 (0.26)
           5.29                   9.15

ACT TAKE = 2.82*Cyber, Errorvar.= 8.45 , R² = 0.30
           (0.54)                 (0.92)
            5.27                   9.17

IND CHAN = 2.83*Cyber, Errorvar.= 7.71 , R² = 0.32
           (0.53)                 (0.85)
            5.36                   9.09

TECH DEV = 3.75*Cyber, Errorvar.= 25.72, R² = 0.20
           (0.80)                 (2.70)
            4.67                   9.53

MULTI SK = 1.95*Cyber, Errorvar.= 4.30 , R² = 0.29
           (0.37)                 (0.47)
            5.20                   9.23

COMM FOC = 2.25*Cyber, Errorvar.= 3.80 , R² = 0.38
```

```
           (0.40)                 (0.43)
            5.58                   8.82

CODEP NE = 13.08*Cyber, Errorvar.= 149.05, R² = 0.35
           (2.40)                  (16.58)
            5.46                    8.99

JOB ROLE = 0.88*Switch, Errorvar.= 3.60 , R² = 0.25
           (0.21)                  (0.40)
            4.24                    8.90

ROLE EXC = 0.97*Cyber, Errorvar.= 2.11 , R² = 0.17
           (0.22)                 (0.22)
            4.42                   9.62

ICT NET = 1.00*Aggre, Errorvar.= 8.56 , R² = 0.43
                                  (1.11)
                                   7.71

IOS = 0.25*Aggre, Errorvar.= 0.82  , R² = 0.32
           (0.039)                (0.096)
            6.30                   8.60

RICH MED = 0.81*Aggre, Errorvar.= 279.89, R² = 0.015
           (0.54)                 (28.04)
            1.50                   9.98

ICT INTD = 0.20*Aggre, Errorvar.= 2.12 , R² = 0.11
           (0.051)                (0.22)
            3.90                   9.67

ICT CORE = 1.00*Cyber, Errorvar.= 1.67 , R² = 0.22
                                  (0.18)
                                   9.49

ICT CONN = 0.14*Aggre, Errorvar.= 3.31 , R² = 0.037
```

```
           (0.060)                (0.33)
            2.36                   9.91

INDVID K = 0.55*Switch, Errorvar.= 0.69  , R² = 0.40
           (0.12)                  (0.090)
            4.66                    7.73

RESTRUCU = 1.00*Anch, Errorvar.= 0.14  , R² = 0.39
                                 (0.025)
                                  5.35

MANG CHA = 1.07*Anch, Errorvar.= 0.34  , R² = 0.23
           (0.28)                (0.043)
            3.80                  7.88

OUTSOURC = 1.28*Cyber, Errorvar.= 2.68 , R² = 0.22
           (0.27)                 (0.28)
            4.81                   9.47

RULE CHA = 1.05*Anch, Errorvar.= 0.21  , R² = 0.30
           (0.27)                (0.032)
            3.86                  6.65

SHAR SYS = 1.23*Cyber, Errorvar.= 2.24 , R² = 0.24
           (0.25)                 (0.24)
            4.92                   9.41

CUSTOM P = 1.00*Spl P, Errorvar.= 0.76 , R² = 0.41
                                  (0.10)
                                   7.44

LESS LEA = 1.48*Spl P, Errorvar.= 0.94 , R² = 0.55
           (0.22)                 (0.17)
            6.66                   5.56

SPECIAL = 0.67*Spl P, Errorvar.= 0.68  , R² = 0.26
```

```
           (0.12)                 (0.077)
            5.51                   8.77

 COMP ADV = 0.23*Switch, Errorvar.= 0.48  , R² = 0.14
           (0.063)                 (0.051)
            3.62                    9.48

 KNOW AND = 1.00*Switch, Errorvar.= 7.40 , R² = 0.17
                                   (0.79)
                                    9.33


 ALT TASK = 0.42*Inter, Errorvar.= 1.71 , R² = 0.18
           (0.13)                 (0.21)
            3.23                   8.04

 MUTUAL D = 1.00*Inter, Errorvar.= 7.90 , R² = 0.22
                                  (1.05)
                                   7.50

 MUTUAL A = 0.92*Inter, Errorvar.= 3.44 , R² = 0.35
           (0.28)                 (0.65)
            3.27                   5.26

 SHAR STR = 1.02*Inter, Errorvar.= 13.35, R² = 0.15
           (0.33)                 (1.56)
            3.05                   8.55


 Structural Equations


 Aggre = 3.01*Cyber, Errorvar.= 2.19 , R² = 0.66
           (0.57)                 (0.73)
            5.24                   3.01
```

```
Anch = 0.0029*Inter, Errorvar.= 0.086 , R² = 0.00021
           (0.024)                 (0.028)
            0.12                    3.09

Cyber =  - 0.79*Anch, Errorvar.= 0.41 , R² = 0.12
              (0.29)               (0.13)
              -2.73                 3.16

Switch = 0.41*Aggre, Errorvar.= 0.46 , R² = 0.70
           (0.091)               (0.23)
            4.46                  1.97

Spl P = 0.44*Switch, Errorvar.= 0.23  , R² = 0.56
           (0.10)                 (0.074)
            4.24                   3.08
```

UTAUT – OLS Data Set

```
Measurement Equations

BI1A = 1.000*BEHAVE, Errorvar.= 15.666, R² = 0.507
                                   (1.587)
                                    9.870

BI2A = 0.744*BEHAVE, Errorvar.= 8.763 , R² = 0.504
           (0.0669)                (0.884)
            11.120                  9.913

BI3A = 0.982*BEHAVE, Errorvar.= 16.254, R² = 0.488
           (0.0891)                (1.600)
            11.012                  10.156
```

```
U6A = 1.000*PERFORM, Errorvar.= 4.088 , R² = 0.436
                                    (0.380)
                                     10.754

RA1A = 1.035*PERFORM, Errorvar.= 5.656 , R² = 0.374
           (0.110)                  (0.494)
            9.421                    11.450

RA5A = 0.881*PERFORM, Errorvar.= 3.603 , R² = 0.405
           (0.0908)                 (0.324)
            9.694                    11.125

OE7A = 1.036*PERFORM, Errorvar.= 3.859 , R² = 0.467
           (0.102)                  (0.373)
            10.173                   10.336

EOU3A = 1.000*EFFORT, Errorvar.= 83.530, R² = 0.427
                                   (7.347)
                                    11.370

EOU5A = 1.168*EFFORT, Errorvar.= 87.110, R² = 0.493
           (0.108)                 (8.211)
            10.782                  10.610

EOU6A = 0.386*EFFORT, Errorvar.= 9.431 , R² = 0.495
           (0.0357)                (0.891)
            10.794                  10.589

EU4A = 0.767*EFFORT, Errorvar.= 40.854, R² = 0.473
           (0.0722)                (3.760)
            10.624                  10.865

SN1A = 2.789*SOCIAL, Errorvar.= 11.610, R² = 0.447
```

```
           (0.590)                      (1.670)
            4.729                        6.954

SN2A = 2.987*SOCIAL, Errorvar.= 10.235, R² = 0.513
           (0.641)                      (1.803)
            4.657                        5.676

SF2A = 1.000*SOCIAL, Errorvar.= 10.669, R² = 0.102
                                        (0.818)
                                         13.037

SF4A = 3.062*SOCIAL, Errorvar.= 133.333, R² = 0.0782
           (0.878)                      (10.080)
            3.489                        13.227

PBC2A = 1.000*FACIL, Errorvar.= 4.960 , R² = 0.198
                                       (0.410)
                                        12.095

PBC3A = 5.313*FACIL, Errorvar.= 46.341, R² = 0.427
           (0.860)                     (5.542)
            6.180                       8.361

PBC5A = 0.837*FACIL, Errorvar.= 1.144 , R² = 0.428
           (0.135)                     (0.137)
            6.180                       8.339

FC3A = 0.0909*FACIL, Errorvar.= 10.319, R² = 0.000978
           (0.182)                      (0.749)
            0.500                        13.778


Structural Equations
```

```
BEHAVE = 0.836*PERFORM + 0.206*EFFORT + 0.479*SOCIAL, Errorvar.= 7.619 , R² = 0.527
           (0.191)         (0.0425)       (0.240)                  (1.347)
            4.374           4.861          1.991                    5.658
```

UTAUT - OBT Data Set

```
Measurement Equations


BI1B = 1.000*BEHAVE, Errorvar.= 4.824 , R² = 0.217
                                    (0.407)
                                     11.855

BI2B = 4.052*BEHAVE, Errorvar.= 31.988, R² = 0.407
           (0.638)                  (3.681)
            6.355                    8.690

BI3B = 0.816*BEHAVE, Errorvar.= 1.109 , R² = 0.445
           (0.128)                  (0.140)
            6.358                    7.927


U6B = 1.000*PERFORM, Errorvar.= 3.999 , R² = 0.446
                                     (0.372)
                                      10.763

RA1B = 0.947*PERFORM, Errorvar.= 4.329 , R² = 0.400
           (0.0963)                  (0.383)
```

```
           9.841                      11.289

RA5B = 0.981*PERFORM, Errorvar.= 4.118 , R² = 0.430
          (0.0972)                  (0.376)
           10.099                    10.963

OE7B = 1.108*PERFORM, Errorvar.= 5.055 , R² = 0.439
          (0.109)                   (0.466)
           10.175                    10.854

EOU3B = 1.000*EFFORT, Errorvar.= 83.840, R² = 0.422
                                   (7.419)
                                    11.301

EOU5B = 1.172*EFFORT, Errorvar.= 86.883, R² = 0.492
          (0.110)                  (8.297)
           10.618                   10.472

EOU6B = 0.387*EFFORT, Errorvar.= 9.411 , R² = 0.494
          (0.0364)                 (0.901)
           10.629                   10.450

EU4B = 0.772*EFFORT, Errorvar.= 40.575, R² = 0.474
          (0.0737)                 (3.789)
           10.485                   10.710

SN1B = 10.594*SOCIAL, Errorvar.= 119.700, R² = 0.344
          (3.138)                   (11.953)
           3.376                     10.015

SN2B = 1.201*SOCIAL, Errorvar.= 16.754, R² = 0.0460
          (0.469)                  (1.235)
           2.561                    13.563
```

```
SF2B = 1.000*SOCIAL, Errorvar.= 12.875, R² = 0.0416
                                    (0.948)
                                     13.585

SF4B = 24.490*SOCIAL, Errorvar.= 1214.440, R² = 0.216
           (7.483)                   (99.829)
            3.273                     12.165

PBC2B = 1.000*FACIL, Errorvar.= 11.034, R² = 0.463
                                   (1.564)
                                    7.055

PBC3B = 1.043*FACIL, Errorvar.= 10.195, R² = 0.504
           (0.157)                 (1.633)
            6.654                   6.244

PBC5B = 0.336*FACIL, Errorvar.= 10.758, R² = 0.0906
           (0.0736)                (0.818)
            4.557                   13.152

FC3B = 1.153*FACIL, Errorvar.= 131.269, R² = 0.0879
           (0.256)                 (9.965)
            4.498                   13.173


Structural Equations


BEHAVE = 0.227*PERFORM + 0.0649*EFFORT - 0.354*SOCIAL, Errorvar.= 0.961 , R² = 0.282
           (0.111)         (0.0183)       (0.316)                   (0.260)
            2.046           3.542         -1.119                     3.693
```

UTAUT – SSK Data Set

```
Measurement Equations


BI1D = 1.000*BEHAVE, Errorvar.= 3.419 , R² = 0.261
                                (0.306)
                                 11.171

BI2D = 3.077*BEHAVE, Errorvar.= 18.695, R² = 0.380
         (0.469)                (2.067)
          6.561                  9.044

BI3D = 0.854*BEHAVE, Errorvar.= 1.119 , R² = 0.440
         (0.130)                (0.143)
          6.555                  7.817


U6D = 1.000*PERFORM, Errorvar.= 52.047, R² = 0.430
                                 (4.690)
                                  11.098

RA1D = 0.957*PERFORM, Errorvar.= 55.362, R² = 0.394
         (0.0979)                (4.823)
```

```
            9.778                     11.479

RA5D = 0.991*PERFORM, Errorvar.= 52.748, R² = 0.422
           (0.0987)                (4.717)
            10.037                  11.182

OE7D = 0.362*PERFORM, Errorvar.= 6.196 , R² = 0.454
           (0.0352)                (0.573)
            10.300                  10.815

EOU3D = 1.000*EFFORT, Errorvar.= 4.098 , R² = 0.401
                                  (0.354)
                                   11.584

EOU5D = 3.814*EFFORT, Errorvar.= 43.603, R² = 0.478
           (0.368)                (4.054)
            10.357                 10.756

EOU6D = 1.433*EFFORT, Errorvar.= 5.729 , R² = 0.495
           (0.137)                (0.544)
            10.481                 10.528

EU4D = 1.728*EFFORT, Errorvar.= 9.537 , R² = 0.462
           (0.169)               (0.871)
            10.241                10.944

SN1D = 6.189*SOCIAL, Errorvar.= 35.957, R² = 0.297
           (2.001)               (3.367)
            3.093                 10.679

SN2D = 1.099*SOCIAL, Errorvar.= 11.996, R² = 0.0385
           (0.471)               (0.883)
            2.334                 13.590
```

```
SF2D = 1.000*SOCIAL, Errorvar.= 10.728, R² = 0.0357
                                    (0.789)
                                     13.605

SF4D = 10.376*SOCIAL, Errorvar.= 137.384, R² = 0.237
           (3.400)                    (11.722)
            3.052                      11.720

PBC2D = 1.013*FACIL, Errorvar.= 7.612 , R² = 0.480
           (0.152)                (1.136)
            6.652                  6.701

PBC3D = 1.000*FACIL, Errorvar.= 7.164 , R² = 0.489
                                   (1.098)
                                    6.527

PBC5D = 0.394*FACIL, Errorvar.= 23.875, R² = 0.0428
           (0.122)                (1.768)
            3.236                  13.503

FC3D = 0.931*FACIL, Errorvar.= 65.902, R² = 0.0827
           (0.213)                (4.988)
            4.366                  13.213


Structural Equations


BEHAVE = 0.0617*PERFORM + 0.227*EFFORT - 0.421*SOCIAL, Errorvar.= 0.937 , R² = 0.224
           (0.0301)         (0.0918)       (0.308)                  (0.233)
            2.050            2.470         -1.370                    4.027
```

Appendix M

Table 1: Statistical and Practical Significance Analysis - ISSAAC

KEY		
	Factor Loadings	Number of Variables
	± .30 (minimal level of significance)	4
🟦	± .40 (relative importance)	4
🟥	± .50 or more (practically significant)	25

Details the overall significance of the un-rotated factor loadings.

	Aggre	Anch	Cyber	Switch	Inter	Spl P
	--------	--------	--------	--------	--------	--------
EXT FAC	- -	- -	0.99	- -	- -	- -
ACT TAKE	- -	- -	1.89	- -	- -	- -
IND CHAN	- -	- -	1.87	- -	- -	- -
TECH DEV	- -	- -	2.49	- -	- -	- -
MULTI SK	- -	- -	1.30	- -	- -	- -
COMM FOC	- -	- -	1.54	- -	- -	- -
CODEP NE	- -	- -	8.86	- -	- -	- -
JOB ROLE	- -	- -	- -	1.01	- -	- -
ROLE EXC	- -	- -	0.69	- -	- -	- -
ICT NET	2.73	- -	- -	- -	- -	- -

	Aggre	Anch	Cyber	Switch	Inter	Spl P
IOS	0.65	- -	- -	- -	- -	- -
RICH MED	2.70	- -	- -	- -	- -	- -
ICT INTD	0.55	- -	- -	- -	- -	- -
ICT CORE	- -	- -	0.66	- -	- -	- -
ICT CONN	0.45	- -	- -	- -	- -	- -
INDVID K	- -	- -	- -	0.74	- -	- -
SOCIAL K	- -	- -	- -	0.65	- -	- -
ALT TASK	- -	- -	- -	- -	0.42	- -
RESTRUCU	- -	0.28	- -	- -	- -	- -
MANG CHA	- -	0.33	- -	- -	- -	- -
OUTSOURC	- -	- -	0.86	- -	- -	- -
RULE CHA	- -	0.32	- -	- -	- -	- -
SHAR SYS	- -	- -	0.87	- -	- -	- -
SHAR S A	- -	0.17	- -	- -	- -	- -
MUTUAL D	- -	- -	- -	- -	0.43	- -
MUTUAL A	- -	- -	- -	- -	0.68	- -
SHAR STR	- -	- -	- -	- -	3.36	- -
TRUST RE	- -	- -	- -	- -	- -	-0.02
CUSTOM P	- -	- -	- -	- -	- -	0.74
LESS LEA	- -	- -	- -	- -	- -	1.04
SPECIAL	- -	- -	- -	- -	- -	0.48
COMP ADV	- -	- -	- -	0.26	- -	- -
KNOW AND	- -	- -	- -	1.18	- -	- -

Table 2: Statistical and Practical Significance – UTAUT (OLS Data Set)

KEY				
	Factor Loadings	Number of Variables		
		OLS	OBT	SSK
	< .30	1	--	--
	± .30 (minimal level of significance)	--	--	--
🟦	± .40 (relative importance)	--	--	--
🟥	± .50 or more (practically significant)	18	19	19

OLS Data Set					
	PERFORM	EFFORT	SOCIAL	FACIL	BEHAVE
	--------	--------	--------	-------	--------
U6A	1.78	- -	- -	- -	- -
RA1A	1.84	- -	- -	- -	- -
RA5A	1.57	- -	- -	- -	- -
OE7A	1.84	- -	- -	- -	- -
EOU3A	- -	7.88	- -	- -	- -
EOU5A	- -	9.21	- -	- -	- -
EOU6A	- -	3.04	- -	- -	- -
EU4A	- -	6.05	- -	- -	- -

SN1A	- -	- -	3.06	- -	- -
SN2A	- -	- -	3.28	- -	- -
SF2A	- -	- -	1.10	- -	- -
SF4A	- -	- -	3.36	- -	- -
PBC2A	- -	- -	- -	1.11	- -
PBC3A	- -	- -	- -	5.87	- -
PBC5A	- -	- -	- -	0.93	- -
FC3A	- -	- -	- -	0.10	- -
BI1A	- -	- -	- -	- -	4.01
BI2A	- -	- -	- -	- -	2.99
BI3A	- -	- -	- -	- -	3.94

Table 3: Statistical and Practical Significance – UTAUT (OBT Data Set)

	OBT Data Set				
	PERFORM	EFFORT	SOCIAL	FACIL	BEHAVE
	--------	--------	--------	-------	--------
U6B	1.80	- -	- -	- -	- -
RA1B	1.70	- -	- -	- -	- -
RA5B	1.76	- -	- -	- -	- -
OE7B	1.99	- -	- -	- -	- -
EOU3B	- -	7.83	- -	- -	- -
EOU5B	- -	9.18	- -	- -	- -
EOU6B	- -	3.03	- -	- -	- -
EU4B	- -	6.04	- -	- -	- -
SN1B	- -	- -	7.92	- -	- -
SN2B	- -	- -	0.90	- -	- -
SF2B	- -	- -	0.75	- -	- -
SF4B	- -	- -	18.32	- -	- -
PBC2B	- -	- -	- -	3.09	- -
PBC3B	- -	- -	- -	3.22	- -
PBC5B	- -	- -	- -	1.04	- -
FC3B	- -	- -	- -	3.56	- -

BI1B	- -	- -	- -	- -	1.16
BI2B	- -	- -	- -	- -	4.69
BI3B	- -	- -	- -	- -	0.94

Table 4: Statistical and Practical Significance – UTAUT (SSK Data Set)

	SSK Data Set				
	PERFORM	EFFORT	SOCIAL	FACIL	BEHAVE
	--------	--------	--------	-------	--------
U6C	6.27	- -	- -	- -	- -
RA1C	6.00	- -	- -	- -	- -
RA5C	6.21	- -	- -	- -	- -
OE7C	2.27	- -	- -	- -	- -
EOU3C	- -	1.66	- -	- -	- -
EOU5C	- -	6.31	- -	- -	- -
EOU6C	- -	2.37	- -	- -	- -
EU4C	- -	2.86	- -	- -	- -
SN1C	- -	- -	3.90	- -	- -
SN2C	- -	- -	0.69	- -	- -
SF2C	- -	- -	0.63	- -	- -
SF4C	- -	- -	6.54	- -	- -
PBC2C	- -	- -	- -	2.65	- -
PBC3C	- -	- -	- -	2.62	- -
PBC5C	- -	- -	- -	1.03	- -
FC3C	- -	- -	- -	2.44	- -

BI1C	- -	- -	- -	- -	1.09
BI2C	- -	- -	- -	- -	3.38
BI3C	- -	- -	- -	- -	0.94

Table 5: Reliability Analysis – ISSAAC

Latent Variable	**Reliability Indicators**					
	Item	**Item Reliability**	**Construct Reliability**	**Cronbach's Alpha**		
				Original	*Max*	*Item Removed*
Interoperability	mutual a	0.43	.89	.68	.68	
	mutual d	0.68				
	alt task	0.42				
	shar str	3.36				
Switching	comp adv	0.26	.79	.66	.67	social
	know and	1.18				
	indvid k	0.74				
	social k	0.65				
	job role	1.01				
Special Product	special	0.48	.64	.76	.77	trust re
	less lea	1.04				
	custom p	0.74				
	trust re	-0.02				
Aggregation	rich med	2.7	.93	.71	.71	
	ict conn	0.45				
	ict net	2.73				

Latent Variable	**Reliability Indicators**					
	ict intd	0.55				
	ios	0.65				
Anchoring	mang cha	0.33	.29	.74	.78	shar s a
	rule cha	0.32				
	restruc	0.28				
	shar s a	0.17				
Cybernization	codep ne	8.86	.98	.86	.86	
	multi sk	1.3				
	comm foc	1.54				
	ict core	0.66				
	ind change	1.87				
	outsourc	0.86				
	role exc	0.69				
	shar sys	0.87				
	tech dev	2.49				
	ext fac	0.99				
	act take	1.89				

Highlighted cells are those deemed insignificant with item reliabilities <.50, ρc <.60 or a <.65

Table 6: Reliability Analysis – UTAUT (OLS Data Set)

Latent Variable	Reliability Indicators					
	Item	Item Reliability	Construct Reliability	**Cronbach's Alpha**		
				Original	*Max*	*Item Removed*
Behavioural Intention	BI1A	16.10	.94	.99	.99	
	BI2A	8.91				
	BI3A	15.51				
Performance Expectancy	U6A	3.15	.96	.90	.91	OE7A
	RA1A	3.40				
	RA5A	2.43				
	OE7A	3.39				
Effort Expectancy	EOU3A	62.09	1.00	.97	.98	EOU3
	EOU5A	84.82				
	EOU6A	9.24				
	EU4A	36.60				
Social Influence	SN1A	9.36	.98	.72	.79	SF4
	SN2A	10.76				
	SF2A	1.21				
	SF4A	11.29				

Facilitating Conditions	PBC2A	1.23	.96	.10	.30	FC3
	PBC3A	34.46				
	PBC5A	0.86				
	FC3	0.01				

Table 7: Reliability Analysis – UTAUT (OBT Data Set)

Latent Variable	Reliability Indicators					
	Item	Item Reliability	Construct Reliability	**Cronbach's Alpha**		
				Original	*Max*	*Item Removed*
Behavioural Intention	BI1B	1.34	.96	.98	.98	B11
	BI2B	22.00				
	BI3B	0.89				
Performance Expectancy	U6B	3.21	.96	.92	.93	OE7
	RA1B	2.92				
	RA5B	3.12				
	OE7B	3.96				
Effort Expectancy	EOU3B	61.31	1.00	.97	.98	EOU3
	EOU5B	84.18				
	EOU6B	9.17				
	EU4B	36.53				
Social Influence	SN1B	7.92	1.00	.72	.79	SF4
	SN2B	0.90				
	SF2B	0.75				
	SF4B	18.32				

Facilitating Conditions	PBC2B	9.52	.98	.07	.30	FC3
	PBC3B	10.36				
	PBC5B	1.07				
	FC3B	12.65				

Table 8: Reliability Analysis – UTAUT (SSK Data Set)

Latent Variable	Reliability Indicators					
	Item	Item Reliability	Construct Reliability	**Cronbach's Alpha**		
				Original	*Max*	*Item Removed*
Behavioural Intention	BI1C	1.21	.94	.98	.99	B13
	BI2C	11.42				
	BI3C	0.88				
Performance Expectancy	U6C	39.31	.99	.91	.91	
	RA1C	36.00				
	RA5C	38.56				
	OE7C	5.15				
Effort Expectancy	EOU3C	2.76	.99	.94	.96	EOU3
	EOU5C	39.82				
	EOU6C	5.62				
	EU4C	8.18				
Social Influence	SN1C	15.21	.98	.71	.71	
	SN2C	0.48				
	SF2C	0.40				
	SF4C	42.77				

Facilitating Conditions	PBC2C	7.02	.96	.36	.39	PBC3
	PBC3C	6.86				
	PBC5	1.06				
	FC3	5.95				

Appendix N

Table 1: Goodness of Fit Indices - ISSAAC

	Original ISSAAC	**M^4**
Chi-square	443.53	477.94
DF	396	400
Ratio	1:1	1:1
NCP	94.58	98.27
SNCP	0.47	0.48
90% Confidence interval computed	✓	✓
Difference between actual NCP value and largest parameter value	60.39	60.93
RMSEA	0.03	0.03
P-Value for Test of Close Fit (RMSEA < 0.05) computed	✓ 1.00	✓ 1.00
ECVI	3.13	3.13
ECVI for saturated model	4.63	4.63
ECVI for independence model	15.94	15.94
RMR	1.17	1.45
SRMR	0.07	0.08

	Original ISSAAC	**M^4**
AIC	628.58	628.27
AIC for saturated model	930.00	930.00
AIC for independence model	3204.88	3204.88
CAIC	925.85	628.27
CAIC for saturated model	2933.34	2933.34
CAIC for independence model	3334.12	3334.12
GF1	0.86	0.86
AFGI	0.84	0.84
PGFI	0.78	0.74
NFI	0.86	0.85
NNFI	0.98	0.97
PNFI	0.78	0.78
CFI	0.98	0.97
IFI	0.98	0.97
RFI	0.85	0.85
CN	211.46	198.13

Highlighted cells are those deemed insignificant against the relevant thresholds

Table 2: Largest MI and associated SEPC - ISSAAC

Paths between Endogenous Latent Variables and their Associated Indicators	**MI**	**SEPC**
Anch and Role Exc	4.67	.33
Anch and IOS	9.07	-.30
Anch and know and	5.40	-.65
Anch and ICT Conn	4.88	.39
Cyber and Mang Cha	6.94	.16
Cyber and Know and	5.17	-1.15
Switch Mang Cha	4.73	.13
Switch and Restruc	5.71	-.11
Switch and Ext Fac	10.10	-.94
Switch and ICT Conn	4.88	-.49
Switch and Tech Dev	6.18	-.46
Switch and IOS	6.07	.35
Spl P and Ext Fac	4.11	-.38
Aggre and ICT Core	5.62	.51
Paths between Endogenous Latent Variables		
Anch and Cyber	13.54	-184.44
Switch and Aggre	5.14	0.05
Inter and Cyber	13.84	.38
Inter and Switch	11.85	.33

Table 3: Goodness of Fit Indices – UTAUT (OLS, OBT and SSK Data Sets)

	Data Sets		
	OLS	**OBT**	**SSK**
Chi-square	253.93	261.53	295.07
DF	126	126	143
Ratio	2:1	2:1	2:1
NCP	89.87	133.00	147.26
SNCP	0.24	0.35	0.48
90% Confidence interval computed	✓	✓	✓
Difference between actual NCP value and largest parameter value	35.73	50	52.59
RMSEA	0.05	0.05	0.05
P-Value for Test of Close Fit (RMSEA < 0.05) computed	✓	✓	✓
ECVI	0.75	0.92	1.01
ECVI for saturated model	0.90	0.90	1.00
ECVI for independence model	0.90	7.42	7.86
RMR	1.96	4.34	1.89
SRMR	0.06	0.06	0.06
AIC	343.70	349.00	384.26
AIC for saturated model	342.00	342.00	380.00
AIC for independence model	3441.31	2817.79	3081.97
CAIC	566.13	571.42	616.57
CAIC for saturated model	1187.22	1187.22	1319.13

CAIC for independence model	3530.28	2906.76	3081.13
GF1	0.93	0.93	0.93
AFGI	0.91	0.90	0.90
PGFI	0.69	0.69	0.70
NFI	0.93	0.91	0.90
NNFI	0.95	0.94	0.93
PNFI	0.76	0.75	0.75
CFI	0.96	0.95	0.95
IFI	0.96	0.95	0.95
RFI	0.91	0.89	0.88
CN	249.18	241.97	239.58

Highlighted cells are those deemed insignificant against the relevant thresholds

Table 4: Largest MI and associated SEPC UTAUT (OLS, OBT and SSK Data Sets)

	Data sets					
	OLS		**OBT**		**SSK**	
Paths between Endogenous Latent Variables and their Associated Indicators	**MI**	**SEPC**	**MI**	**SEPC**	**MI**	**SEPC**
FACIL and RA1	21.15	-0.93				
FACIL and RA5	6.54	0.42			4.47	-0.12
FACIL and SN2					6.72	0.21
FACIL and U6			19.2	0.65	8.91	0.17
FACIL and SF2					4.50	0.17
SOCIAL and RA5	6.49	-0.35	5.89	-0.81	5.54	-0.26
SOCIAL and U6	19.75	0.67	15.57	1.32	5.86	0.27
EFFORT and RA1	4.20	-0.46				
EFFORT and SF2	6.85	0.51	7.64	-0.90	5.44	-0.22
EFFORT and SF4			8.42	11.19		
EFFORT and PBC3	6.71	2.06				
EFFORT and PBC5			4.55	0.42	5.20	0.13
EFFORT and SN2			8.38	-1.08	11.16	-0.32
PERFORM and SN2					4.48	-0.26
PERFORM and SF4	6.09	1.73				
PERFORM and SF2					7.28	0.09

Paths between Endogenous and Exogenous Latent Variables						
FC and BI	1.89	-0.11	5.94	-0.11	4.96	-0.60