The use of Elaboration Likelihood Model in eWOM research: literature review and weight-analysis

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Abstract. With the development of Internet and e-commerce, traditional word of mouth communications have evolved into electronic word of mouth (eWOM) communications, which significantly affect consumers in their decision-making process. Previous studies investigated how consumers process information online and how it affects consumer behaviour applying the Elaboration Likelihood Model (ELM). ELM distinguishes between two routes of information processing: central and peripheral. Existing literature has a mixed of findings regarding factors affecting information process using ELM and lacking a comprehensive review providing evaluation and a consolidated view of these factors. Thus, the aim of this research is to evaluate the use of ELM in the context of eWOM research by performing a systematic review and weight analysis of existing research findings. This will help consolidating the predictive power of the independent variables on the dependent variable, by taking into consideration the number of times a relationship has been previously examined. The model developed through weight analysis would allow eWOM practitioners to decipher more influential factors.

Keywords: eWOM, ELM, weight analysis, eWOM persuasiveness, literature review

1 Introduction

Developed from traditional word of mouth communications, Electronic word-of-mouth (eWOM) communications represent one of the most important information sources used by consumers in their decision-making process [1]. eWOM is defined as "the dynamic and on-going information exchange process between potential, actual, or former consumers regarding a product, service, brand, or company, which is available to a multitude of people and institutions via the Internet" [2]. eWOM has unique characteristics (e.g. tie strength, privacy, anonymity, volume), which makes its processing more complicated in comparison with traditional WOM [3].

eWOM communications receive growing interest from researchers and practitioners [2]. eWOM significantly affects the consumer decision-making process. According to recent statistics, online reviews, which are types of eWOM influence the purchase

decision for 93 percent of consumers [4]. A number of studies investigated factors affecting the persuasiveness of eWOM and its impact on consumer behaviour. To explain the information processing, researchers used Elaboration Likelihood Model (ELM). ELM is considered as the most popular and useful persuasion model in consumer research and social psychology [5]. According to ELM individuals process information using central and peripheral routes. The topic of ELM studies in the context of eWOM communications is still relatively new. Few existing studies provided a comprehensive literature review of the application of ELM model in information processing but did not consider it in the context of eWOM communications [5, 6]. The extant literate on ELM studies in eWOM environment appeared fragmented without a comprehensive review of published papers or a classification framework. Thus, it is not easy to draw meaningful conclusions from prior studies due to inconsistent results and lack of their consolidated understanding. Existing studies in this area have reported conflicting results on the effect of factors on persuasion and consumer behaviour. For example, Kim and Lee [7] found that source credibility has a significant positive effect on intention to buy, while Wang [8] found that the effect is non-significant. The difference in the results might be explained by different types of products and services, as well as different platform characteristics. The mixed findings on the factors affecting perceived persuasiveness of eWOM communications and consumer behaviour can lead to confusion for academics and marketing practitioners alike.

As a result, it is important to conduct a review of existing ELM studies in eWOM context and perform weight-analysis. Hence, the purpose of this research is to evaluate the use of ELM in the context of eWOM research by performing a systematic review and weight analysis of existing research findings. This will help investigate the predictive power of the independent variables on the dependent variable, by taking into consideration the number of times a relationship has been previously examined. The model developed through weight analysis would allow eWOM practitioners to decipher more influential factors.

The remainder of the paper is organised as follows. First, the literature review will be presented. After, the research method employed for this study is described. Next, the findings from weight analysis are presented. Then, the findings are discussed, followed by the conclusion and outlining the limitations of this study and directions for future research.

2 Literature Review

ELM was proposed by Petty and Cacioppo [9]. It is a dual process theory which describes the change of attitude form. The model explains different ways of stimuli processing. ELM separates the central route (when an individual considers an idea logically) and peripheral route (where an individual employs pre-existing ideas and superficial qualities to be persuaded by the message) [9]. Individuals use the central route when they are motivated and can think about the issue (high involvement consumers). Opposite to central route, the peripheral route is used when either ability or motivation to think on the issue is low (low involvement consumers) [9, 10]. ELM is

used in the information adoption model proposed by Sussman and Siegal [11]. The information adoption model states that information helpfulness will influence outcomes (e.g. intention towards and advocated behaviour). ELM is considered as a major theoretical model in eWOM research [12].

Existing studies in eWOM communications mostly consider ELM by using central or peripheral cues to process information [10, 12, 13]. Existing literature states that information embedded in eWOM message is centrally processed by consumers, whilst information associated with text attributes such as reviewer characteristics is heuristically processed by individuals [14]. Studies defined argument quality, accuracy, factuality, valence, timeliness, type of review, length, readability, and relevance as the central route [15-18]. Whilst average rating, consistency, expertise, image, number of followers, number of friends, presentation mode, credibility, tie strength, and volume were defined as a peripheral route [19-22].

3 Research method

As this research aims to synthesise existing findings on the use of ELM in eWOM research, it was considered appropriate to employ weight analysis [23, 24]. Weight analysis is used to ascertain the predictive power of independent variables taking into account the number of times the relationships between independent and dependent variables were studied before.

To perform the analysis, peer-reviewed journal articles on eWOM communications were collected from bibliographic databases Scopus, EBSCO and Web of Science using a keyword search based approach [25-27]. The searched keywords included "Elaboration likelihood model", "ELM", "Online review", "Online reviews", "Electronic word-of-mouth", "Electronic word of mouth", "eWOM", "Internet word-of-mouth", "Internet word of mouth", "iWOM", "Online word-of-mouth", "Online word of mouth", "Virtual word-of-mouth". As a result of this search 120 articles were identified. Articles that did not have empirical findings were excluded, leaving 75 articles. Based on the screening and initial review of these 75 articles, Table 1 presents the factors (as constructs or dimensions of ELM) affecting consumer behavior that were used in eWOM studies.

Based on the analysis of 75 articles, it was found that researchers used a number of moderators, which affected the impact of peripheral and central cues on information processing. The most common used moderators are product type [28, 29], involvement [16, 30], gender [20, 31], source expertise [32], and prior knowledge [7, 33].

Table 1. Factors affecting consumer behaviour

Route	Construct	Definition	# of studies	Representative studies
Central route	Argument quality	Persuasive strength of arguments embedded in an informational message	36	[34, 35]
	Accuracy	The correctness of the shared information	5	[15]

	Factuality	The message containing fact-based information	2	[16]
	Valence	Whether the message is positive or negative	17	[14, 18]
	Timeliness	The extent to which the informational content is current and timely	6	[15, 16]
	Type of the review	Attribute value vs simple recommendation	2	[36]
	Length	Total number of words in the message	16	[12, 15]
	Readability	The level of effort required to understand the text	3	[14, 17]
	Relevance	The extent to which an online review is viewed relevant and is considered by the decision maker	7	[16]
Peripheral route	Average Rating	Average rating of the product/service	16	[16, 18]
	Consistency	Consistency of the review with the rest of the reviews	8	[19, 20]
	Expertise	The degree to which the message communicator is able to provide the correct information	10	[19, 22]
	Image	Number of images in the message about product/service	2	[12, 18]
	Number of followers	Number of followers the reviewer has online	3	[12, 15]
	Number of friends	Number of friends the reviewer has online	2	[15]
	Presentation mode	Ranging from pure text to text with image, to the most visual presentation mode, video	2	[29, 30]
	Source credibility	Consumers' overall perceptions regarding the credibility of the message communicator	31	[12, 16]
	Tie strength	The depth of a relationship between source and information seeker	2	[21]
	Volume	Total number of posted online reviews	27	[15, 36]

4 Weight analysis

In order to perform weight analysis, the number of significant results was divided by the total number of times that particular relationship between a given independent and dependent variable had been tested [24, 37]. For example, to calculate the weight for the relationship between argument quality and attitude, 6 (number of significant relationships) was divided by 7 (the total number of studies investigated this relationship), which results in weight 0.857. Table 3 presents findings from weight analysis for all attributes identified in this review.

Table 2. Weight analysis

Independent variable	Dependent variable	Significant	Non-significant	Total	Weight
Argument Quality	Attitude	6	1	7	0.857
Source credibility		4	4	8	0.500
Volume		4	1	5	0.800
Argument Quality	Engagement	0	4	4	0.000
Attitude		3	0	3	1.000
Source credibility		3	1	4	0.750
Attitude	eWOM adoption	3	1	4	0.750
Argument Quality		5	0	5	1.000
eWOM credibility		11	0	11	1.000
eWOM usefulness		13	0	13	1.000
Source credibility		3	0	3	1.000
Tie strength		2	0	2	1.000
Argument Quality	eWOM credibility	12	0	12	1.000
Average product/service rating		7	0	7	1.000
Consistency of review		6	1	7	0.857
Source expertise		3	1	4	0.750
Source credibility		11	0	11	1.000
Volume		2	0	2	1.000
Argument Quality	Intention to Buy	9	1	10	0.900
Attitude		14	0	14	1.000
Engagement		3	0	3	1.000
eWOM credibility		7	1	8	0.875
eWOM usefulness		14	2	16	0.875
Source credibility		3	3	6	0.500
Type of the review		1	1	2	0.500
Volume		12	4	16	0.750
Accuracy		4	2	6	0.667
Argument Quality		12	0	12	1.000
Consistency of review		2	0	2	1.000
Expertise		7	1	8	0.875
Factuality		1	1	2	0.500
Image count		2	0	2	1.000

Length of review	eWOM usefulness	16	3	19	0.842
Number of followers		1	2	3	0.333
Number of friends		2	0	2	1.000
Timeliness		5	3	8	0.625
Average rating		9	2	11	0.818
Presentation mode		2	0	2	1.000
Readability		1	2	3	0.333
Relevance		6	1	7	0.857
Source Credibility		9	3	12	0.750
Valence		15	2	17	0.882
Volume		6	2	8	0.750

Based on the classification proposed by Jeyaraj et al. (2006), predictors can be classified as well-utilised and experiments. The predictor is considered "well-utilised" if it was examined five or more times, otherwise, the predictor is considered as "experimental". A well-utilised predictor can be classified as "best predictor" if its weight is equal or greater than 0.8. An experimental predictor can be classified as "promising" if its weight is 1. Based on the above discussion findings from weight analysis were classified in the following way.

Three factors affecting attitude towards product/service, namely argument quality (examined 7 times, significant 6 times), source credibility (examined 8 times, significant 4 times), and volume (examined 5 times, significant 4 times) are considered well-utilised. Based on the result of weight analysis, argument quality and volume are the best predictors of attitude as they have weights of 0.857 and 0.800 respectively.

Three factors influencing eWOM engagement are defined as experimental predictors: argument quality (examined 4 times, significant 0 times), attitude (examined 3 times, significant 3 times), and source credibility (examined 4 times, significant 3 times). As argument quality has weight equals 1, it is considered as a promising predictor of eWOM engagement.

Three out of 6 predictors of eWOM adoption are best predictors with weight equals to 1: argument quality (examined 5 times, significant 5 times), eWOM credibility (examined 11 times, significant 11 times), and eWOM usefulness (examined 13 times, significant 13 times). The other three predictors, namely attitude (examined 4 times, significant 3 times), source credibility (examined 3 times, significant 3 times), and tie strength (examined 2 times, significant 2 times) are considered experimental. Source credibility and tie strength are examined less than five times but have weight equals to 1, which makes them promising predictors of information adoption.

Four out of 6 factors affecting eWOM credibility are examined more than five times and have weight more than 0.8, which makes them best predictors: argument quality (weight equal 1), average rating (weight equals 1), consistency of review (weight equals 0.857) and source credibility (weight equals 1). Two other predictors are considered as experimental: attitude (examined 4 times, significant 3 times) and tie

strength (examined 2 times, significant 2 times). Tie strength has a weight of 1, thus it is considered as a promising predictor of eWOM credibility.

Six out of 8 predictors of intention to buy are well utilised: argument quality (examined 10 times, significant 9 times), attitude (examined 14 times, significant 14 times), eWOM credibility (examined 8 times, significant 7 times), eWOM usefulness (examined 16 times, significant 14 times), and source credibility (examined 6 times, significant 3 times). Argument quality (weight equals 0.900), attitude (weight equals 1) and eWOM credibility (weight equals 0.875) are considered as best predictors of intention to buy, as their weight is more than 0.8 and they were examined 5 or more times. Type of review (examined 2 times, significant 1 time) is considered as experimental predictor and engagement (examined 3 times, significant 3 times) is found to be a promising predictor with the weight equals to 1.

Ten out of 17 predictors affecting eWOM usefulness are well-utilised, namely accuracy (examined 6 times, significant 4 times), argument quality (examined 12 times, significant 12 times), expertise (examined 8 times, significant 7 times), length of review (examined 19 times, significant 16 times), timeliness (examined 8 times, significant 5 times), average rating (examined 11 times, significant 9 times), relevance (examined 7 times, significant 6 times), source credibility (examined 12 times, significant 9 times), valence (examined 17 times, significant 15 times), and volume (examined 8 times, significant 6 times). Out of nine well utilised predictors, the following predictors have weight more than 0.8, which makes them best predictors of eWOM usefulness: argument quality (weight equals 1), expertise (weight equals 0.875), length of review (weight equals 0.842), average rating (weight equals 0.818), relevance (weight equals 0.857), and valence (weight equals 0.882).

Finally, seven predictors of eWOM usefulness are experimental as they were examined less than 5 times: consistency of review (examined 2 times, significant 2 times), factuality (examined 2 times, significant 1 time), image count (examined 2 times, significant 2 times), number of followers (examined 3 times, significant 1 time), number of friends (examined 2 times, significant 2 times), presentation mode (examined 2 times, significant 2 times), and readability (examined 3 times, significant 1 time). Out of these experimental predictors, four have weight equals to 1, which makes them promising predictors of eWOM usefulness: consistency of review, image count, number of friends, and presentation mode.

5 Discussion

Taking into consideration the growing number of studies employing ELM to study eWOM persuasiveness, it is important to discuss and analyse their collective findings. Figure 1 depicts the diagrammatic representation of the factors affecting consumer behaviour using ELM with their corresponding weight by employing the results of weight analysis. The findings suggest that best predictors such as volume, argument quality, consistency of review, source credibility, expertise, length of the review, average rating, relevance, source credibility, and valence should be included in eWOM research. Promising predictors of engagement (attitude), eWOM adoption

(source credibility, tie strength), eWOM credibility (volume), intention to buy (engagement) and eWOM usefulness (image count, number of friends, presentation mode) should be included in future empirical research in order to evaluate their overall performance.

Most of the eWOM studies employing ELM as a theoretical foundation focused on characteristics of the message source or content of the message. However, limited number of studies investigated the impact of individual characteristics on information processing. Thus, future research needs to consider factors such as age, gender, level of education, trust tendency to name a few. This will advance our understanding of information processing by individuals.

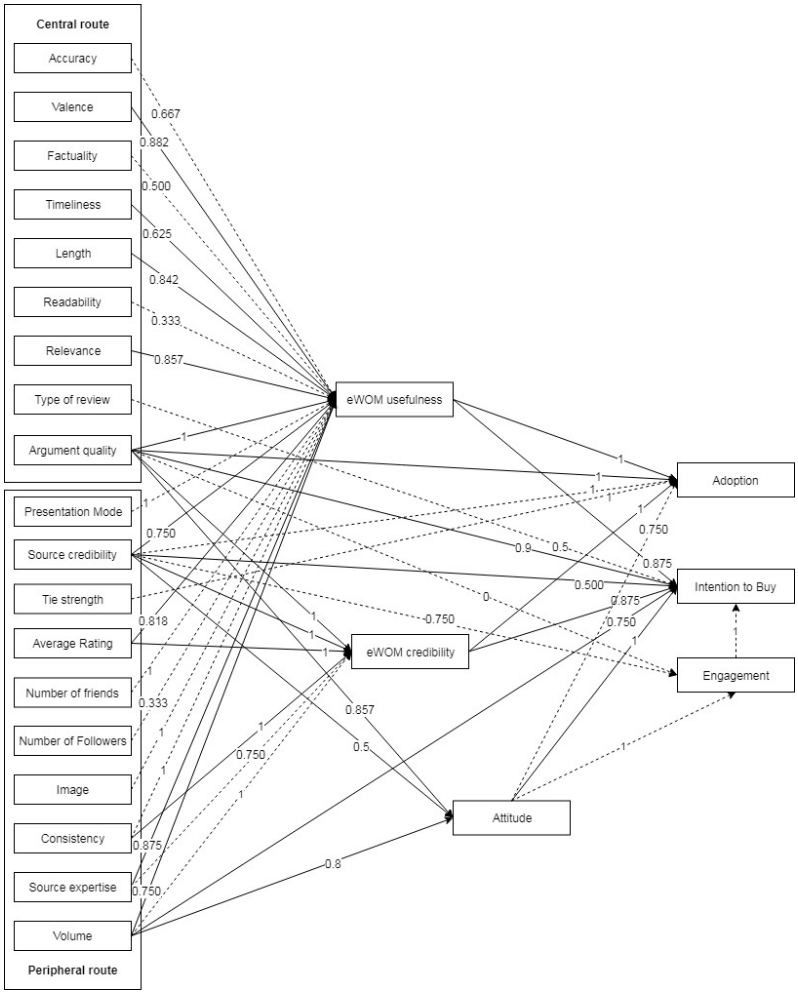

Figure 1. Factors affecting the persuasiveness of eWOM communications and consumer behavior

Note:- - ▶ experimental predictors; ⟶ well-utilised predictors.

6 Conclusion

This research aimed to evaluate the use of ELM in the context of eWOM research by performing weight analysis of existing research findings. This aim was reached by identifying and analysing relevant and important studies on eWOM that used ELM as a theoretical foundation. The weight analysis was performed by identifying a number of significant and non-significant relationships between studied variables.

This research provides some implications for researchers and practitioners. This study builds a framework for future research identifying peripheral and central route factors and their impact on consumer behaviour. The proposed framework provides the overall picture of persuasive eWOM communication by using ELM. Scholars looking further into the factors affecting information processing of eWOM messages can employ the results of this study in order to make more informed decisions regarding inclusion of factors in their research. Practitioners are advised to carefully evaluate the traditionally utilised predictors and pay more attention to the best predictors- volume, argument quality, consistency of review, source credibility, expertise, length of the review, average rating, relevance, source credibility, and valence.

The current study has some limitations. First, this study used only Web of Science, Scopus and EBSCO databases for collection of study, which can limit the number of research outputs available for weight analysis. Future research should also employ any other available datasets. Second, this research employed only weight analysis without conducting meta-analysis. Conducting meta-analysis can assist researchers in evaluation of the significance of the studied relationships based on the effect size statistics. Additionally, outcomes of meta-analysis could strengthen the findings of weight analysis [38]. Thus, future studies could perform both types of analysis of factors affecting consumer behaviour.

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