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Consumers' Adoption of Self-Service Technologies in the Context of the Jordanian Banking Industry

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Abstract

This study aimed to examine the key factors predicting Jordanian consumers' intentions and usage of three types of self-service banking technologies. This study also sought to test if the impacts of these main predictors could be moderated by channel type. This study proposed a conceptual model by integrating factors from the unified theory of acceptance and use of technology (UTAUT), along with perceived risk. The required data were collected from a convenience sample of Jordanian banking customers using a survey questionnaire. The statistical results strongly support the significant influence of performance expectancy, social influence, and perceived risk on customer intentions for the three types of SSTs examined. The results of the X^2 differences test also indicate that there are significant differences in the influence of the main predictors due to the moderating effect of channel type. One of the key contributions of this study is that three types of SSTs were tested in a single study, which had not been done before, leading to the identification of the factors common to all three types, as well as the salient factors unique to each type.

Keywords: Self-service technology, Internet banking, mobile banking, telebanking, moderating effect.

1. Introduction

Self-service technology (SST) is among the best-known and most-innovative service delivery channels, providing customers with a wide range of products and services (Alalwan et al., 2015; Curran and Meuter, 2005; Fan et al., 2016; Kokkinoua and Cranage, 2013; Meuter et al., 2000, 2005). Conceptually, SST is defined as “technological interfaces that enable customers to produce a service that is independent of direct service employee involvement” (Meuter et al., 2000, p.50). According to Bitner et al. (2002), Lee (2016), and Meuter et al. (2000), four common types of technology interfaces have been widely applied in service contexts: telephone/interactive voice response (IVR) interfaces (e.g. telebanking); Internet-based interfaces (e.g. online shopping and Internet banking); interactive kiosks (e.g. automated teller machines (ATMs)); and videos/CDs. However, the decision in the current study was to focus on only three types of SSTs: Internet banking, telebanking, and mobile banking. These three kinds of SSTs have been recently introduced in Jordan, whereas ATMs have been implemented by Jordanian banks for a long period of time. Therefore, ATMs are widely adopted and used by Jordanian banking customers compared to the three selected types of SSTs.

Upon close review of the main body of literature, the moderating effects of channel type on the adoption of SST has never been tested by prior studies in the related area of SSTs. In fact, customer reactions to SST channels are likely to differ according to the types, natures, and purposes of such channels (Hanafizadeh et al., 2014; Lin, 2011; Mallat et al., 2004; Oh et al., 2016). This variance could be attributed to the faster growth of certain kinds of SSTs (e.g. mobile banking) in comparison to other channels (e.g. telebanking and Internet banking) (Laukkanen, 2017; Lin, 2011, 2013). This could also reflect customers’ experience with each of these SSTs. Thus, SST channels (e.g. mobile banking) are considered to be pioneering technology, comprising novelty and innovativeness compared with other kinds of banking channels (e.g. ATMs and telebanking) (Mallat et al., 2004; Püschel et al., 2010). In addition, the facilities and resources required (e.g. 4G services, smartphones, Wi-Fi, PCs, and/or landlines) to run SST services differ from one channel to another (Oruç and Tatar, 2017; Riquelme and Rios, 2010). This leads to the following question: does the nature and type of

SST (e.g. Internet banking, mobile banking, and telebanking) moderate and determine the impacts of key factors predicting customers' intentions and usage concerning these channels?

In this regard, it is important to mention that banks in developing countries (i.e. Jordan) suffer from a weakness in the adoption of SSTs and the lower usage rate by customers in comparison with developed countries (Al-Sukkar and Hasan, 2005; Migdadi, 2012; Sharma et al., 2017). This adds to the fact that quite a few studies have been conducted in developing countries in general and in Jordan particularly. This, in turn, creates a lack of understanding about the main factors influencing the adoption of SSTs in developing countries. In Jordan, nowadays, most banks provide financial services using different kinds of SST channels; accordingly, they have the challenge of effectively marketing these different channels. Therefore, and to fill this gap, the current study aims to examine the moderating effects of SST channel types (i.e. Internet banking as a type of Internet-based interface; telebanking as a type of telephone/IVR interface; and mobile banking as a more novel and modern technology). In this regard, it is worth mentioning that the unit of analysis are the Jordanian banking customers, who were the focus of the current study, and the main source of study data.

2. SSTs in Jordan

Jordan is witnessing a significant renaissance in the field of communications and information technology (The Gulf Today, 2012). The three largest organizations that provide mobile, Internet, and telecom services to Jordanian customers are Zain, Orange, and Umniah (The Jordan Times, 2013). Further, in 2016, there were 15.35 million mobile subscriptions in Jordan, with a penetration rate of 140% (Statista, 2018a). This is in addition to the fact that the number of Jordanian Internet users reached about 6.3 million in 2017, as stated by Statista (2018b). Accordingly, Jordanian banks have noticed the great opportunity of using technology breakthroughs to provide their customers with high-quality banking services at lower human and financial costs (Azzam and Alramahi, 2010; Migdadi, 2012; Wirtz and Zeithaml, 2018). In this regard, SST channels have received considerable attention in the banking sector in Jordan, where 23 banks have implemented Internet banking, 15 have introduced mobile banking, and 13 have employed telebanking (Association of Banks in Jordan, 2010; Migdadi, 2012). This has been accompanied by huge amounts of financial resources being invested in implementing SST channels in the banking logistical system (Al-Majali, 2011; Association of Banks in Jordan, 2010; Migdadi, 2012). Jordanian banks have launched such services in order to have wider geographical reach, to cut operational and labor costs, to contribute to service value and

quality, to enhance customer satisfaction and loyalty, and to maintain and enlarge their market shares (Al-Rfou, 2013; Awwad and Ghadi, 2010; Khraim et al., 2011).

However, Jordanian banking customers seem to be less interested in using and accepting SST channels (Al-Majali, 2011; Al-Rfou, 2013; Alryalat et al., 2013; Al-Smadi, 2012; Awwad and Ghadi, 2010; Salhieh et al., 2011). For instance, the adoption rate of mobile banking services is less than 8%, and 79% of Jordanian banking customers think that they are not able to use mobile banking correctly and safely (Gharaibeh and Arshad, 2016). Statista (2018c) mentions that the penetration rate of Internet banking services was less than 13% in 2012. In 2013, Al-Rfou provided statistical evidence indicating that Jordanian banking customers are still little interested in using and adopting Internet banking channels. The statistics show that less than 19% of banking clients in Jordan have accessed Internet banking services, and only 21% of those customers believe that they can actually use this channel type effectively. Al-Rfou also states that about 61% of Jordanian banking customers do not have full knowledge and awareness of the existence of Internet banking and the benefits of the channel.

Owing to the above-mentioned facts and statistics, there is a question on the main factors that could hinder or contribute Jordanian customers' intentions and usage regarding SSTs (AbuShanab et al., 2010; Al-Majali, 2011; Al-Rfou, 2013; Al-Smadi, 2012; Al-Sukkar and Hasan, 2005). This has led to the perception of SSTs as a double-edged sword (Chiu et al., 2010; Hilton et al., 2013; Hung et al., 2012; Meuter et al., 2005). Indeed, customer reluctance to use this technology means that it is futile to invest in SSTs, so banks find themselves having to continue to provide their services via human encounters, with their associated operational and labor costs (Chiu et al., 2010; Hilton et al., 2013; Hung et al., 2012). From reviewing the current literature on SSTs in Jordan, a number of researchers have investigated Internet banking (i.e. AbuShanab et al., 2010; Alalwan et al., 2017; Alalwan et al., 2018; Al-Majali, 2011), mobile banking (Alalwan et al., 2016b; Awwad and Ghadi, 2010; Khraim et al., 2011) or telebanking (i.e. Alalwan et al., 2016a). The theory of reasoned action (TRA) was used by Al-Majali (2011) to predict Jordanian customers' intentions to use Internet banking, while an extended model developed from the theory of planned behaviour and the technology acceptance model was proposed by Al-Smadi (2012). An integrated model based on the technology acceptance model with perceived risk was proposed and tested by Alalwan et al. (2016b) to predict Jordanian customers' intentions toward mobile banking services. Their results largely confirm the roles of perceived usefulness, perceived ease of use, and perceived risk in predicting customers' intentions to adopt mobile banking. In a different study testing Jordanian customers'

intentions to use telebanking, Alalwan et al. (2016a) proposed a model based on extending the unified theory of acceptance and use of technology (UTAUT2). Alalwan et al. (2016a) were able to approve the predictive validity of UTAUT2 and confirmed the significant impacts of trust, hedonic motivation, performance expectancy, price value, and effort expectancy. Likewise, Rawashdeh (2015) states that Jordanian customers' attitudes toward mobile banking are largely shaped by perceived usefulness and privacy. More recently, Alalwan et al. (2018) found that the actual adoption of Internet banking is strongly influenced by behavioral intentions and habits.

3. Theoretical Foundation

In the literature on information systems and technology acceptance, a good number of studies have addressed individuals' behavior and intentions toward new systems, like SSTs (Åkesson and Edvardsson, 2018; Baabdullah, 2018a; Chen et al., 2012; Demirci Orel and Kara, 2014; Dwivedi et al., 2011; Dwivedi et al., 2017a, 2017b; Pascual-Miguel et al., 2015; Venkatesh et al., 2003). The models and theories used include the Theory of reasoned action (TRA) (Fishbein and Ajzen, 1975); the theory of planned behavior (TPB) (Ajzen, 1985); the technology acceptance model (TAM) (Davis et al., 1989); innovation diffusion theory (IDT) (Rogers, 2003); the technology readiness model (Parasuraman, 2000); and social cognitive theory (SCT) (Bandura, 1986; Compeau and Higgins, 1995). However, in 2003, Venkatesh et al. were successfully able to integrate and synthesize a new model: the UTAUT. This model comprises four main factors (performance expectancy, effort expectancy, social influence, and facilitating conditions) from the eight grounded theories in the area of information systems and technology acceptance (Dwivedi et al., 2015). The UTAUT is considered one of the most inclusive and parsimonious models for predicting individuals' behavior and intentions toward new systems, as stated by Bagozzi (2007).

Indeed, Venkatesh et al. (2003) considered the fundamental cognitive, social, and environmental aspects in a single model, reflecting the predictive validity of the UTAUT to explain about 70% of the variance in behavioral intentions. Due to the model's inclusiveness and predictive validity, a large number of studies have cited the model: 20,852, as reported by Google Scholar. In their meta-analysis of the main studies that have tested and cited the UTAUT, Dwivedi et al. (2011) mention that about 43 studies have fully or partially considered the UTAUT in their proposed models. It is also worth mentioning that the UTAUT has been used by many researchers to test customers' intentions and acceptance of different kinds of systems and technologies, such as SSTs, mobile shopping, kiosks, e-government, and Internet

banking (AbuShanab et al., 2010; Alryalat et al., 2013; Rana et al., 2016, 2017; Chiu et al., 2010; Slade et al., 2015; Van Raaij and Schepers, 2008; Zhou et al., 2010). Further, researchers have used the UTAUT to explain the adoption of new systems for different kinds of users, such as customers, students, citizens, and employees (Alryalat et al., 2013; Chiu et al., 2010; Van Raaij and Schepers, 2008; Wang and Shih, 2009; Williams et al., 2015). In addition, the UTAUT has been applied and validated in different countries and regions (e.g. Australia, Jordan, Malaysia and Saudi Arabia) (Alalwan et al., 2018; Al-Gahtani et al., 2007; Maruping et al., 2017; YenYuen and Yeow, 2009; Yeow et al., 2008).

All things considered, there is support for the generalizability and applicability of the UTAUT in both developing and developed countries and for different types of technology (Junior and dos Santos, 2017; Rana et al., 2013; Venkatesh et al., 2012; Zhou et al., 2010). For instance, the UTAUT was able to explain about 45.75% of the variance in Chinese customers' usage of mobile banking and about 64% of the variance in Jordanian customers' intentions to use Internet banking (Alalwan et al., 2018). A number of SST studies have used the UTAUT as a strong theoretical foundation to predict customers' behavior and intentions toward SST channels (i.e. AbuShanab et al., 2010; Chiu et al., 2010; Dwivedi et al., 2017a; Martins et al., 2014; Riffai et al., 2012; Wang and Shih, 2009; Yueh et al., 2016; Zhou et al., 2010). Importantly, most of these studies have considered other external factors alongside the UTAUT constructs to provide an accurate and comprehensive picture regarding consumer behavior related to SSTs. Such factors include self-efficacy (AbuShanab et al., 2010), anxiety (YenYuen and Yeow, 2009), innovativeness (Chiu et al., 2010), trust (Riffai et al., 2012), risk (Luo et al., 2009), and perceived credibility (Yu, 2012). Furthermore, the UTAUT has been integrated with other theories, such as task–technology fit theory (Zhou et al., 2010) and technology readiness theory (Chiu et al., 2010).

In view of the above, the UTAUT was adopted as a suitable theoretical foundation for the conceptual model utilized in this study to explain Jordanian customers' intentions and usage regarding three kinds of SSTs: Internet banking, mobile banking, and telebanking. Accordingly, the main constructs of the UTAUT (performance expectancy, effort expectancy, social influence, and facilitating conditions) were selected as the main constructs of the conceptual model. However, the UTAUT does not cover all the constructs that have been identified as critical factors influencing customer intentions and acceptance regarding SSTs. From construct/relationship analyses, perceived risk has been recognized as one of the most important and frequently found factors influencing customers' intentions and usage regarding SSTs

(Alalwan et al., 2016b; Eriksson et al., 2008; Jaruwachirathanakul and Fink, 2005; Kesharwani and Bisht, 2012; Kolodinsky et al., 2004; Martins et al., 2014; Martin and Camarero, 2008; Roy et al., 2017). Further, importantly, customers are remarkably affected by the perceived risk of using SST banking channels due to the sensitive nature of online banking transactions conducted using SSTs, where there are high degrees of uncertainty, intangibility, heterogeneity, and vagueness, along with the absence of human interaction (Kesharwani and Bisht, 2012; Martin and Camarero, 2008). Accordingly, customers are more likely to be worried when using SST channels (Eriksson et al., 2008; Jaruwachirathanakul and Fink, 2005; Kolodinsky et al., 2004). Moreover, there has been an increase in the rate of electronic financial crimes in Jordan over the last decade, in addition to a media focus on such crimes, representing another reason for the increased concern among Jordanian customers about using electronic banking channels (Al-Sukkar and Hasan, 2005;). As stated by a report published by Roya News in 2018, Jordan is listed in eighth place of the top 12 Arab countries in terms of cyber-attacks. Based on the same report, more than 1,158 cybercrimes were recorded in Jordan between January and April 2018. Therefore, perceived risk could play a vital role in influencing Jordanian customers' intentions to use SST banking channels.

Furthermore, in the 15 exploratory interviews conducted with Jordanian banking customers, perceived risk was widely reported by these customers to be one of the most important obstacles mitigating their willingness to use SST banking channels. This concern was attributed by the interviewed customers to the sensitive nature of financial services and online banking channels in particular. In this respect, they also reported that although SSTs are more innovative and cost-effective banking channels, they are still hesitant to use such channels due to the risks owing to the sensitive nature of financial services and electronic banking channels in particular (for more details, see Appendix 2).

For the above-mentioned reasons, and in order to maintain the parsimonious nature of the model and to avoid any repetition, perceived risk was the only external factor that was included as an extension to the UTAUT in the conceptual model.

3.1 The Moderating Influence of Channel Type

As discussed in the Introduction section, customer reactions to SST channels are likely to differ according to the kinds, natures, and purposes of such channels (Hanafizadeh et al., 2014; Lin, 2011; Mallat et al., 2004; Oh et al., 2016). For instance, mobile banking has been constantly and positively evaluated in terms of its efficiency (saving time and effort), mobility, and safety,

while Internet banking has been seen as less expensive to use, more useful, and easier than mobile banking (Lal and Dwivedi, 2009; Lin, 2013; Shareef et al., 2014; Shareef et al., 2016a; Suoranta and Mattila 2004). Furthermore, banking customers have expressed less interest and preference toward telebanking compared to other banking channels, such as ATMs and Internet banking (Thornton and White, 2001). Thornton and White (2001), for instance, noted that telebanking was ranked in third place after ATMs and Internet banking in terms of usage rates. In line with the discussion so far, there is a need to examine the moderating impact of channel type (Internet banking, mobile banking, and telebanking) on the main factors predicting customers' intentions and actual use regarding SSTs. Further discussion and justifications regarding the research hypotheses are provided in the following sections.

3.1.1 Performance Expectancy

Performance expectancy is conceptualized as “the degree to which an individual believes that applying the technology will help him or her to attain gains in job performance” (Venkatesh et al., 2003, p.447). As discussed, the impact of performance expectancy varies in accordance with channel type. In other words, the benefits associated with each channel are likely to be perceived differently. Consistent with this proposition, mobile banking has been constantly and positively evaluated in terms of efficiency (saving time and effort), mobility, and safety, while Internet banking has been seen as less expensive to use, more useful, and easier to use than mobile banking (Alalwan, 2018; Baabdullah, 2018b; Dwivedi et al., 2017a; Lal and Dwivedi, 2008; Lin, 2013; Madigan et al., 2017; Suoranta and Mattila, 2004). Sundarraj and Wu (2005) also report that Internet banking was perceived to be more advantageous than telebanking and that its adoption rate was higher. Therefore, this study proposed the following hypothesis:

H1: The influence of performance expectancy on Jordanian customers' intentions to use SSTs will be moderated by channel type.

3.1.2 Effort Expectancy

Effort expectancy was conceptualized in the current study as customers' perceptions of the ease or difficulty of using particular types of SSTs: Internet banking, mobile banking, and telebanking (Venkatesh et al., 2003). Given the particular nature of SSTs, a certain level of knowledge and skill is required. Moreover, using these channels requires customers to perform all tasks alone without any assistance, so effort expectancy could play a crucial role in determining customers' intentions to use these technologies. Indeed, the nature of the SST and the efforts expected from customers to use the channel successfully differ from one channel to

another. As some of these channels (e.g. telebanking) have been established for a longer period of time than others have (e.g. mobile banking), customers' experience and skills with each channel will differ as well. In this regard, Howcroft et al. (2002) indicate that aspects relating to the degree of complexity and equipment accessibility derive less attention in telebanking compared to Internet banking. Therefore, the role of effort expectancy in shaping customers' intentions to use SSTs is likely to be moderated by channel type. Hence, the following hypothesis was formulated:

H2: The influence of effort expectancy on Jordanian customers' intentions to use SSTs will be moderated by channel type.

3.1.3 Social Influence

Venkatesh et al. (2003, p.450) define social influence as “the extent to which an individual perceives that important others believe he or she should apply the new system”. The existing literature related to SSTs has paid particular attention to the social influence construct (e.g. Chiu et al., 2010; Martins et al., 2014; Wang and Shih, 2009). In line with this, it has been noticed that customers' decisions to use technology are influenced by the information and recommendations provided by the people surrounding them (Chiu et al., 2010; Martins et al., 2014; Venkatesh et al., 2003; Wang and Shih, 2009; Zhou et al., 2010). However, the important role of social influence in shaping behavioral intentions to use innovations has been observed to vary in the literature on SSTs. This variation has been attributed to differences in individual attitudes, perceptions, experiences, and skills regarding the technology of interest (Davis et al., 1989; Venkatesh and Davis, 2000). In light of the fact that mobile banking has only recently been introduced by Jordanian banks in comparison with telebanking and Internet banking, which have been used for a long time, people's perceptions and awareness of such applications are expected to be different. This leads us to expect that the role of social influence on customers' intentions to use SSTs will differ according to channel type. Thus, this study postulated the following hypothesis:

H3: The influence of social influence on Jordanian customers' intentions to use SSTs will be moderated by channel type.

3.1.4 Facilitating Conditions

Facilitating conditions are defined as “the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system” (Venkatesh et al., 2003, p.453). When they are in the process of using self-service banking channels

(Internet banking, mobile banking, and telebanking), customers usually need specific support facilities (e.g. skills, resources, compatibility with other well-known technologies used by customers, and technical infrastructure) so as to effectively apply these technologies (Martins et al., 2014; Riffai et al., 2012; Sathye, 1999; Venkatesh et al., 2003). The facilities and resources required (e.g. 4G services, smartphones, Wi-Fi, PCs, and landlines) to run SST services differ from channel to channel (Riquelme and Rios, 2010). While SSTs like telebanking require simple facilities (traditional phones and effective call centers), other technologies (e.g. mobile banking and Internet banking) require advanced and complicated facilities. This is in addition to the fact that the level of compatibility with other kinds of technologies differs from channel to another, which, in turn, causes the facilitating conditions to differ. Furthermore, customer experience with technology hinders or contributes to the influencing role of facilitating conditions. For instance, as theorized by Mathieson (1991), Venkatesh et al. (2003), and Venkatesh et al. (2012), customers with rich experience are more likely to bypass the difficulties regarding the availability of technical and informational support or the compatibility degree to obtain the desired benefits. In line with this, Howcroft et al. (2002) found that customers paid particular attention to issues pertaining to equipment accessibility in the case of Internet banking. Thus, this study postulated the following hypothesis:

H4: The influence of facilitating conditions on the actual usage of SSTs will be moderated by channel type.

3.1.5 Perceived Risk

Perceived risk was proposed as an extension to the conceptual model of the current study, along with other UTAUT factors. The important role of perceived risk could relate to the particular and sensitive nature of the banking industry in general, as well as online banking technology in particular, which is universally characterized by high uncertainty, intangibility, heterogeneity, and vagueness, along with the absence of human interaction (Kesharwani and Bisht, 2012; Martin and Camarero, 2008). These characteristics make customers more apprehensive to use online banking, thereby mitigating their intentions to use this technology (Eriksson et al., 2008; Jaruwachirathanakul and Fink, 2005; Kolodinsky et al., 2004). In addition, customers seem to be more sensitive when it comes to financial matters, which explains the crucial role of perceived risk in hindering customers' willingness to accept online banking channels (Al-Gahtani, 2011; Im et al., 2008; Kesharwani and Bisht, 2012). Importantly, most of the interviewed customers in the exploratory study conducted expressed their concerns that using

SSTs exposes their bank account details to financial, fraud, and hacking risks, especially these related to Internet banking. In this respect, the customers also reported that although SSTs are more innovative and cost-effective banking channels, they are still hesitant to use such channels due to the risks. One of the most important comments made by the interviewees was that the level of perceived risk differs from one channel to another: while Internet banking was reported to be the most risky channel, mobile banking was considered the least risky. Accordingly, this study postulated the following hypothesis:

H5: The influence of perceived risk on Jordanian customers' intentions to use SSTs will be moderated by channel type.

3.1.6 Behavioral Intentions

As discussed previously, customers' experience with SST channels affects their perceptions of these channels' novelty and innovativeness. Thus, certain SST channels (e.g. mobile banking) are considered pioneering technology and are seen as more novel and innovative than other kinds (e.g. ATMs and telebanking) (Mallat et al., 2004; Püschel et al., 2010). Therefore, customers are expected to express different interests in using these channels, according to their novelty and related benefits. This leads us to suppose that the impact of behavioral intentions on using SSTs could differ from one channel to another. Hence, this study postulated the following hypothesis:

H6: The influence of behavioral intentions on the actual usage of SSTs will be moderated by channel type.

4. Methodology

A field survey was considered best suited to the current study. Thus, a self-administered questionnaire survey was conducted to collect data from Jordanian banking customers, using convenience sampling (Bhattacharjee, 2012). Given that there were three different kinds of SSTs under investigation (Internet banking, mobile banking, and telebanking), three separate questionnaires were developed using the same set of construct items (see Appendix 1). In total, 500 questionnaires were allocated to each SST channel targeted. A seven-point Likert scale was used to measure the main items of the UTAUT constructs and perceived risk, with anchors ranging from 'strongly agree' to 'strongly disagree'. A set of five common financial services was adopted to measure the use of SSTs by Jordanian banking customers. A seven-point timescale was adopted to measure the use of these services, with the following points: never,

once a year, several times a year, once a month, several times a month, several times a week, and several times a day (Dwivedi et al., 2006; Venkatesh et al., 2003).

5. Results

5.1 Response Rate

As summarized in Table 1, 500 self-administered questionnaires were distributed for each type of SST: Internet banking, mobile banking, and telebanking. Of the 1,500 questionnaires distributed, 1,107 questionnaires were returned (Internet banking = 379; mobile banking = 377; telebanking = 351), which yielded a 74% response rate. Of the 1,107 returned questionnaires, 1,014 (68%) questionnaires (Internet banking = 348, 70%; mobile banking = 343, 69%; telebanking = 323, 65%) were found to be valid and were therefore subjected to further statistical analysis.

Table 1: Response Rate

	Internet banking	Mobile banking	Telebanking	Total	Percentage
Total sample	500	500	500	1,500	100
Responses received	379 (0.79)	377 (0.75)	351 (0.70)	1,107	74
Valid responses	348 (0.70)	343 (0.69)	323 (0.65)	1,014	68

5.2 Respondents' Profile and Characteristics

The vast majority of the respondents were male (65.1%; female = 37.1%). This was due to the conservative culture in Jordan, where it is unacceptable to communicate with females without any formal associations (i.e. being colleagues, relatives, or neighbors). Thus, it was much easier to distribute the questionnaires to male respondents. In addition, the number of males in Jordan is larger than the number of females by half a million, as reported by the Jordanian Department of Statistics in 2016. The vast majority of the respondents were approached in workplaces, where the majority of employees are male (the participation rate of women in the labor force in Jordan is estimated to be 12%) (Alghad, 2016). For these reasons, this study had more male than female participants.

A large proportion of the respondents were within the age groups 25–30 (33.3%) and 31–40 (34.8%). As for education level, the largest segment of the valid sample (69.8%) had Bachelor degrees, and most of the sample had income levels of 400–600 JOD (30.8%). The majority of

the respondents (90%) had adequate levels of computer experience (more than three years). Likewise, 86.9% of the respondents had three years of experience with the Internet.

5.3 Structural Equation Modelling Analysis

Two-stage structural equating modelling (SEM) analysis was conducted with the measurement model and the structural model to analyze the empirical data of three datasets: Internet banking, mobile banking, and telebanking (Byrne, 2010).

5.3.1 Measurement Model: Confirmatory Factor Analysis

Model Fitness

The initial results of the confirmatory factor analysis (CFA) across the three SST channels indicated that the measurement model was not able to fit the observed data adequately due to the fact that some of the fit indices (e.g. the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), and Normed Chi-Square/ Degree of Freedom (CMIN/DF) did not meet the recommended levels. Thus, conducting an accurate refinement and modification process on the measurement model was necessary to enhance the model fitness (Byrne, 2010; Hair et al., 2006; Kline, 2005). Hence, a decision was taken to remove the most problematic items over the three datasets.

According to an investigation of the standardized regression weight for each construct, one item of facilitating conditions (FC4) and two items of usage behavior (Service3 and Service5) had values less than 0.50; therefore, these items were removed. According to the standardized residual matrix, the value of SI1 from social influence, PR1 and PR5 from perceived risk did not meet the recommended levels (± 2.58) (Hair et al., 2006); accordingly, they were dropped. Further, the modification indices indicated that BI4 from behavioral intentions, EE1 from effort expectancy, PR7 from perceived risk, and PE4 from performance expectancy; hence, the decision was taken to eliminate these items. After this, the measurement model was tested again, and all the fit indices of the modified measurement model across the three datasets were found to meet the recommended levels (Table 2).

Table 2: Fit Indices of the Measurement Model for Internet Banking, Mobile Banking, and Telebanking

Fit indices	Cut-off point	Result
CMIN/DF	≤ 3.000	1.89
Goodness of fit index (GFI)	≥ 0.90	0.91
Adjusted goodness of fit index (AGFI)	≥ 0.80	0.87
Normed fit index (NFI)	≥ 0.90	0.94
Comparative fit index (CFI)	≥ 0.90	0.97
Root mean square error of approximation (RMSEA)	≤ 0.08	0.03

Construct Reliability and Validity

Using the AMOS 21.0 output file, the construct reliability (CR) values for all the latent constructs were calculated, as shown in Table 3. All the latent constructs were able to satisfactorily exhibit acceptable levels of CR, with values higher than 0.70 (Hair et al., 2010; Straub, 1989).

Table 3: Composite Reliability Results for Internet Banking, Mobile Banking, and Telebanking

Latent construct	Internet banking	Mobile banking	Telebanking
PE	0.92	0.92	0.93
EE	0.91	0.91	0.97
SI	0.85	0.93	0.78
FC	0.87	0.91	0.77
PR	0.88	0.90	0.90
BI	0.92	0.92	0.91
Use Behavior (UB)	0.79	0.82	0.80

As reported in Table 4, the average variance extracted (AVE) values for all the latent constructs were above the threshold value of 0.50 over the three datasets (Fornell and Larcker, 1981; Hair et al., 2010).

Table 4: AVE Values for Internet Banking, Mobile Banking, and Telebanking

Latent construct	Internet banking	Mobile banking	Telebanking
PE	0.79	0.80	0.82
EE	0.76	0.77	0.91
SI	0.74	0.93	0.64
FC	0.70	0.80	0.54
PR	0.65	0.69	0.75
BI	0.80	0.82	0.80
UB	0.56	0.61	0.59

Using CFA, both convergent validity and discriminant validity were also inspected to assess the construct validity for the three SSTs. By looking at the standardized regression weights table provided by the AMOS 21.0 output file, all remaining items across the three datasets were found to have factor loading values above the recommended level of 0.50, as well as significant

regression weights with their targeted constructs, with p -values less than 0.001 (Hair et al., 2010) (see Table 5). Discriminant validity was assessed by looking at the inter-correlation coefficients between the latent constructs (Brown, 2006; Gefen and Straub, 2005; Kline, 2005). As seen in Table 6, the values of the squared roots of the AVEs for the latent constructs across the three datasets were higher than the estimates of the inter-correlations with other corresponding constructs (Boudreau et al., 2001; Fornell and Larcker, 1981; Gefen and Straub, 2005). Thus, an adequate level of discriminant validity between the latent constructs was found, due to the fact that each construct's items were found to be highly loaded on their targeted constructs and less loaded on the other constructs (Brown, 2006; Kline, 2005).

Table 5: Factor Loading for Internet Banking, Mobile Banking, and Telebanking

Construct	Items	Internet banking	Mobile banking	Telebanking
PE	PE1	0.86	0.90	0.94
	PE2	0.86	0.90	0.89
	PE3	0.93	0.87	0.90
EE	EE2	0.87	0.89	0.98
	EE3	0.88	0.93	0.97
	EE4	0.87	0.82	0.98
SI	SI2	0.80	0.95	0.90
	SI3	0.91	0.75	0.72
FC	FC1	0.77	0.90	0.61
	FC2	0.83	0.91	0.64
	FC3	0.89	0.87	0.92
PR	PR2	0.77	0.92	0.88
	PR3	0.86	0.93	0.97
	PR4	0.87	0.81	0.91
	PR6	0.60	0.67	0.68
BI	BI1	0.88	0.86	0.90
	BI2	0.90	0.93	0.89
	BI3	0.90	0.93	0.89
UB	UB 1	0.80	0.94	0.96
	UB 2	0.77	0.67	0.55
	UB 4	0.69	0.70	0.72

Table 6: Discriminant Validity for Internet Banking, Mobile Banking, and Telebanking

Internet banking								Mobile banking				
Construct	PE	EE	SI	FC	PR	BI	UB	Construct	PE	EE	SI	FC
PE	0.89							PE	0.89			
EE	0.66	0.87						EE	0.61	0.88		
SI	0.59	0.59	0.86					SI	0.46	0.57	0.94	
FC	0.68	0.81	0.56	0.83				FC	0.53	0.58	0.53	.89
PR	-0.40	-0.37	-0.40	-0.45	0.80			PR	-0.19	-0.27	-0.22	-0.20
BI	0.65	0.65	0.60	0.53	-0.55	0.89		BI	0.67	0.58	0.50	0.53
UB	0.49	0.42	0.36	0.52	-0.28	0.57	0.75	UB	0.46	0.30	0.24	0.55
Telebanking								<p>Note: The diagonal values are the squared root of the variance of the latent constructs. The off-diagonal values are the estimates of the inter-construct correlations.</p> <p>Legend: BI: behavioral intentions, EE: effort expectancy, FC: facilitating conditions, PE: performance expectancy, PR: perceived risk, SI: social influence, UB: use behavior.</p>				
Construct	PE	EE	SI	FC	PR	BI	UB					
PE	0.93											
EE	0.67	0.95										
SI	0.61	0.46	0.80									
FC	0.63	0.59	0.46	0.74								
PR	-0.27	-0.10	-0.50	-0.19	0.87							
UB	0.57	0.40	0.39	0.48	-0.20	0.69	0.77					

5.3.2 Validation of the Structural Model

As can be seen in Table 7, the results of the structural model analysis indicated that all the fit indices (CMIN/DF, GFI, AGFI, NFI, CFI, and RMSEA) were within their threshold values, thus proving the good fit of the models for this application.

Table 7: Fit Indices of the Structural Model

Fit index	Cut-off point	Yielded results
CMIN/DF	≤3.000	2.449
GFI	≥0.90	0.901
AGFI	≥0.80	0.834
NFI	≥0.90	0.931
CFI	≥0.90	0.951
RMSEA	≤0.08	0.038

Path coefficient analyses were conducted using AMOS 21.0 to verify the research hypotheses, as well as to examine the extent and the pattern of the causal relationships between the latent constructs (Anderson and Gerbing, 1988; Byrne, 2010; Hair et al., 2010). As can be seen in Table 8, in the case of Internet banking and mobile banking, all the causal paths were found to be significant. As for telebanking, however, two causal paths were found to be non-significant (effort expectancy → behavioral intentions; facilitating conditions → use behavior)

Table 8: Standardized Estimates of the Final Version of the Structural Model

Internet banking				Mobile banking			Telebanking		
Hypothesized path	Standardized estimate	P-value	VIF	Standardized estimate	P-value	VIF	Standardized estimate	P-value	VIF
PE → BI	0.26	***	2.014	0.61	***	1.799	0.45	***	2.348
EE → BI	0.27	***	2.342	0.24	***	2.007	0.087	0.19	1.799
SI → BI	0.21	***	1.620	0.18	***	1.675	0.17	0.044	1.720
FC → UB	0.20	0.01	1.671	0.15	0.018	1.427	0.054	0.341	1.477
PR → BI	-0.27	***	1.295	-0.12	0.006	1.107	-0.13	0.005	1.300
BI → UB	0.43	***	1.671	0.61	***	1.457	0.41	***	1.533

[VIF: Variance inflation factor, ***: P ≤ 0.001]

5.3.3 Multicollinearity Test

As shown in Table 8, the VIF values ranged from 1.620 to 2.342 (Internet banking); from 1.107 to 2.007 (mobile banking); and from 1.300 to 2.348 (telebanking). The VIF values were noticeably lower than the cut-off value of 10 suggested by Brace et al. (2003), Diamantopoulos and Winklhofer (2001), and Irani et al. (2009). This clearly proves that there was no concern regarding multicollinearity for the three samples of the current study: Internet banking, mobile banking, and telebanking.

5.4 Testing the Moderating Influence

To examine the moderating influence of channel type along the causal paths, the main survey participants were divided into three categories: Internet banking participants, mobile banking participants, and telebanking participants. As summarized in Table 9, the largest proportion of the variance accounted for by behavioral intentions was observed in the structural model for telebanking (65%), followed by the Internet banking model (62%), while the least variance (58%) accounted for by behavioral intentions was observed in the mobile banking model. As for the variance explained by use behavior, the results were relatively different from those for behavioral intentions and other endogenous factors. The biggest value of R^2 recorded for use behavior was noticed in the case of the telebanking model (43%).

Table 9: R^2 Results for Internet Banking, Mobile Banking, and Telebanking

Endogenous construct	Internet banking	Mobile banking	Telebanking
Behavioral Intentions	62%	58%	65%
Use Behavior	33%	30%	43%

As can be seen in Table 8, the extracted coefficient values for the main paths for behavioral intentions and use behavior differed from one SST channel to another. Therefore, the differences in the influence of the main predictors of behavioral intentions (PE, EE, SI, and PR) and use behavior (BI and FC) could be attributed to the moderating effects of channel type. Accordingly, an investigation into the moderating influence of channel type on the associations between the main predictors of BI and UB was undertaken. To do so, the χ^2 of the unconstrained base model was compared with the χ^2 of the constrained model. As can be seen in Table 10, the value of $\Delta\chi^2$ was 218.34, with a significance level of 0.000. This means that there were significant differences among the groups. Accordingly, there was a possibility to find

differences at the path level. One path coefficient was constrained to be equal over the models of the three applications, and the value of χ^2 for the new model with this constrained path was then compared with value of χ^2 for the unconstrained base model (Im et al., 2008; Wang and Shih, 2009).

As can be seen in Table 10, the most significant differences among the SST channels were regarding the impact of behavioral intentions on actual use behavior ($\Delta\chi^2 = 14.001$, $p < 0.001$). Indeed, behavioral intentions were the strongest factor predicting the use of mobile banking (see Table 8). Facilitating conditions were found to be the most crucial factor predicting the use of Internet banking ($\Delta\chi^2 = 9.518$, $p < 0.010$). Further, channel type moderated the relationship between performance expectancy and behavioral intentions, where the strongest impact of performance expectancy in this respect was observed in the case of mobile banking ($\Delta\chi^2 = 9.505$, $p < 0.010$). Perceived risk also influenced behavioral intentions more saliently in the case of Internet banking in comparison with mobile banking and telebanking ($\Delta\chi^2 = 5.931$, $p < 0.050$). Effort expectancy was the most significant factor predicting behavioral intentions in the case of Internet banking and mobile banking but not in the case of telebanking ($\Delta\chi^2 = 6.348$, $p < 0.050$). However, there were no significant differences in the impact of social influence on behavioral intentions that could be attributed to channel type ($\Delta\chi^2 = 0.857$, $p < 0.100$). Accordingly, H1, H2, H4, H5, and H6 were all supported, while H3 was rejected.

Table 10: Results of the Moderating Effects (χ^2 Difference Test)

	χ^2	DF	$\Delta\chi^2$	P-value
Unconstrained base model	2027.841	771		
Constrained base model	2246.178	821	218.34	0.000
Constrained paths				
PE → BI	2037.346	733	9.505	0.010
EE → BI	2034.189	733	6.348	0.050
SI → BI	2028.698	733	0.857	NS
FC → UB	2037.359	733	9.518	0.010
BI → UB	2041.842	733	14.001	0.001
PR → BI	2033.772	773	5.931	0.05

Legend: NS: non-significant

6. Discussion

In the current study, an empirical examination of the extension of the UTAUT with perceived risk was undertaken to see how SST channel type could moderate the influences of the main predictors of behavioral intentions and the use of such technology. Aspects related to benefits and usefulness attracted considerable interest from the Jordanian banking customers in formulating their intentions to use such channels. The results of the χ^2 difference test also indicate that the influence of performance expectancy on behavioral intentions differed from one SST channel to another: while this relationship reached the highest level for mobile banking and telebanking, it was lower but still significant for Internet banking. This means that customers perceive using mobile banking and telebanking as more beneficial and convenient than Internet banking. This could be because mobile banking and telebanking channels have a higher degree of mobility and flexibility compared to Internet banking (Lin, 2013; Suoranta and Mattila, 2004). Accordingly, the perceived benefits and usefulness differed from one channel to another. Indeed, the ability of each SST channel to serve customers at a convenient time and place with less effort is different. For example, when customers plan to use mobile banking, they just need their smartphones and the applications required to access banking services from anywhere (e.g. when they are at home, at work, or even when out), which is not possible when using Internet banking, which requires a PC or laptop located in a specified place.

As presented in the previous section, the statistical results support the significant role of effort expectancy in contributing to behavioral intentions to use both Internet banking and mobile banking, whereas this role is non-significant in the case of telebanking. This means that Jordanian customers' willingness to use both Internet banking and mobile banking is more likely to reach a high level if those customers perceive that using such systems is not difficult and requires little effort.

The results of the χ^2 differences test also support the moderating role of channel type on the causal association between effort expectancy and behavioral intentions. Indeed, this relationship was strongest for Internet banking, followed by mobile banking, but it was non-significant for telebanking. This could be attributed to the fact that both mobile banking and Internet banking are more-developed and -advanced technologies in comparison with telebanking, which been implemented for a long time in Jordan. Therefore, customers are more likely to have the experience and skills needed to use telebanking compared to Internet banking and mobile banking. In line with Venkatesh et al. (2003) and Venkatesh et al. (2012), as a customer's experience with a targeted technology increases, they become more likely to be

unconcerned about the simplicity or difficulty of using the system. Additionally, such experienced individuals are more likely to be confident in their ability to use new technology (Castañeda et al., 2007; Davis et al., 1989; Venkatesh et al., 2003, 2012; Wang et al., 2006; Wessels and Drennan, 2010). Individuals could also overlook the extent of easiness or difficulty in the targeted system if they perceive more benefits and utilities (convenience, efficiency, feeling of entertainment, and saving cost and time) from using the system (Curran and Meuter, 2007; Davis et al., 1989, 1992; Kolodinsky et al., 2004; Yoon, 2010). As mentioned previously, the respondents perceived telebanking as very useful and productive, as reflected by the large coefficient value extracted for the impact of performance expectancy on customer intentions to use telebanking.

Similar to effort expectancy, the facilitating conditions construct was found to be a significant determinant of the actual usage of both Internet banking and mobile banking. However, the statistical results disproved the impact of facilitating conditions in the case of telebanking. Accordingly, it could be argued that aspects relating to important facilities, skills, infrastructures, and technical support are less important when using telebanking systems. In other words, the facilities required in the case of Internet banking and mobile banking (e.g. PCs, smartphones, 4G services, Internet access, Wi-Fi, and secured websites) are fundamental for smooth and easy access to financial services. On the other hand, telebanking requires fewer facilities and less equipment. The customer just needs a phone to call the automated center to access banking services. The results for the facilitating conditions construct pertaining to Internet banking and mobile banking are parallel with the results of prior studies (e.g. Wang and Shih, 2009; Zhou et al., 2010). Moreover, the statistical results of the moderating test also highly support the notion that the impact of facilitating conditions on use behavior is likely to differ from one SST channel to another. While the facilitating conditions construct played a crucial role for Internet banking and mobile banking, this was not the case for telebanking. Indeed, customers' experience and skills, as well as the degree of compatibility of the targeted technology with other technologies used by customers, should be taken into account when examining the impact of facilitating conditions (Al-Gahtani et al., 2007; Mathieson, 1991; Thompson et al., 1991, 1994). According to Mathieson (1991), Venkatesh et al. (2003), and Venkatesh et al. (2012), customers' experience with technology could also hinder or contribute to the impact of facilitating conditions. For instance, as theorized by Venkatesh et al. (2003) and Venkatesh et al. (2012), customers with rich experience could bypass the difficulties regarding the availability of technical and informational support to obtain the desired benefits.

As discussed previously, telebanking has been implemented for some time by Jordanian banks. Accordingly, Jordanian customers have more experience using telebanking than mobile banking and Internet banking. This hinders the impact of facilitating conditions on the usage of telebanking by Jordanian customers. In addition, consumer technology (e.g. telebanking) is usually attributed with greater simplicity in terms of design, use, and the facilities required; hence, customers could require less technological and organizational infrastructure and support relative to that required in an organizational setting (Chong, 2013; Park et al., 2007).

The results of the X^2 differences test disproved the moderating effect of channel type on the relationship between social influence and behavioral intentions. This means that the three samples paid the same level of interest to social influence when forming their decisions to use the SST channels. Through daily interactions with technology, along with increasing knowledge of and experience with technology, people are more likely to have positive perceptions and attitude toward the adoption of new technology (Shih and Fang, 2004; Venkatesh et al., 2003). As discussed earlier regarding the current situation of SSTs in Jordan, Jordan is one of the leading countries in the Middle East in terms of technology and mobile systems. In fact, the Jordanian government has spent a lot of time, money, and resources on creating a culture that supports innovation and technological development. This explains why Jordanian society looks positively at the SST solutions introduced by banks. According to Burton-Jones and Hubona (2006), the impact of social influence largely depends on how much the society supports or discourages the adoption of new ideas. In the current study, Jordanian banking customers expressed positive perceptions and thoughts toward the three kinds of SSTs examined.

The results of the X^2 differences test support the moderating effect of channel type on the relationship between perceived risk and behavioral intentions. Compared to the mobile banking and telebanking respondents, the Internet banking respondents were more strongly concerned regarding the aspects related to perceived risk. Indeed, mobile banking and telebanking are likely to be more-protected and safer ways to use financial services compared to Internet banking, which is more vulnerable to problems associated with third parties and cybercrime (Curran and Meuter, 2005; Lin, 2013; Suoranta and Mattila, 2004). Further, in Jordan, most electronic financial crimes and problems occur around services conducted using Internet applications (Alghad, 2014; Al-Sukkar and Hasan, 2005; The Jordan Times, 2014). For instance, according to a report cited by Faqir (2013), there has been a noticeable increase in the rate of cybercrimes registered in Jordan; in 2011, there were 1,103 cases. This has a negative

effect on Jordanian banking customers, who believe that using Internet banking could jeopardize and threaten the safety of their money and information. This clearly explains why Jordanian customers pay more interest in risk issues when they are considering using Internet banking.

As expected, the influence of behavioral intentions on actual usage was significantly moderated by channel type. The strongest impact of behavioral intentions on usage was for mobile banking, followed by Internet banking, while the weakest impact was for telebanking. Actually, mobile banking is considered the most advanced and modern banking technology available to Jordanian banking customers. Mobile banking is perceived as more novel and innovative compared to other channels (Laukkanen and Lauronen, 2005; Mallat et al., 2004; Marakarkandy et al., 2017; Püschel et al., 2010). Moreover, as discussed in reference to the roles of performance expectancy and perceived risk, the participants perceived mobile banking as more useful and less risky (Laukkanen, 2007; Lin, 2013; Suoranta and Mattila, 2004).

6.1 Contributions to Theory

As discussed above, there is a need to discover the main factors shaping customers' perceptions, intentions, and behavior toward SST channels, especially for new kinds of channels (e.g. mobile banking) and in developing markets (e.g. Jordan). Indeed, as in many other Middle Eastern and Arabic countries, very little attention has been paid by researchers to discover the main dimensions and aspects of SST adoption. Accordingly, this study represents a worthwhile attempt to expand current understanding and awareness regarding the issues related to SSTs in Jordan. Organizations in Jordan have always kept in mind the importance of utilizing technology in all aspects to improve quality of life for the Jordanian people. This is also accompanied by the large amount of investment by Jordanian organizations in this respect. This makes the Jordanian context worthy of attention and research, especially due to the lack of literature on SSTs in developing and Middle Eastern countries.

Further, a close review of the literature led us to observe that no studies had examined three kinds of SSTs in a single study, only examining one or two SSTs, so the current study sought to address this by looking at Internet banking, telebanking, and mobile banking. This was especially important in light of the fact that each channel represents a different kind of SST: Internet-based interfaces (Internet banking); telephone/IVR interfaces (telebanking); and mobile banking as a novel SST. More importantly, even though a good number of studies had tested the moderating influence of other factors (e.g. age, gender, experience, and income level)

(e.g. Jaruwachirathanakul and Fink, 2005; Riquelme and Rios, 2010; Wang and Shih, 2009), the moderating influence of channel type had not been considered by prior SST studies. Thus, this study adds to the existing understanding and theory on SSTs, as well as technology acceptance and information systems. The assumptions regarding the moderating role of SST type were supported by the empirical results of the current study, which found that customers reacted differently to different technologies. This helped to show which factors were able to maintain a significant influence over the three models tested in the current study.

6.2 Implications for Practice

In addition to the theoretical contributions, the results of the current study will provide Jordanian banks with clues and directions for improving SST aspects. For example, the results largely supported the role of behavioral intentions, which means that the study participants had adequate levels of interest in using SSTs. Accordingly, they are potential adopters of SSTs and should be targeted through suitable marketing strategies (Dwivedi and Irani, 2009; Irani et al., 2009). Those potential adopters could be convinced by using more-personal communication channels (one-to-one marketing actions), as suggested by Laukkanen et al. (2009). These communication efforts should focus on the utilities and benefits of SSTs compared to traditional banking channels. To motivate potential adopters, it is also important to let them experiment with SSTs via trial accounts, enabling them to experience the simplicity and usefulness of SSTs (Algharabat et al., 2017; Dwivedi and Irani, 2009; Irani et al., 2009; Jaruwachirathanakul and Fink, 2005; Shareef et al., 2011; Shareef et al., 2016a). In this regard, Laukkanen et al. (2009) argue that such experience can also help to mitigate the impact of perceived risk.

The role of performance expectancy gives more clues to banks on how to ensure that SSTs can help customers to obtain a wide range of banking services efficiently and quickly. This requires banks to provide full information and assistance so that customers can safely and successfully use SST channels (Chiu et al., 2010; Jaruwachirathanakul and Fink, 2005; Shareef et al., 2011; Simintiras et al., 2014). Further, banks should increase the number of banking transactions possible via SSTs and should maintain the quality and 24/7 continuity of SST channels. Such efforts will surely add to the perceived value and usefulness of SSTs (Simintiras et al., 2014; Zhou et al., 2010). The important role of facilitating conditions should encourage Jordanian banks to work hard to make the main required facilities, resources, information, and support available (Shareef et al., 2011; Simintiras et al., 2014). Banks should also persuade their customers that the SSTs are compatible with the other applications adopted by the customers.

As for the role of perceived risk, the innovative modification strategy advised by Laukkanen et al. (2008) could be applied to reduce customers' fears and concerns about using SSTs. In this respect, there are good examples of biometric applications (e.g. fingerprint, voice, and iris recognition) that could give customers more mechanisms in terms of encryption and authentication (Laukkanen et al., 2008; Simintiras et al., 2014). Voice recognition could be applied to telebanking, while fingerprint and iris recognition are more applicable to Internet banking and mobile banking. Such methods are more effective in securing online channels than classical password methods are (Laukkanen et al., 2008; Sharma et al., 2017). Moreover, banks should offer marketing policies like guarantees to return money to customers if their bank accounts are hacked. Furthermore, banks should empower a structural assurance of customers' bank accounts that are accessed via SSTs to prevent any hacking and privacy violations (Gan et al., 2006; Martins et al., 2014; Simintiras et al., 2014).

7. Limitations and Future Research Directions

Despite the fact that the current study represented a fruitful attempt in the area of information systems and SSTs, it was restricted by a number of limitations. For example, the data was obtained from a convenience sample of Jordanian banking customers, which could have negatively affected the results' generalizability. In this regard, it should be mentioned that it was not possible to conduct probability sampling techniques in the study population. For instance, an updated, reliable, and full list of banking customers in Jordan was not available to select participants randomly. Further, for privacy and security reasons, the banks in Jordan do not provide any information regarding their customers' contact information, which makes contacting customers very difficult for researchers. Therefore, convenience sampling had to be conducted in the current study.

The sample description showed that most of the respondents were young, had medium-level incomes, were well educated, and had adequate experience with computers and the Internet. Further, there were more male than female participants. Therefore, this raises concerns regarding the applicability of the extracted results to other parts of the population or even to other populations with different characteristics (e.g. age, income, education level, gender, and technology experience).

The focus of attention of the current study was Jordanian banking customers. This limits the results' generalizability to other countries and cultures, as customers' perceptions and usage patterns regarding SSTs and technology in general differ due to variances in countries'

development levels (developed vs. developing countries); cultures (Western vs. Asian cultures; individualistic vs. collective cultures) (Shareef et al., 2016b); laws and regulations; and Internet and computer literacy (Constantiou et al., 2009).

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Appendix 1

Table 11: Construct Items Adopted for Internet Banking, Mobile Banking, and Telebanking

Construct	Item	
Performance Expectancy	PE1	I find Internet banking / mobile banking / telebanking useful in my daily life.
	PE2	Using Internet banking / mobile banking / telebanking increases my chances of achieving tasks that are important to me.
	PE3	Using Internet banking / mobile banking / telebanking helps me to accomplish tasks quicker.
	PE4	Using Internet banking / mobile banking / telebanking increases my productivity.
Effort Expectancy	EE1	Learning how to use Internet banking / mobile banking / telebanking is easy for me.
	EE2	My interaction with Internet banking / mobile banking / telebanking is clear and understandable.
	EE3	I find Internet banking / mobile banking / telebanking easy to use.
	EE4	It is easy for me to become skillful at using Internet banking / mobile banking / telebanking.
Social Influence	SI1	People who are important to me think that I should use Internet banking / mobile banking / telebanking.
	SI2	People who influence my behavior think that I should use Internet banking / mobile banking / telebanking.
	SI3	People whose opinions that I value prefer that I use Internet banking / mobile banking / telebanking.
Facilitating Conditions	FC1	I have the resources necessary to use Internet banking / mobile banking / telebanking.
	FC2	I have the knowledge necessary to use Internet banking / mobile banking / telebanking.
	FC3	Internet banking / mobile banking / telebanking is compatible with other technologies I use.
	FC4	I can get help from others when I have difficulties using Internet banking / mobile banking / telebanking.
Behavioral Intentions	BI1	I intend to use Internet banking / mobile banking / telebanking in the future.
	BI2	I always try to use Internet banking / mobile banking / telebanking in my daily life.
	BI3	I plan to use Internet banking / mobile banking / telebanking in the future.
	BI4	I predict that I will use Internet banking / mobile banking / telebanking in the future.
Perceived Risk	PR1	Using Internet banking / mobile banking / telebanking services subjects my bank account to potential fraud.

	PR2	Using Internet banking / mobile banking / telebanking services subjects my bank account to financial risk.
	PR3	I think using Internet banking / mobile banking / telebanking puts my privacy at risk.
	PR4	Hackers might take control of my bank account if I use Internet banking / mobile banking / telebanking.
	PR5	Using Internet banking / mobile banking / telebanking does not fit well with my self-image.
	PR6	Internet banking/ mobile banking / telebanking might not perform well and create a problem with my bank
	PR7	Using Internet banking/ mobile banking / telebanking exposes me to an overall risk.
Use Behavior	UB1	Balance Enquiries and downloaded bank statements.
	UB2	Fund Transfers.
	UB3	Requesting a check book or bank certificates.
	UB4	Paying bills.
	UB5	Request an increase in credit card(s) limit or pay any balance due.

Appendix 2

Prior to finalizing the model of this study, the researchers conducted a qualitative study to check the main aspects considered in the model, as well as to see if any other factors should be considered alongside the UTAUT factors. Therefore, the decision was made to conduct 15 exploratory interviews in Jordan in June and July 2015. Semi-structured interviews were adopted. To ensure the validity and reliability of these interviews, the main questions were formulated based on prior literature and theories on technology acceptance. For instance, questions related to the main benefits of using SSTs were formed based on what has been discussed regarding the TAM, the UTAUT, and innovation diffusion theory (Davis et al., 1989; Rogers, 2003; Venkatesh et al., 2003). The questions proposed in this respect were as follows:

1. Do you think that SSTs (Internet banking, mobile banking, and telebanking) are useful?
2. If yes, what kinds of benefits do you perceive in using these channels?
3. Do you think that SSTs are more effective and productive than traditional channels, such as human encounters, for financial services? If yes, why?

The answers to these questions were very positive, and the respondents really seemed to have positive perceptions of the usefulness and benefits of SSTs. A sample answer to these questions is presented below:

Participant 1: *Indeed, SST channels, especially mobile banking, are very efficient for obtaining banking services. Compared to human tellers, using SSTs saves time and effort, and I can use such channels at any time and any place I wish without having to visit the bank branches.*

Questions related to the ease of use of SSTs were also used, based on what has been proposed by Davis et al. (1989) regarding the role of ease of use; by Rogers (2003) regarding the role of complexity; and by Venkatesh et al. (2003) on the role of effort expectancy. The questions proposed in this respect were as follows:

1. Do you think SSTs are easy to use?
2. What do you think about the time and effort requested from you as a customer to learn the basic skills to use SST channels easily and safely?

The vast majority of the interviewees stated that they had the main abilities and skills required to use SSTs. Even those who did not have sufficient knowledge to use SSTs were sure that they could learn to do so easily and that this would not consume too much time and effort. Two of the respondents' answers to these questions are presented below:

Participant 11: *I think that using such channels is not complicated and anyone with a certain level of experience could easily apply and conduct financial transactions.*

Participant 13: *Indeed, I have not used SST channels before. However, I believe that I could learn the main skills required to use SSTs within a short time without any barriers or difficulties.*

The participants were asked whether the people surrounding them support or discourage using SSTs. Based on what is proposed in the UTAUT regarding the role of social influence, the questions were formulated as follows:

1. What kinds of perceptions (positive or negative) does Jordanian society have toward SST channels?
2. Have you received any recommendations from the people surrounding you regarding the use of SST channels?
3. Do you value and take into account the recommendations coming from your family, friends, and colleagues regarding the usage of SSTs?

Most of the participants indicated that society and their own communities positively evaluate and support using SST channels. In addition, most of those participants stated that there is a good level of technology awareness in Jordan and a culture that supports using new systems like SSTs. Further, the interviewees disclosed that they were affected by the information and recommendations coming from their friends, families, and colleagues. Two of the respondents' answers to these questions are presented below:

Participants 4: *People in Jordan are more likely to support using new systems that help them to use new services like banking services in a more innovative and convenient way. This is due to the education levels and positive awareness that Jordanian people have.*

Participants 7: *People surrounding me have a positive perception toward SSTs. Once I ask and consult them about these channels, they usually recommend using SST channels, and I really appreciate what they suggest in this regard.*

The interviewees were asked about the main facilities, resources, and support they needed to use SSTs. They were also asked if SSTs were compatible with the other systems they used. The questions in this regard were extracted from what was proposed and suggested in the UTAUT and Rogers' model (2003). The questions are presented below:

1. Do you think that using SSTs requires special facilities and resources?

2. How much does the availability of such facilities and resources affect your decision to adopt SSTs?
3. What do you think about the role of the support provided by banks regarding the usage of SSTs?
4. Are SST channels compatible with the other systems you already use?

In fact, a large number of participants confirmed that using SSTs, particularly Internet banking and mobile banking, is very difficult without the existing facilities and technical resources. For instance:

Participant 3: *Internet banking and mobile banking are easy to use and more useful than traditional channels. Nevertheless, certain facilities (e.g. 4G mobile services, smartphones, and Internet access) are very crucial to be available to complete banking transactions using SST channels.*

Participant 6: *Call centers and support from my bank are very important to tell me how to use SSTs if I have any problems. As long as my bank provides me with such facilities and support, I will be motivated to use SSTs.*

Participant 2: *I think that the nature of SSTs is not far from the nature of the other technologies and systems that I use. For instance, I always use an IVR system to contact my mobile service provider, which is similar to a phone banking channel. Also, I have many applications on my smartphone that are compatible with the nature of mobile banking.* It was also important to ask the interviewees if there were any other negative factors that could hinder their decisions to use SSTs channels. The general questions that were proposed and asked in this respect were:

1. What are the main factors that negatively affect your decisions to use SSTs?
2. What kinds of fears do you have toward using SST channels?

The most common obstacles mentioned by the interviewees related to the perceived risks of using SSTs. These concerns were attributed by the interviewees to the sensitive nature of financial services and online banking channels in particular. In this respect, they also reported that although SSTs are more innovative and cost-effective banking channels, they are still hesitant to use such channels due to the risks owing to the sensitive nature of financial services and electronic banking channels in particular. Two of the respondents' answers to these questions are presented below:

Participant 5: *Regardless of the fact that using SSTs could help me easily and effectively obtain banking services, I still feel scared about the expected problems, such as fraud or losing my privacy and money.*

Participant 14: *Honestly, the number of cybercrimes in Jordan is increasing, and I can't trust banks to prevent hackers from accessing my accounts and stealing my money. Therefore, I do not want to expose myself and my bank account to any danger and risk, and I would like to continue using human encounters as a safer way of conducting banking transactions that protects my privacy and money.*