



The Digital Evolution of Word-of-mouth Communication: Assessing the Impact of Electronic Word-of-mouth on Consumer Decision-making Journey

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Abstract

The current thesis comprises three interrelated and independent studies which have been accomplished in two main phases. In *phase one*, a framework has been proposed to systematically review the eWOM and consumer decision-making literature. The systematic review analyses 113 empirical studies to examine the current state of knowledge regarding how electronic word-of-mouth (eWOM) facilitates consumers' purchase decision-making journey. Findings in this study are presented following the stages of Engle, Kollat and Blackwell (1987)'s decision-making model. In each of the decision-making stage, relevant eWOM characteristics are discussed with regard to their dynamic influence on the cognitive (e.g. eWOM acceptance), affective (attitude towards the products) and behavioural (purchase intention) elements underlying the decision-making behaviour. As evidenced by the systematic review, the current eWOM research has been centred on the verbal communication aspects and overlooked the way word-of-mouth information delivers in digital environment and its impact on consumers' decision-making. In *phase two*, two studies are therefore designed to focus on the diversity of word-of-mouth communication medium in the online environment. More specifically, these two studies empirically investigated two emerging aspects of eWOM, namely visual eWOM and mobile eWOM. By employing online data and survey data, the findings of empirical researches in phase two shed light on the critical role of eWOM communication medium by empirically showing the medium that represent eWOM (visual eWOM) and deliver eWOM (mobile eWOM) influence consumers' decision-making journey cognitively (e.g. how consumer evaluate the information and decision outcome) and affectively (e.g. how consumer feel about the decision-making process). Practical and theoretical implications are discussed.

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Chapter One

Introduction

1.1 Introduction

The current thesis focuses on the phenomenon of word-of-mouth digital evolution. In particular, the thesis concerns with phenomenon that word-of-mouth evolves into online context and most prominently how this evolution amplifies and accelerates the marketing power of word-of-mouth over consumer decision-making. Three independent and interrelated studies in the current thesis are proposed to comprehensively investigate this research domain. To guide theory, the first study (presented in chapter two) of this thesis systematically reviewed 113 empirical studies in this research stream to synthesize previous empirical studies. Building upon the systematic review, two complementary studies (present in chapter three and chapter four) are proposed to empirically investigate this phenomenon by choosing to focus on the communication medium of online word-of-mouth (e.g. how word-of-mouth is presented and delivered), namely visual eWOM and mobile eWOM. These two contemporary aspects, as the sequels of the word-of-mouth's digital evolution, epitomise the way digital word-of-mouth is conveyed which receives limited attention from researchers. In order to pursue more managerially relevant guidance, these two studies were accordingly designed to examine the impact of these aspects of word-of-mouth on the dimensions of consumers 'purchase decision-making journey. The present chapter firstly introduces the research domain, objectives and rationale of the thesis are then discussed, followed by the structure of the current thesis.

1.2 Research Domain

1.2.1 The Digital Evolution of Word-of-mouth

Marketers spend a fortune on designing and delivering advertising to fascinate and persuade customers, yet what consumers often rely on is free and simple: word-of-mouth (Bughin et al., 2010; McKinsey, 2010). Word-of-mouth, in the marketing context, is defined as the ‘informal communication directed at other consumers about the ownership, usage, or characteristics of particular goods and services and/or their sellers’ (Westbrook, 1987; p 261). As one of the most ancient mechanism in the human society history, word-of-mouth has been significantly influencing consumer decision-making as long as language and business have been intertwined (Dellarocas, 2003; Antonow, 2017). As early as 1950s, the Fortune Magazine reported that American consumers are immensely susceptible to word-of-mouth (Whyte, 1954). In like manner, a recent industrial survey revealed that by the year of 2017, 68% of the US consumers rely on online word-of-mouth to make a variety of decisions ranging from what laptop to buy to which movie to watch (Statista, 2018). What lasts from 1950s is the marketing power of word-of-mouth over consumers’ purchase decision-making, however, what changes compare to 1950s is the nature of word-of-mouth communication. Word-of-mouth now has evolved into digital forms and this transformation affects the way consumers making purchase decision.

The digital evolution of word-of-mouth has been amplifying and accelerating its marketing power. In other words, with word-of-mouth extending to the online context and starting to comprise with electronic elements, the influence is becoming even more dominant in consumer decision-making. For example, compare to traditional offline

word-of-mouth that normally occurs in oral and person-to-person communication (Arndt, 1967), the reach of word-of-mouth in the online context is unprecedented as the information are public and can be seen by magnitude of online users (Park & Kim, 2008). Furthermore, different with traditional word-of-mouth that are often transmitted in interpersonal conversation, online word-of-mouth are documented in written form, which are traceable for consumers and breakdowns the restrain of time and place. The prosperity of online word-of-mouth emboldens the ‘research-obsessed’ consumers. As the consequence, consumers are now unprecedentedly depending on online word-of-mouth to make variety of decisions ranging from what laptop to buy to which movie to watch (Statista, 2018).

Despite the practical influences of word-of-mouth digital evolution on consumers decision-making, this ever-growing phenomenon also prompts the theoretical development since the impact of word-of-mouth on consumer behaviour in online context cannot be comprehensively addressed and explained by traditional (offline) word-of-mouth theory (Brown, Broderick, & Lee, 2007). Accordingly, a considerate amount of research have investigated this new form of word-of-mouth, results in a substantial research stream named electronic word-of-mouth (eWOM). Electronic word-of-mouth (eWOM or online word-of-mouth) is defined as *the statements provided by the customers evaluating a certain product or service, which is available to the multitude of people and institutions via the internet* (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004). Prior researchers have found that electronic word-of-mouth is one of the most powerful forces for consumers’ decision-making journey, in the way which can effectively increases brand awareness, supports product evaluation and enhances brand loyalty (Babić Rosario, Sotgiu, De Valck, & Bijmolt, 2015; Ferguson, 2008; Jalilvand & Samiei, 2012). However, literature investigating electronic

word-of-mouth is large and fragmented. Electronic word-of-mouth has evolved and generated distinct features from the online environment, compare to traditional word-of-mouth. However, electronic word-of-mouth is not a homogeneous phenomenon in regard to the way that consumers construct the information and access peers' opinions. For example, online product reviews, as the main form of electronic word-of-mouth studied in the literature, encompasses various components such review rating (e.g. the score that individual consumer gives for a certain product), the review content (e.g. what is said in the reviews about the product), and information cues such as the status of the user who writes the review (e.g. user's membership). Moreover, the reviews can be displayed in many platforms, such as retailers' websites (e.g. Amazon.com) and third party review sites (e.g. TripAdvisor). Consumers are exposed to and influenced by more than just one dimension of the information in their decision-making journey. That is to say that, electronic word-of-mouth *per se* is a rather dynamic and multi-dimension variable that combines the nature of digital environment. Therefore, the literature exploring the impact of electronic word-of-mouth needs to be systematically researched in order to comprehensively understand it's dynamic. To this end, this thesis comprehensively and empirically assesses the impact of electronic word-of-mouth on consumer decision-making journey by considering word-of-mouth in online environment a multi-dimension concept.

1.3 Objectives and Rationale of the Thesis

The advent of the World Wide Web (www) enables consumers to get access to online information, for example online reviews effortlessly and thus reduces the physical efforts of making a choice. Traditional word-of-mouth behaviour occurs in oral and person-to-person conversation (Arndt, 1967), in which the communication is not

likely to be documented. However, in online context, word-of-mouth are documented in written format, which are both traceable and measurable (Park & Kim, 2008). The content and source characteristics of the digitalized word-of-mouth become more salient, how consumers utilize the information in purchase decision-making process is therefore being reshaped in subtle ways.

Consumer decision-making is a process that consumer go through to reach the final buying decision. In practice, marketers intend to define the process as a multi-step process in order to track consumer decision-making from start to finish, so that they may develop marketing strategies accordingly. In theory, researchers also consider and present consumer decision-making behaviour as a process, and have developed various models that attempt to describe the decision-making process. Models of decision-making behaviour from cognitive paradigm theorists treat consumers following a problem-solving sequence of activities to make decision. For example, the most cited model of consumer decision-making is developed by Engle, Kollat and Blackwell (1987). Engle et al. (1987)'s model presents the universal process that consumer go through to make a purchase decision, which comprises with five stages: needs recognitions (also named as problem awareness), information search, evaluation, purchase and outcome.

Researchers have provided ample evidence on the powerful influence of electronic/online word-of-mouth over consumer decision-making process. The literature in this domain is large but fragment, for two reasons. First, electronic word-of-mouth is a rather heterogeneous concept, however data restrictions constrain the researchers to study only one or a few dimensions of it. Second, most of the research has typically investigate the impact of online word-of-mouth on a single or a few stage of decision-

making process. These limitations prevent researchers and marketers gain a more holistic understanding of the marketing power of word-of-mouth over consumer decision-making. Despite the recent surge in research of this domain, it is unclear that how today's consumers are driven by the dynamics of online word-of-mouth in facilitating their decision-making journey. To overcome these limitations, this thesis presents a comprehensive systematic review with the sample of 113 empirical studies to examine current state of knowledge in the literature to reveal the dynamic pattern of this phenomena. In order to pursue more practical guidance, two complementary studies are proposed to empirically investigate certain aspects of word-of-mouth evolution on consumer decisions-making journey.

Works in constructing this thesis were allocated into *two main phases*. In *phase one*, a systematic review was conducted to (1) examine the current state of knowledge in the electronic word-of-mouth and consumer decision-making linkage literature in order to provide guidance to academics and practitioners that aiming to understand the phenomenon; (2) synthesize findings from fragmented research to gain a more holistic understanding towards the impact of online word-of-mouth on consumer decision-making journey; (3) define the research gap and discuss future research directions based on the analysis results. As the theoretical basis for understanding the effect, the systematic review adopted an intergraded framework which comprises the six characteristics of electronic word-of-mouth from King et al. (2014)'s model and the consumer decision-making model developed by Engle, Kollat and Blackwell (1987) to integrate research findings from the literature. King et al. (2014)'s model includes: (a) enhanced volume, (b) dispersion, (c) persistence and observability, (d) anonymity and deception, (e) salience of valence and (f) community engagement which dynamically reflects the online nature of electronic word-of-mouth. Each of the characteristic

proposed in the model distinctively spots the peculiar dimension of the phenomenon concerning how word-of-mouth communication developed into the online environment (as the outcome of word-of-mouth digital evolution). Furthermore, the decision-making model proposed by Engle, Kollat and Blackwell (1987) comprises with five stages: needs recognitions (also named as problem awareness) stage, information search stage, evaluation stage, purchase stage and outcome stage. The models are adopted by the systematic review to organise the corresponding variables that studied in the literature. The findings in systematic review are presented following the stages of Engle, Kollat and Blackwell (1987)'s decision-making model. In each of the decision-making stage, relevant characteristics of electronic word-of-mouth are discussed with regard to their dynamic influence on the cognitive (e.g. eWOM information acceptance), affective (attitude towards the products) and behavioural (purchase intention) aspects underlying the consumers' decision-making behaviour.

The findings of systematic review show that, the current research concerning online word-of-mouth has been centred on the verbal communication aspects and overlooked the way word-of-mouth information delivers in the digital environment and its impact on consumers' decision-making. The way that word-of-mouth information is conveyed can be described as the 'communication medium' that represents and sends the information. According to the studies analysed in the systematic review, there are two types of communication mediums that carries word-of-mouth which were neglected by King et al. (2014)'s model, namely visual eWOM and mobile eWOM. Visual eWOM refers the fact that the majority feedback systems and review aggregators (for example, TripAdvisor.com, Yelp.com and Amazon. com) now allow consumers uploading pictures in their comments. Whereas mobile eWOM labels the phenomenon that consumers' behaviour of word-of-mouth production and consumption via mobile

devices. Both of the two newly-emerged aspects of electronic word-of-mouth reflect the diversities of communication mediums, which also differentiates electronic word-of-mouth from traditional word-of-mouth in the way that the information is delivered. The mediums that carry word-of-mouth matters as the effectiveness of communication depends on the richness of the communication media (Maity & Dass, 2014). However, compare to other characteristics, these dimensions as the sequels of the word-of-mouth's digital evolution, have been received scarce attention from researchers.

To this end, building upon the outcome of the systematic review, in *the second phase*, two studies were designed to empirically examine the diversities of electronic word-of-mouth communication medium: visual eWOM and mobile eWOM, and their impact on consumer decision-making journey. Figure 1.1 illustrates the scope and the rationale of the studies in this thesis.

In particular, the first empirical study (chapter three) demonstrates the phenomenon that electronic word-of-mouth in web context tend to be more diverse regarding presentation format. As one of the newly-emerged aspect of electronic word-of-mouth communication, visual eWOM has been overlooked in the literature as precious research tend to focus on the textual features (Ring, Tkaczynski, & Dolnicar, 2016). The study proposes a conceptual framework in which psychological properties of electronic word-of-mouth communication have an impact on consumers' evaluation of electronic word-of-mouth information, and such effects are proposed contingent on the exposure of visual eWOM. The findings of this particular study shed light on the critical role of visual eWOM by empirically showing that when do image speak louder in the electronic word-of-mouth context. The findings guide theorists and practitioners on the understanding of consumers' online review processing pattern.

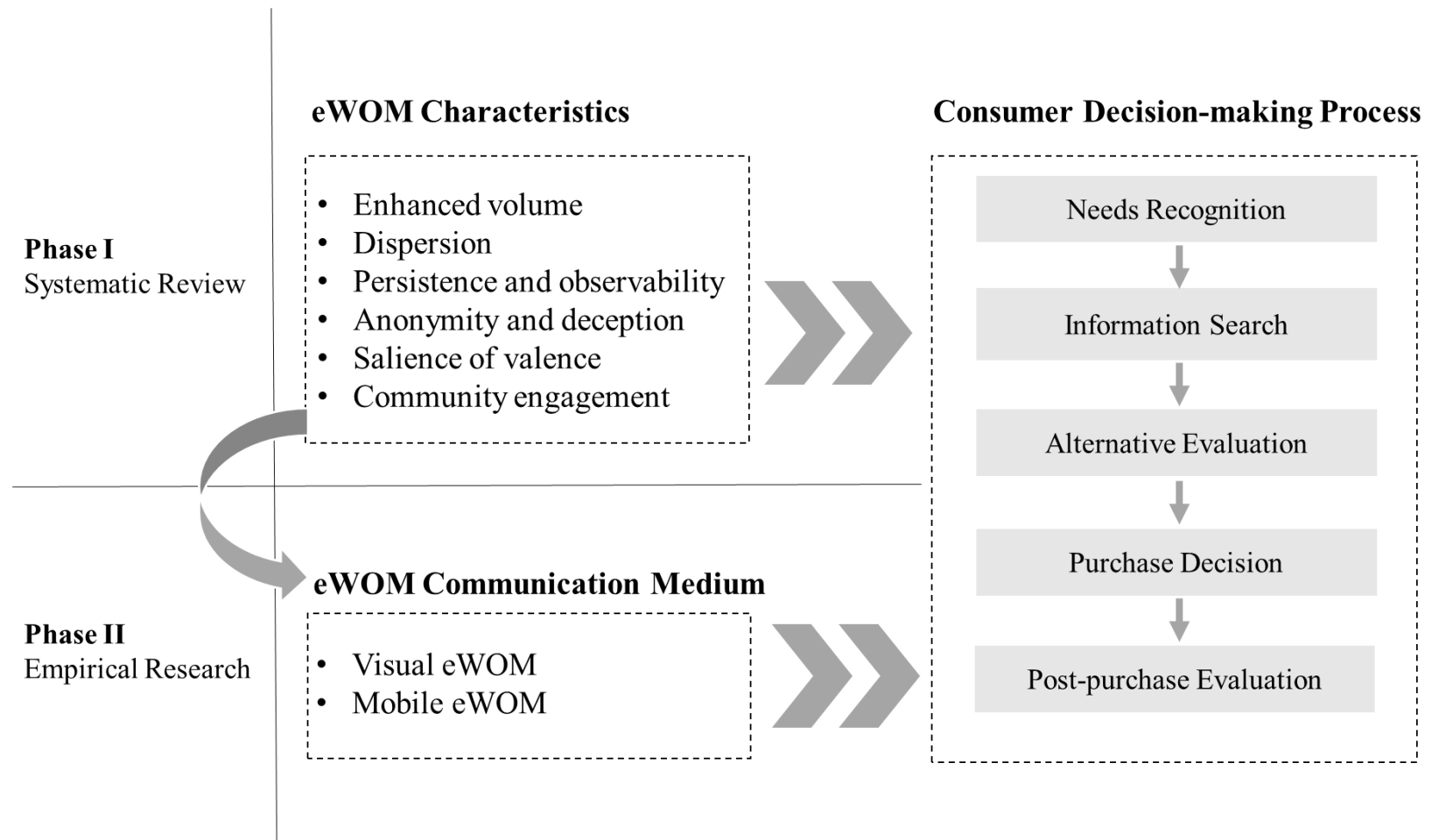


Figure 1. 1: Scope and Rationale of the Thesis

The second empirical study focuses on consumers' eWOM activity in the mobile channel. Most of the prior studies in the literature consider electronic word-of-mouth as a technologically homogeneous activity without a specific focus on the media or channel characteristics. On the contrary, this study investigates consumer's electronic word-of-mouth behaviour in mobile channel. This study examined the influence of characteristics mobile technology artefacts on consumer decision-making satisfaction in electronic word-of-mouth context. This study extends the understanding of consumer decision-making satisfaction in mobile context by empirically showing that mobile eWOM searching experience as a part of the purchase process, have an influence on consumer decision-making satisfaction. Understanding how mobile characteristics affect consumer decision-making helps marketers to better design mobile eWOM services, especially for user-generated content and crowdsourcing service providers, and therefore enhance consumer channel satisfaction and loyalty to the service thus reap their efforts in financial returns.

1.4 Structure of the Thesis

The present thesis contains five chapters, presenting three independent but interrelated studies. The current chapter (chapter one) focuses on introducing the research domain, explaining the objectives and rationale of the studies conducted in this research undertaking. The rest of the thesis is structured as follows.

The second chapter presents the first study - a systematic review. In this chapter, the phenomena of word-of-mouth digital evolution is discussed in relation to the rich literature. The organizing framework as well as the two-stage process is introduced as the methodological choice of the systematic review. Findings of empirical studies

examined in this systematic review are presented and discussed based on how the digital evolution of electronic word-of-mouth (which is conceptualized as eWOM characteristics in this study) affect each stage of consumer decision-making process. Research gaps are identified along with the discussion. Future research directions in this domain are suggested in this chapter.

The third chapter introduces the first empirical study of this thesis. This study focuses on the influence of the way electronic word-of-mouth information presents (e.g. visual eWOM) and its impact on eWOM consumption amongst consumers. This study presents a section of literature review to discuss the key variables investigated in the study, followed by the hypotheses development. Research methodology is explained in relation to the methodological choice and data collection. Results, discussion and implications are then discussed.

The fourth chapter presents the second empirical study which focus on another aspect of the communication medium – the device consumers adopt to actively search and process word-of-mouth information in purchase decision-making context. This aspect of eWOM refers to mobile eWOM in the literature. In like manner, the study starts with discussing the theory and related literature regarding the phenomenon and the key variables in the conceptual framework. Research methodology, results are then being discussed, followed by discussion, implication and limitations of the study. Future research directions are suggested at the end.

The last chapter concludes the thesis. Three studies are summarized in this chapter regarding the research context, objectives of the studies, results and contribution of each studies, as well as the implications.

Phase I

Systematic Review Phase

Chapter Two

Word-of-Mouth Digital Evolution and Consumer Decision-making Journey: A Systematic Review

2.1 Introduction

The proliferation of online word-of-mouth changes how people make decisions in subtle ways. Word-of-mouth communication used to occur in interpersonal communications (e.g. between people with strong social ties such as friends and families), however in online environment, word-of-mouth are public and can be seen by magnitude of online users. Moreover, online word-of-mouth are traceable, measureable and cumulated (Park & Kim, 2008). According to the statistics figure reported as of December, 2017 by the world-renowned review aggregator Yelp.com, the cumulative reviews contributed by users since 2005 have reached 148 million.

Despite the practical influences of online word-of-mouth, this ever-growing phenomenon also results in a substantial research stream named electronic word-of-mouth or eWOM (King, Bush, & Racherla, 2014). Yet despite a recent surge in research concerning word-of-mouth and consumer decision-making linkage in online context, it is unclear that how the evolved word-of-mouth impact today's consumers across decision-making process. Electronic word-of-mouth takes place in a more complex computer-mediated context (King et al., 2014), and the impact of word-of-mouth on consumer behaviour in the online context cannot be comprehensively addressed and explained by traditional word-of-mouth theory (Brown et al., 2007). Furthermore, electronic word-of-mouth is a rather dynamic and multi-dimension concept that combines the nature of digital environment. Given the unique nature of the electronic word-of-mouth, a considerate amount of literature has explored and defined the unique features of eWOM. For example, Lee et al. (2008) conclude four distinctive characteristics of eWOM which include measurability, source, volume and reachability. Furthermore, Lee & Youn (2009) first documented the anonymous nature of eWOM as

consumers now are able to post content to magnitudes of audience in online community without exposing their identities. More expansively, Mauri & Minazzi (2013) summarized six research dimensions of eWOM, which include valence, intensity, speed, persistency, importance and credibility. Nevertheless, within Mauri & Minazzi (2013)'s six eWOM dimensions, some of the dimensions can be ambiguity. For example, speed was described by the author as number of contacts (repost) in certain period of time, which is the concept can also be explained by intensity and importance. The eWOM information is considered to be relative intense and important if it is efficiently spread by consumers. In comparison with other studies, King et al. (2014)'s study proposed a model which comprehensively reflect the characteristics of electronic word-of-mouth. Each characteristic proposed in the model distinctively spot the peculiar dimension of the phenomenon concerning how word-of-mouth communication evolves into online platform. These six characteristics include: (a) enhanced volume, (b) dispersion, (c) persistence and observability, (d) anonymity and deception, (e) salience of valence and (f) community engagement.

The current research in this domain tend to focus on single or a few characteristics of eWOM due to the restrain of data characteristics. In order to provide a holistic understanding of electronic word-of-mouth, this study therefore adopts King et al. (2014)'s model to capture the characteristics of electronic word-of-mouth, as the outcome of eWOM evolution. eWOM volume is known as the quantity of electronic word-of-mouth which for example, the number of online reviews and comments. In this study, online reviews or online consumer reviews are discussed frequently as the representation of eWOM, as it has been and still is researched as the main form of electronic word-of-mouth in the literature. *Enhanced volume* is referring to the phenomenon that, the volume and reachability of online word-of-mouth are exceptional

compared to offline word-of-mouth that often transmitted in interpersonal communication (Dellarocas, 2003). According to the statistics figure reported by the world-renowned review aggregator Yelp.com, the cumulative reviews contributed by users since 2005 have reached 148 million as of December, 2017. *Dispersion* describes the characteristic that eWOM is available at more than one platform or channels. By contrast to the traditional word-of-mouth which is directed and dominated by consumers, eWOM information is available to consumers at not only consumer-dominated channels, but also crosses a broad range of online communities, for example, social networks (Aroean, Dousios, & Michaelidou, 2019), third party review site (Park & Nicolau, 2015), retailer website (Zhang, Craciun, & Shin, 2010) and etc. *Persistence and observability* define the traceable nature of eWOM as eWOM information (e.g. online reviews) are encoded and transmitted mainly in a written form. It remains public once it has been posted online. The characteristic of *anonymity and deception* reveals the fact that the electronic word-of-mouth are exchanged through anonymous online users and results in deceptions (for examples, non-authentic reviews that are created by the marketers). *Salience of valence* is demonstrating that the valence of word-of-mouth in online context is more salient as it can be presented with numerical value (such as ratings). For example, online retailer (e.g. Amazon.com) and review aggregator (e.g. Yelp.com and TripAdvisor.com) provides five-star rating system. The rating system require the eWOM sender to ‘quantify’ their experience and represent in the form of numeric ratings. *Community engagement* refers to eWOM platforms that enable consumers to form non-geographically limited communities, used to discuss products and services, as well as how to better use them. These characteristics are employed in this study to categorize dimensions of eWOM that have been studied among literature as the antecedents of consumer decision-making behaviour. For instance, variable such

as ‘number of review’ in a study would be categorized into the characteristic of enhanced volume; and variable like ‘review rating’ is categorized into salience of valence.

With regard to the concept of consumer decision-making, prior studies in eWOM and consumer decision-making literature generally follow cognitive paradigm to assess certain stages of the consumer decision-making process as the focal points of their research. For example, Grewal et al. (2003)’s study adapted Shocker, Ben-Akiva, Boccara, & Nedungadi (1991)’s decision-making model and operationalize consumer decision-making process into three components which include retrieval, consideration and choice. Moore (2007) investigates the relationship between information search and consideration set formation in online context based on a two-stage decision-making model that comprises information search and evaluation. Furthermore, Jang, Prasad, & Ratchford (2012) focus on a model that comprises consideration set formation and choice to examine how consumers evaluate products. The cognitive decision-making models adopted in previous literatures are constructed with similar components. However, studies in this research stream focus on one or two stages of the decision-making process. In order to gain a more complete understanding of the marketing power of word-of-mouth over consumer decision-making and present the pattern of the empirical results, the current study aims synthesis the findings of previous eWOM literature focusing on how eWOM influences consumers’ behaviour across the decision-making journey. To this end, this study adopts decision-making model developed by Engle, Kollat and Blackwell (1987) as backdrop to comprehensively integrate research findings. The decision-making model proposed by Engle, Kollat and Blackwell (1987) comprises with five stages: needs recognitions (also named as problem awareness) stage, information search stage, evaluation stage, purchase stage and outcome stage.

The characteristics of eWOM are discussed in relation to their impact on these stages of consumer decision-making journey.

In the findings section (Section 2.4), findings are presented following the stages of Engle, Kollat and Blackwell (1987)'s decision-making model. In each of these decision-making stage, relevant eWOM characteristics are discussed with regard to their dynamic influence on the cognitive (eWOM acceptance), affective (attitude towards the products) and behavioural (purchase intention) elements underlying the decision-making behaviour. Instead of structuring the findings based on eWOM characteristics, this study chooses to organise the findings centering consumer decision-making process because: (1) the majority of the papers in this field look at the effects of more than one characteristic of eWOM (as shown in table 2.2) on one or two decision-making stages. There would be many overlaps if the results are presented by eWOM characteristic; (2) interpreting multiple eWOM characteristics under one particular stage shows how the eWOM characteristics interactively affect consumer decision-making behaviour.

In *needs recognition stage*, the findings show that the characteristics of eWOM volume, valence as well as persistence and observability are studied in relation to the impact on consumer's awareness of the business. In *information search stage*, relevant eWOM characteristics (including dispersion, persistence and observability, anonymity and deception, as well as salience of valence) are discussed concerning how consumer rely on these characteristics to 'judge' the information in terms of (a) review value (e.g. review helpfulness) and (b) review credibility. In this stage, consumers are evaluating the eWOM information rather than the product, they use information cues observed in the review to consider whether they want to adopt the information. In *alternative evaluation stage*, the findings present how eWOM Characteristics such as enhanced

volume, persistence and observability, dispersion, anonymity and deception, salience of valence are influencing consumer making judgement about certain product (such as product attitude and product judgement). In *purchase decision stage*, how eWOM characteristics (enhanced volume, dispersion, anonymity and deception, persistence and observability, salience of valence) affect purchase decision (e.g. purchase intention) are discoursed. In *posted-purchase stage*, consumer satisfaction towards both product and decision-making process are discussed on the subject of eWOM characteristics effects. Expect the six characteristics that King et al. (2014) proposed, two more aspects of eWOM characteristics that related to presentation format and eWOM channel are also explored by the researchers, demonstrating that eWOM in web context tend to be more diverse.

The aim of this study is threefold. First, the study aims to examine the current state of knowledge related to eWOM and consumer decision-making linkage. Second, the review intends to synthesize findings from fragmented research towards the impact of eWOM on consumer decision-making process, and present empirical findings based on the integrated framework. Third, the current study is determined to define the research gap and discuss future research directions based on the analysis results. This study is structured as follows: First, how articles are identified and analysed for the current study is introduced. Second, the organizing framework and conceptual background are introduced in the section that follows. The components of the framework (Consumer decision-making process and six eWOM characteristics) are discussed. Third, in the findings section, the findings related to eWOM characteristics and each stage of the consumer decision-making process are presented to reveal the patterns detected by assessing the literature. Finally, future research directions are suggested.

2.2 Literature Identification and Analysis

A two-stage process was adopted for the present study: article identification and article analysis (Cheung & Thadani, 2012). Before analysing and synthesising findings from the rich literature, relevant studies first need to be identified. In order to build the initial pool of articles, the present study follows Webster & Watson (2002)'s concept-driven systematic review methodology. The concept-driven method allows examining literature from various perspectives of concept, which have been investigated by all authors. Compare to author driven approach, this method is more appropriate for the topic related to eWOM. eWOM is a relatively new topic and takes place in a computer-mediated context. It started to receive attention from marketers and researchers after web 2.0 tools (e.g. online forums, consumer review sites, blogs, etc.) became prosperity. In contrast to traditional word-of-mouth, the topic of eWOM lacks deep history and extensive research stream (King et al., 2014). The concept-driven method would able to remedy the situation and gather comprehensive literature even when an author has only published one article. Moreover, the concept driven-search also allows more efficient searches for articles examined more than one concept, which can be considered the ideal approach for the current study that intends to investigate papers focusing on both eWOM and consumer decision-making concepts.

This paper aims to analyse published journal articles that addressed the impact of eWOM on consumer decision-making process. In order to accumulate a relative complete census of relevant literature and build the initial pool of publications, articles with relevant topics were searched in Academic Search Premier (EBSCO). In this study, by following Hennig-Thurau, Gwinner, Walsh, & Gremler (2004), eWOM is defined as the statements provided by the customers evaluating a certain product or service, which

is available to the multitude of people and institutions via the internet. The search was conducted based on the keywords related to the definition of eWOM which include Electronic word of mouth; eWOM; Online word of mouth; Online reviews; Online consumer reviews; Online user reviews; Web reviews; Online product reviews; and User-generated content.

Studies must fit the following criteria in order to be included in the pool: (1) the study is published in a peer reviewed journal. (2) The study focuses on the concepts of eWOM and decision-making. (3) The study must have empirically tested the effect of eWOM on consumers' decision-making process directly or indirectly. Considering the purpose of this study, articles that following conceptual approaches are not included. As eWOM is a relatively new topic which started to receive attention from marketers and researchers after web 2.0 tools became popular (e.g. online forums, consumer review sites, blogs, etc), this study, therefore, decided to focus on the paper published between 2007 and 2017. After eliminating irrelevant studies based on the selection criteria and 189 journal articles were left for further examination. Amongst these 189 journal articles, 34 papers focus on the antecedent of eWOM instead of its impact. Moreover, 42 out of 189 investigated the impact of eWOM at the company level, for example, brand equity dilution through negative online word-of-mouth and how online reviews predicting consumer product demand. After excluding papers, which do not fit the criteria of the current study, 113 peer-reviewed articles dealing with eWOM, online reviews and other aforementioned terminologies identified in the searching process, were selected for the analysis of present study. Figure 2.1 presents the article selection process for the current study.


Stage	Article selection process
Stage 1	<div> <p>Keywords: Electronic word of mouth; eWOM; Online word of mouth; Online reviews; Online consumer reviews; Online user reviews; Web reviews; Online product reviews; User-generated content</p> <p>Database: Academic Search Premier (EBSCO)</p> </div>  <div> <p>Criteria for selection:</p> <ol style="list-style-type: none"> 1. The study is published in a peer reviewed journal between the year 2007 and 2017. 2. The study focuses on the concepts of eWOM and dimensions of decision-making. 3. The study must have empirically tested the effect of eWOM on decision-making directly or indirectly </div>
Outcome	113 studies are selected

Figure 2.1: Article Selection Process for Systematic Review

2.3 Organizing Framework and Conceptual Background

2.3.1 The Organizing Framework

The present study adopts the decision-making model developed by Engle, Kollat and Blackwell (1987) as a backdrop, combined with the characteristics of eWOM that summarized by King et al. (2014) to structure and organize the analysis.

The decision-making model adopted (including needs recognition, information search, alternative evaluation, and purchase and post-purchase evaluation stages) in this study is developed based on five stages problem solving process and then being used to explain consumer decision-making behaviour. The concept of eWOM evolution in this study is operationalized as the unique characteristics of eWOM in the aspect of how online environment makes electronic word-of-mouth diverse, compare to traditional word-of-mouth communication.

The six eWOM characteristics proposed by King et al., (2014) dynamically reflect the online nature of eWOM. The six characteristics include (a) enhanced volume; (b) dispersion, (c) persistence and observability; (d) anonymity and deception; (d) salience of valence and (e) community engagement. These characteristics are employed in this study to categorize dimensions of eWOM that have been studied among literature as the antecedents of consumer decision-making behaviour. These characteristics are explained in the section that follows. The organizing framework of the current study is presented in Figure 2.2.

**Characteristics of
Word-of-mouth Evolution /eWOM**

- Enhanced volume
- Dispersion
- Persistence and observability
- Anonymity and deception
- Salience of valence
- Community engagement



Consumer Decision-making Process

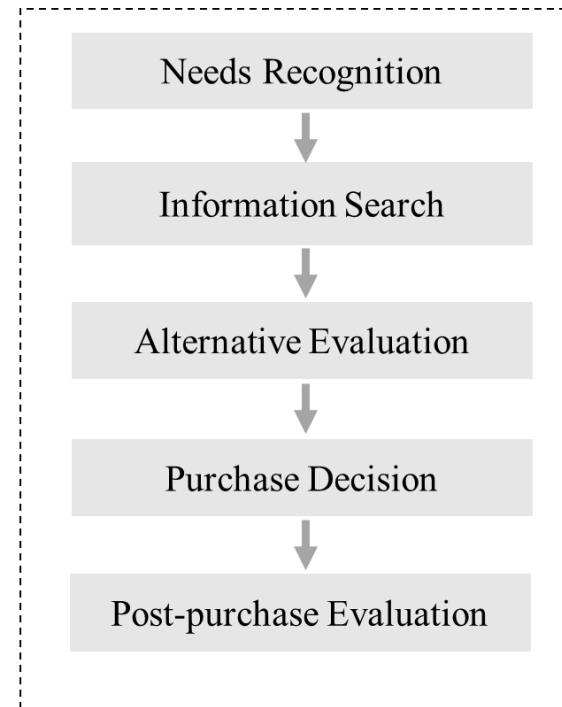


Figure 2.2: The Organizing Framework for Systematic Review

2.3.2 Conceptual Background

2.3.2.1 Word-of-mouth Evolution: The Characteristics of Electronic Word-of-mouth

Consumer perceives word-of-mouth to be ten times more trustworthy than other types of information such as advertising (Nielsen, 2013). Word-of-mouth has powerful influence on consumer decision-making. The tipping point between traditional word-of-mouth and electronic word-of-mouth is the genesis of the internet. The Internet has dramatically transformed the way consumer acquiring information, and more importantly, the way they make purchase decision. WOM behaviour has begun to evolve into digital platform and starts to comprise electronic elements and the impact of WOM on consumer behaviour in online context cannot be comprehensively addressed and explained by traditional (offline) WOM theory (Brown et al., 2007). Researchers have paid substantial attention to the phenomenon and investigated the unique features of the 'new form' word-of-mouth in an online context. In order to reflect the eWOM evolution process. Researchers such as Lee et al. (2008) conclude four distinctive characteristics of eWOM which include measurability, source, volume and reachability. Not long after Lee et al. (2008)'s study, Lee & Youn (2009) added the anonymous feature of eWOM as consumers now are able to post content to magnitudes of audience in online community without exposing identity. In like manner, Mauri & Minazzi (2013) summarized six research dimensions of eWOM, which include valence, intensity, speed, persistency, importance and credibility. Nevertheless, within Mauri & Minazzi (2013)'s six eWOM dimensions, some of the dimensions can be ambiguity. For example, the author described speed as number of contacts (repost) in certain period of time, which can also be explained by intensity and importance. The eWOM information is considered to be relative intense and important if it is efficiently spread by

consumers. More recently, King et al. (2014) have identified six major characteristics of eWOM, which comprehensively reflect the unique online-nature of eWOM. In comparison with other studies, each characteristic proposed in King et al. (2014)'s study distinctively spot the peculiar dimension of the phenomenon. The six characteristics include enhanced volume, dispersion, persistence and observability, anonymity and deception, salience of valence, community engagement. These characteristics are detailed explained in this sections with regard to how and why eWOM differs from traditional WOM.

(a) Enhanced Volume

Volume can be defined as the quantity of electronic word-of-mouth that normally presents as the form of online comments and reviews. Traditional word-of-mouth communication usually takes place as the form of interpersonal conversation. The information is exchanged and transmitted within a small group of people, for example, people with strong social ties, such as friends and families. However, in online environment, social ties are no longer the restriction of the transmission of word-of-mouth. *'The reach of word-of-mouth has been amplified and accelerated by the digital revolution, to the point where it is no longer an act of intimate, one-on-one communication'* (Bughin, Doogan, & Vetvik, 2010; p2). eWOM are posted to public online platforms by consumers from all over the world, as the consequence, these information can be seen by magnitude of online users and used for assisting decision-making. The rich reachability and multi-directional nature of the Internet make eWOM volume sheer and unprecedented (Dellarocas, 2003). Unlike traditional word-of-mouth that are transmitted via oral conversation, eWOM is countable. For example, Chevalier & Mayzlin (2006)'s study examines the impact of online reviews on book's sales, the

findings reveal that the average number of reviews per book (available online) was 68.31 and the standard deviation was 205.42 in the year 2004. According to the statistics figure reported as of December, 2017 by the world-renowned review aggregator Yelp.com, the cumulative reviews contributed by users since 2005 have reached 148 million. In the same vein, TripAdvisor.com also discloses that there are 455 million average users around the world actively participate in eWOM production and consumption and bring about around 600 million reviews and opinions available on the platform. Except advantages that related to consumers, greater volume would also able to benefit businesses and marketers. Previous studies reveal that high volume of review is perceived as a signal of product popularity and leading to product awareness (Park & Kim, 2008) . However, the information overload caused by high eWOM volume also negatively influences consumer decision-making. When large number of reviews exposed to consumer, they are less confident and more confused about their decisions (Park & Lee, 2008).

(b) Dispersion

Dispersion provides the notion that eWOM information is available at more than one platform or channel. Traditional word-of-mouth is a consumer-dominated activity of marketing communication where the sender is independent of the market. By contrast to the offline channel, eWOM information is generated by and is available to consumers not only in consumer-dominated channels, but also crosses a broad range of communities (e.g. online discussion forum, consumer review sites, personal blogs, social networks, shopping websites, company websites etc.) (King et al., 2014). Literature classifies these platforms into two categories: consumer-generated platform and marketer-generated platform. Marketer-generated platforms are usually owned and

controlled by the organization or the company. While consumer-generated platforms (such as Tripadvisor.com and Yelp.com), are also known as review aggregators. Product reviews of companies and organizations on these sites are collected from consumers. eWOM information on both platforms allows customers to obtain product information and opinions of other customers, in turn influencing their product evaluation (Jabr & Zheng, 2013). Consumers tend to not be affected by the type of the platform when the recommendations are consistent (Baum & Spann, 2014; H. Yang, Guo, Wu, & Ju, 2015). Similarly, Bronner & de Hoog (2010) indicate that in holiday related decision-making situations, the level of trust for both platforms is equal. However, when conflicts exist between consumer-generated sources and marketer-generated information, consumers will develop negative attitudes towards the retailer (Baum & Spann, 2014). The characteristic of eWOM dispersion also causes another problem, named free riding. Free riding happens when consumer uses one website's information to decide which product to buy and make the final purchase in another platform.

(c) Persistence and Observability

Traditional WOM information is usually exchanged through conversations, whereas eWOM information is encoded and transmitted mainly in a written form. Word-of-mouth information in online context is persistently available once posted and remains in public repositories (Dellarocas, 2003). In addition to word-of-mouth information with written format, visual eWOM, for example, product pictures and even video are available in certain online shopping platform and review sites (For instance, Aamazon). These various type of eWOM would be observable online once posted (Dellarocas & Narayan, 2007) . The persistence and observability of eWOM breaks the

restrictions on time and location, and enables asynchronous (not in the same time) discussion (Cheung, 2014). In other words, because of this persistence, consumers are able to get access to the information regardless of time and place. Unlike traditional word-of-mouth, electronic word-of-mouth is both measureable and traceable (Park & Kim, 2008). This leads to a stream of research tackling information content and source characteristics, such as information credibility (Cheung, Lee, & Rabjohn, 2008; Chih, Wang, Hsu, & Huang, 2013; Lis, 2013), persuasiveness Zhang, Zhao, Cheung, & Lee, 2014), usefulness and helpfulness (Cheung, 2014; Korfiatis, García-Bariocanal, & Sánchez-Alonso, 2012). Researchers such as Park & Kim (2008) have also classified online review types to investigate how the distinction within the information affects consumer's decision. They found that when the review content targets at product attributes, information is perceived to be more informative than simple recommendations, which in turn has the positively effect on purchase intention (Park & Lee, 2008).

(d) Anonymity and Deception

eWOM communication often occurs between people have weak ties. In interpersonal communications, people can value the sender from social cues such as gender, age and occupation. However, the Internet community is relative anonymous, and those cues are no longer available. The anonymity nature of online environment allows consumers to feel more comfortable on sharing experiences and contribute opinions without compromising their identities. Nevertheless, anonymity also brings risks for consumers. Marketers spend a fortune on designing and delivering attractive advertising to the target customers, yet what consumers really intend to rely on is the free and simple user-generated information (Bughin et al., 2010). Some of the marketers

are also aware of the power of eWOM and attempt to manipulate the online reviews in various ways to boost sales. Review manipulation is the phenomenon where ‘*vendors, publishers, writers or any third-party consistently monitoring the online reviews and posting non-authentic reviews on behalf of customers when needed, with the goal of boosting sales of their product*’ (Hu, Bose, Koh, & Liu, 2012, p 674). Consumers are cautious of review manipulation and intend to avoid adopting non-authentic reviews by accessing information trustworthiness. Consumers would assess information trustworthiness based on cues such as gender, age, social and professional status in offline environment, but these cues can be intentionally falsified in an online anonymous community (Brown et al., 2007). Accordingly, consumers rely on certain reviewer and review characteristics to evaluate online recommendations. Variables such as reviewers’ expertise, review recency, comprehensiveness and information relevance have been tested and proved to be influential for eWOM credibility and in turn predicting consumers’ purchase intentions (Cheung, 2014; Chin-Lung Lin, Sheng-Hsien Lee, & Der-Juinn Horng, 2011; Fan & Miao, 2012; Zhang et al., 2014).

(e) Salience of Valence

Consumers are able to provide and possibly exposed to both positive and negative reviews. In an offline context, studies have found that negative comments are much more influential than positive ones (Lee & Youn, 2009). In an online context, these characteristics tend to become more salient. According to King et al. (2014), the characteristic of salience of valence refers to the numerical ratings provided to consumers which reflect overall negative or positive impression of the products. In online shopping/reviewing context, website (e.g. Amazon.com, TripAdvisor.com and Yelp.com) provides five rating system. For example, on the site of TripAdvisor, one or

two star implies the experience is terrible or poor, three star denotes average and four or five means very good or excellent. Consumers are asked to provide corresponding ratings when they submit reviews online, and as a consequence, the valence of online reviews are more visible and easier to be acquired by consumers. Research shows that positive ratings are associated with positive product attitudes and purchase intentions (Mauri & Minazzi, 2013; J. Wu, Wu, Sun, & Yang, 2013a). However, negative comments are not necessarily bringing negative influences. Vermeulen & Seegers (2009) found that both positive and negative reviews are able to create awareness of the products. Beyond the impact of one-sided reviews (either positive or negative), researchers such as Baum & Spann (2014) and Qiu, Pang, & Lim (2012) also investigated conflict (inconsistent) ratings and found that conflicting aggregated ratings and recommendations influence consumer's perceived review credibility and negatively affect purchase intentions.

(f) Community Engagement

Because of the massive reachability of eWOM, community engagement has been studied as an antecedent of WOM (King et al., 2014). Community engagement refers to eWOM platforms that enable consumers to form non-geographically limited communities, used to discuss products and services, as well as how to better use them. Community engagement has been studied as a social factor that encourages eWOM contribution (Hennig-Thurau, Walsh, & Walsh, 2003; Teichmann, Stokburger-Sauer, Plank, & Strobl, 2015). Given the scope of this review is limited to the consequence of eWOM, therefore the characteristic of community engagement is discussed with regard to its impact on consumer decision-making. Previous research (e.g. Chih et al., 2013; Wathen & Burkell, 2002) show that information receiver's social location a virtual

community and social orientation through information influences his or her perception of eWOM credibility.

In the next section (Section 2.4), the impact of eWOM characteristics on consumer decision-making process is discussed in more depth, with regard to: a) which of the above eWOM characteristics are examined by previous studies in relating to each stages of consumer decision-making process. b) What has been done in eWOM and consumer decision-making linkage research? What is the current state of literature? Furthermore, the dimensions of eWOM and what has yet to be done are discussed in the section that follows.

2.3.2.2 Consumer Decision Making Journey

The theory of consumer decision-making behaviour can be classified into two streams of thoughts in general: the cognitive paradigm and the behavioural paradigm. The former one considers and presents consumer decision-making behaviour as a process. Models of decision-making behaviour from cognitive paradigm treat consumer follows a problem-solving sequence of activities to make decision. The latter one believes that what is really going on in the individual's mind is not possible to describe and conclude. Unlike scholars advocate cognitive paradigm, behavioural theorists believe that consumer decision-making is stimulated and shaped by external settings rather than consumer search and evaluate information initiatives (Pickton & Broderick, 2005).

Following cognitive paradigm, researchers have developed various consumer decision-making models that attempt to describe the process that consumers go through to make purchase decision. For example, Grewal, Cline, & Davies (2003) investigate the dynamics between later and early-entrant of word-of-mouth communication with

regard to phased consumer decision-making. In Grewal et al. (2003)'s study, the authors adapted Shocker, Ben-Akiva, Boccara, & Nedungadi (1991)'s decision-making model and operationalize consumer decision-making process into three components which include retrieval, consideration and choice. These stages occur in traditional transactions as well as electronic and digital context. Furthermore, Moore (2007) investigates the relationship between information search and consideration set formation in online context based on a two-stage decision-making model which comprises information search and evaluation. Likewise, Jang, Prasad, & Ratchford (2012) focus on a model that comprises consideration set formation and choice to examine how consumers evaluate products in terms of the perceived quality, perceived price and other product characteristics based on the reviews the consumers are exposed to. Moreover, Aggarwal & Singh (2013) constructed a three-stage decision-making (screening, choice and contract stage) that venture capitalists follow to make an investment decision. More recently, Yang et al. (2015) develop a decision-making model which consists online search, evaluation and decision stages to assess how patients decide to consult a doctor using various sources of reviews in online environment. Decision-making stages were constructed with different titles in the literature. However, most cognitive models are constructed with similar components, which reflect a sequence of problem-solving activities.

On the other hand, Court, Elzinga, Mulder, & Vetvik (2009) published in McKinsey Quarterly to argue the funnel decision-making process. The authors confirmed the traditional funnel metaphor of consumer decision-making process proposed by Engle, Kollat and Blackwell (1987) and proposed a circular journey with four primary phases of consumer decision-making: initial consideration; active evaluation (or the process of researching potential purchases), closure (when consumers

buy brands) and post purchase (when consumers experience them). By using research evidence from various industries, for example, automobile, electronic products and telecommunication industries, they state that consumer decision journey is an interactive process rather simply narrowing down the consideration set as consumer weigh choices.

As this study, intends to analyse what have been investigated in the literature regarding eWOM characteristics and consumer decision-making journey, a more integrated model is able to capture and classify the variables that have been tested in the large and fragmented literature. Engle, Kollat and Blackwell (1987)'s decision-making model is therefore adopted. The decision-making model proposed by Engle, Kollat and Blackwell (1987) is a more comprehensive model, which comprises with five stages: needs recognitions (also named as problem awareness), information search, evaluation, purchase and outcome. The model presents the universal process that consumer go through to make a purchase decision. Once the consumer have *recognized the need or a problem*, he or she would start to find adequate information to help for resolving the problem. *Information search* is the process follows which consumer initiatively search their environment for appropriate data to make reasonable decision. When the consumer acquires enough information, he or she would enter the next stage named *alternative evaluation*, where the consumer can assess and compare all the choice and then filter choices into available consideration set based on information collected from searching stage. Then, consumer move to the *purchase stage* to decide what to buy based on the searched information and the outcome of evaluation stage to make the actual purchase. *Outcome stage* is the stage after the actual purchase, which can be considered another evaluation stage towards the whole consumption experience. In this post-purchase evaluation stage, consumer evaluates and assesses the process through comparing the actual experience with their expectations. There are generally three types of outcomes:

positive post-purchase behaviour, neutral behaviour and negative post-purchase behaviour (Bamossy & Solomon, 2016). If the experience is better than consumers' expectation, then it leads to positive post-purchase behaviour and achieves satisfactory outcome. Whereas, if what consumer experienced is worse than their expectation, it would cause negative behaviour which leads to unfavourable outcomes such as dissatisfaction. Another situation is consumers' experience matches their expectation, and then they would have neutral opinions and evaluations of the consumption.

2.4 Findings

2.4.1 Overview

The current study comprises 113 peer-reviewed articles that carrying out eWOM research towards consumer decision-making. The 113 articles were selected from 45 journals (**Table 2.1**) published between the year of 2007 and 2017. 74% of the papers were published in ABS academic journal according to ABS academic journal guide (2017) which provides guidance on the range of quality journals.

Table 2. 1: List of Selected Publications for Systematic Review

	Journal Title	Number
1	Decision Support Systems	10
2	International Journal of Electronic Commerce	9
3	Computers in Human Behaviour	7
4	Electronic Commerce Research and Applications	7
5	Journal of Business Research	6
6	Journal of Interactive Marketing	6
7	MIS Quarterly	5
8	Tourism Management	5
9	International Journal of Hospitality Management	4
10	Journal of Marketing	4
11	Journal of Travel Research	4
12	International Journal of Advertising	3
13	International Journal of Contemporary Hospitality Management	3
14	Journal of Computer-Mediated Communication	3
15	Journal of Interactive Advertising	3
16	Internet Research	2
17	Journal of Consumer Research	2
18	Journal of Marketing Research	2
19	Journal of Travel, & Tourism Marketing	2
20	Annals of Tourism Research	1
21	Asia Pacific Journal of Marketing and Logistics	1
22	Business, & Information Systems Engineering	1
23	Communication Research	1
24	Cornell Hospitality Quarterly	1
25	Cyber Psychology, Behaviour, and Social Networking	1
26	European Journal of Marketing	1
27	Global Economic Review	1
28	Information Systems Research	1
29	Information Technology and Management	1
30	Information & Management	1
31	International Journal of Electronic Business Management	1
32	International Journal of Operations, & Production Management	1

33	International Journal of Research in Marketing	1
34	Journal of Advertising Research	1
35	Journal of Applied Social Psychology	1
36	Journal of Consumer Behaviour	1
37	Journal of Consumer Psychology	1
38	Journal of Marketing Management	1
39	Journal of Research in Interactive Marketing	1
40	Journal of Retailing	1
41	Journal of the Association for Information Systems	1
42	Marketing Letters	1
43	Psychology and Marketing	1
44	Social Behaviour and Personality	1
45	Southern Communication Journal	1
Total number of papers analysed in this study		113

Figure 2.3 presents the trend of the number of papers published within the ten years period. It can be seen from the figure that the number of studies dealing with eWOM and decision-making become the hot topic since 2012 and the trend remains steady till now.

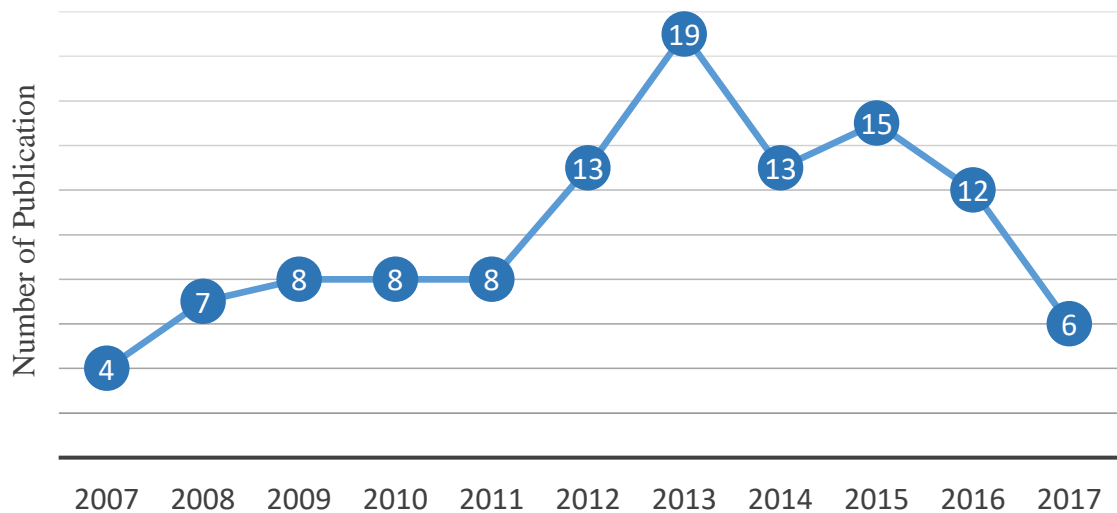


Figure 2. 3: Statistic of eWOM and Consumer Decision-making Publication between the Year 2007 and 2017

2.4.1.1 Review of Study Findings

Content analysis is conducted to the selected studies with following dimensions: authors and year of publication, sample and source (of data collection), method (research design), the dependent variable, which indicates at least one stage of decision-making process, independent variable that operationalizes eWOM characteristics and relevant empirical findings. **Table 2.2** presents the results of content analysis. This section introduces descriptive statistics of analysed studies in terms of research method, the frequency of eWOM characteristic studied and the frequency of decision-making stages investigated.

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Aggarwal & Singh (2013)	33 venture capitals	Experiment	Screening stage; Choice stage; Contract stage; Volume of blog; Time of each decision stages	Selection decision; Choice decision; Choice decision	Blogs are influential at the screening stage. After the screening stage, blogs are not influential since decision makers evaluate entities closely at later stages.
Ahmad & Laroche (2015)	Amazon reviews and 450, 430 U.S. residents for experiment	Field data and experiment	Discrete emotions in the review (hope vs. happiness vs. anxiety vs. disgust). Emotion certainty	Review helpfulness	Perceived review helpfulness depends on the discrete emotions exposed in the review, the results show that happiness and disgust can affect helpfulness positively, but hope and certainty mediate the relationship.
Ayeh, Au, & Law (2013)	661 travel consumers	Survey	Homophily; Trustworthiness; Expertise	Attitude toward using UGC; Behavioural intention to use UGC for travel planning	Perceived homophily increases perceived source credibility and can further affect attitude and intention. However, expertise is not able to directly affect behavioural intention.
Baek, Ahn, & Choi (2012)	75,226 reviews from Amazon.com	Field data	Rating inconsistency; Reviewer ranking; Reviewer real name; Word Count; Percentage of negative word; Product type (search vs.	Review helpfulness	Both peripheral cues (review rating and reviewer's credibility) and central cues (the content of reviews) influence review helpfulness. Online reviews can be used further information search or evaluating alternatives. Consumers choose to focus on different information sources based on the purposes of reading reviews.

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
			experience); Price (high vs. low)		
Baum & Spann (2014)	669 internet users in the 1st experiment and 663 in the 2nd experiment	Experiment	Recommendation consistency; Valence of recommendation	Intention to follow recommendation; Intention to purchase	Inconsistent recommendations negatively influence consumers' purchase decisions. The effectiveness of the retailer's recommender scan is enhanced by providing positive opinions of previous customers in addition to a recommender system's recommendation. However, positive consumer reviews may even have negative consequences for online retailers if there is a conflict.
Black & Kelley (2009)	429 reviews from 100 hotels from Yahoo! Travel Guides	Field data	Reviews include the following elements: Trust; Character Development; Detail; Superiority; Inspire; Well Written; Service Failure; Service Recovery; Effective Service Recovery	Review helpfulness	Consumer perceives online reviews that include elements of a good story to be more helpful. They consider reviews that are documenting a service failure to be less helpful and reviews containing an effective recovery more helpful.
Cadario (2015)	View ship data of 41 TV shows and online WOM data	Field data	Cumulative valence and volume of online word-of-mouth	TV show view ship	The impact of the eWOM volume over time inverted U-shaped curve, where it is not significant in the early episodes, but it increases until peaking

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
					and start to decrease in the later stage of the show's life.
Cao, Duan, & Gan (2011)	3460 online reviews from CNET Download.com	Field data	Basic characteristics; Stylistic characteristics; Semantic characteristics	Helpfulness vote	Semantic characteristics are more influential than basic and stylistic characteristics in determine review value. Reviews with extreme opinions receive more helpfulness votes than those with mixed or neutral opinions.
Casaló, Flavián, Guinalíu, & Ekinci (2015)	92 participants	Experiment	Review valence; Reviewer risk aversion	Review helpfulness	High risk-averse travellers find negative online reviews more useful than positive reviews. High-risk averse travellers feel expert reviewers' postings, travel product pictures, and well-known brand names enhance the value of positive reviews.
Chakravarty, Liu, & Mazumdar (2010)	157 undergraduate students	Experiment	Word of mouth valence; Contradictory critics' Ratings; Movie going frequency	Movie evaluation	The persuasive effect of online word-of-mouth is stronger on infrequent than on frequent moviegoers, especially when it is negative. The effect of negative word-of-mouth on infrequent moviegoers is enduring even in the presence of positive reviews by movie critics.
Chen & Lurie (2013)	65,531 restaurant reviews from Yelp.com and 73, 69, 98 and 108	Field data and experiment	Review valence; Temporal cues	Review attribution; Review value	Review valence negatively affects review value, and the negative relationship is absent for reviews that contain temporal contiguity cues. The results also show that readers make casual attributions

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
	respondents for the experiments				based on temporal contiguity cues in the review, where the cues in a positive review enhance review value and the likelihood of choosing a product.
Cheng & Ho (2015)	983 restaurant reviews from ipeen.com.tw	Field data	Reviewer's number of followers; Reviewer's level of expertise; Image count; Word count	Usefulness of the review	Reviewer's number of the follower is positively related to the reviewer expertise. The review is perceived to be more practical and useful based on the number of image and word contained in the review.
Cheung (2014)	100 internet users	Survey	eWOM trustworthiness; Timeless and comprehensiveness; Quality; Relevance	Information usefulness; Purchase intention	Review usefulness is depending on the timeliness and comprehensiveness of information, trustworthiness and quality of information, these variables, in turn, predict the consumers' purchase intention.
Cheung, Lee, & Rabjohn (2008)	154 online consumers	Survey	Argument quality; Source credibility	Information usefulness; Information adoption	Review usefulness is associated with review adoption behaviour. Source credibility, accuracy and timeliness were not found to impact information usefulness as much as Relevance and Comprehensiveness.
Cheung, Luo, Sia, & Chen (2009)	159 respondents	Survey	Argument Strength; Recommendation Framing; Recommendation	Perceived eWOM credibility; eWOM review adoption	Both informationally and normative determinants significantly influenced perceived eWOM credibility. However, recommendation framing and

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
			Sidedness; Source Credibility; Recommendation Consistency; Recommendation Rating		sidedness are not able to affect perceived eWOM credibility.
Chih, Wang, Hsu, & Huang (2013)	353 online discussion forum users	Survey	Website reputation; Source credibility; Obtaining buying related information; Social orientation through information	Positive eWOM review credibility; Product attitude; Website attitude; Purchase intention	Web site reputation, source credibility, obtaining buying-related information, and social orientation through information positively influence perceived positive eWOM review credibility and in turn have an impact on purchase intentions (also product and Web site attitudes).
Chiou, Hsiao, & Su (2014)	195 participants	Experiment	Cultural offerings (elite vs. mass); Commentators (professional vs. consumer)	Review credibility; Offering evaluation; Overall attitude; Behavioural intention	Online cultural reviews credibility is significantly higher for professional than for consumer commentators across both elite and mass cultural offerings.
Chong, Li, Ngai, Ch'ng, & Lee (2016)	12,000 electronic products with sales and review information	Field data	Customer review rating (valence); Number of customer reviews (volume); Percentage of negative review;	Sales rank	Online review sentiments can both predict product sales although online reviews. The interplay effects are more important than the individual effect.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
			Percentage of positive review; Review text sentiment;		
Chu, Roh, & Park (2015)	70, 239 and 94 college students for experiment 1,2 and 3	Experiment	Product type (hedonic vs. utilitarian); Dispersion of reviews (high vs. low); Average ratings	Decision-making uncertainty; Product attitude	Compared to lowly dispersed ratings, highly dispersed ratings improve the evaluation of hedonic products by reducing the perceived uncertainty in achieving the decision goals.
Chua & Banerjee (2016)	2190 reviews from Amazon	Field data	Review sentiment; Product type (search vs. experience); comprehensibility; specificity; reliability	Review helpfulness	The significant difference in helpfulness ratio was found across review sentiments.
Cui, Lui, & Guo (2012)	online reviews of 332 new products from Amazon.com over 9 months	Field data	Volume; Valence; Product life cycle; Product category	Sales of new product	Both review valence and volume are influential when consumers are choosing search products, whereas volume is more influential for experience product. The effect of review volume on new product sales decreases over time. The percentage of negative reviews has a stronger effect than positive reviews, confirming the negativity bias.
DeAndrea, Heide,	123 participants	Experiment	Review spamming knowledge; Review	Recommendation likelihood	The more a target is perceived to be able to control the dissemination of online reviews, the less

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Vendemia, & Vang (2015)			platform; Dissemination control; Perceived to be genuine third-party reviewers; The restaurant rating		credible the consumer the reviews to be. The consumer tends to trust reviews are truly produced by third-party reviewers more.
Dellarocas, Zhang, & Awad (2007)	1,188 weekly box office data of 80 movies, 1,040 critic reviews and 55,156 user reviews	Field data	Genre and MPAA Ratings; Pre-release Marketing and Availability; Star Power; Release Strategy; Professional Critics; User Reviews; Early box office revenues	Box office	The addition of online product review metrics to a benchmark model that includes pre-release marketing, theatre availability and professional critic reviews substantially increases its forecasting accuracy, the forecasting accuracy of our best model outperforms that of several previously published models.
Dou, Walden, Lee, & Lee (2012)	250 undergraduate students	Experiment	Trustworthiness towards the reviewer; Expertise of the review; External attribution; Internal attribution	Attitude towards the video; Attitude towards the product; Purchase intention	Consumer relies on the visible source to evaluate the credibility of online reviews. The identity of a visible source is used to consider the intention of the source of the message, which in turn determines message persuasiveness.
Duan, Gu, & Whinston (2008a)	Data of 71 movies from Yahoo! Movies, Variety. com, and	Field data	Cumulative number of reviews; Number of daily reviews; Cumulative Average	Box office	Online users' rating has a little persuasive effect on consumer purchase decisions. The findings expose the awareness effect, where the volume of online

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
	BoxOfficeMojo.com		User Grade; Daily Average User Grade		reviews is positively associated with box office sales.
Duan, Gu, & Whinston (2008b)	Data of 71 movies from Yahoo! Movies, Variety.com, and BoxOfficeMojo.Com	Field data	Number of user reviews; Cumulative average user grade; Daily average user grade; Daily number of screens for movie; Released days; Weekend release	Daily revenue for movie	Both a movie's box office revenue and WOM valence significantly influence eWOM volume. eWOM volume, in turn, leads to higher box office performance.
Fan & Miao (2012)	51 consumers	Survey	Customer expertise; Customer involvement; Rapport; Perceived eWOM credibility	eWOM acceptance; Purchase intention	Involvement has the most significant effect on perceived eWOM credibility, and in turn, affect eWOM acceptance and intent to purchase. The male customers have different e-commerce shopping behaviours than female customers.
Fang (2014)	445 respondents	Survey	Source expertise; Argument strength; Recommendation rating; Source attraction; Arousal	Perceived credibility of eWOM reviews; eWOM adoption	The affective stimuli and arousal can contribute to eWOM adoption, in addition to the cognitive path. Users focus on different stimuli of eWOM depending on their levels of curiosity.
Fang, Ye, Kucukusta, & Law (2016)	41,061 reviews for 106 attractions	Field data	Review length; Review text readability; Review	Helpfulness votes	The empirical analysis results indicate that both text readability and reviewer characteristics affect the perceived value of reviews.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
			sentiment; Reviewer rating distribution		
Filieri (2015)	354 respondents	Survey	Overall product ranking; Customer ratings; Information quality; Source credibility; Information quantity	Source Credibility; Information Diagnosticity; Information Adoption	Information quality is the most influential factors for consumer decision-making, followed by customer rating and overall rankings.
Filieri & McLeay (2014)	578 respondents	Survey	Information timeliness; Information understandability; Information relevance; Information accuracy; Value-added information; Information completeness; Information quantity; Product ranking	Information Adoption	Product ranking, information accuracy, information value-added, information relevance, and information timeliness are strong predictors of travellers' adoption of information from ORs on accommodations.
Floh, Koller, & Zauner (2013)	339 students and 317 consumers	Experiment	eWOM valence; eWOM valence intensity	Purchase intention	A significant change in online shopping behaviour was found for positive medium and strong reviews but not for negative ones.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Gao, Zhang, Wang, & Ba (2012)	160 and 64 participants for experiment 1 and 2	Experiment	Information quality; Information quantity; Thought mode;	Satisfaction (decision and post-consumption)	It is the quality of information that lead to higher decision and post-consumption satisfaction rather than quantity. Unconscious thought moderates the relationship between information quality and consumer satisfaction.
Ho-Dac, Carson, & Moore (2013)	2,324 observations of products of 78 individual models and 47 periods and 3,341 reviews from Amazon	Field data	Brand model; Cumulative number of reviews; Average star rating; Cumulative number of positive reviews; Cumulative number of negative reviews	Sales rank	Positive (negative) eWOM increase (decrease) the sales of models of weak brands but not strong brands.
Hong & Park (2012)	181 and 145 participants for study 1 and 2	Experiment	Review type (statistical vs. narrative); Review valence (negative vs. positive); Statistical review valence (positive vs. negative)	Review credibility; Attitude towards product	Negative statistical reviews are perceived to be more credible than negative narrative reviews, while the credibility of positive statistical reviews and positive narrative reviews do not differ.
Hong, Huang, Burtch, & Li (2016)	Reviews 3,750 restaurants from 2003 to 2014	Field data	Individualism–Collectivism Values; Travel experience; Prior	Review helpfulness	Consumers from a collectivist culture are less likely to deviate from the average prior rating and to express emotion in their reviews. Reviews exhibit

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
			review volume; Average rating; Consumer tenure; Review age; Time effects; Rating deviation; Review emotion		high conformity, and intense emotions are perceived to be less helpful.
Hu, Koh, & Reddy (2014)	4405 book reviews from Amazon.com	Field data	Ratings; Sentiments	Sales	Ratings indirectly affect sales through sentiments in the review. Review helpfulness and recency are found to be influential in determining sales.
Hu, Liu, & Zhang (2008)	26 batches of review and item-level data from amazon	Field data	Reviewer Quality; Reviewer Exposure; Product Coverage; Age of the Product	Perceived Uncertainty; Actual Purchase	Consumer pay attention not only to review scores but to other contextual information such as a reviewer's reputation and reviewer exposure. The impact of online reviews on sales decreases over time.
Huang, Hsiao, & Chen (2012)	972 students	Survey (Scenario-based)	Valence of word of mouth	Perceptions toward virtual communities; Perceived influence of electronic word of mouth; Attitude toward product; Purchase intention	Consumers' perceptions toward virtual communities reinforced the influences of online comments on attitude and purchase intention.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Huang, Lurie, & Mitra (2009)	90 undergraduates	Experiment	Time per page; Number of pages viewed; Mean time in domain; Number of domains searched; Total time; Free rider; Experience good	Purchase behaviour; Time spent on website; Likelihood to purchase at website	Consumers spend similar amounts of time in searching for information for both search and experience goods, but their observing, browsing and purchase behaviour generate a different pattern in these two types of goods. In addition, free riding is less frequent for the experience than for search goods.
Jabr & Zheng (2014)	1740 randomly selected books with at least 25 reviews on Amazon.com	Field data	Review-related variables (volume; rating; helpful vote); Reviewer-related variables (top reviewer disagreement; average rating agreement)	Sales	Once products are hyperlinked through recommendations, those with higher centrality within the resulting network of referrals are associated with higher sales. These sales gains are hampered by improvements in the reviews of competing products. The endorsement of opinion leaders and homogeneity in reviewer agreement improve product sales.
Jiménez & Mendoza (2013)	201 business students, 182 online consumers	Experiment and survey	Product category (search vs. experience); Level of detail in the review (general vs. detail); Reviewer agreement (low vs. moderate vs.	Purchase intention; Credibility; Attitudes towards reviews	Review credibility is positively associated with purchase intention. The determinants of review credibility are distinct between search and experience product.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
			high); Review valence (positive vs. negative)		
Ketelaar, Willemsen, Sleven, & Kerkhof (2015)	470m participants	Experiment	Valence (positive vs. negative vs. neutral); Expertise	Purchase intention	The moderating role of receiver expertise for both the influence and weight of review valence effects explain the inconsistent results for review valence reported in previous studies.
Kim & Gupta (2012)	129 and 143 undergraduate business students for experiment 1 and 2	Experiment	Emotional expression; Valence of user review	Reviewer rationality; Review informative value; Product evaluation	Negative emotional expressions in a single negative review decrease the reviews' informative value and make consumers' product evaluations less negative. Positive emotional expressions in a single positive review do not influence consumers' product evaluations. When multiple convergent emotional expressions are present in multiple user reviews, both positive and negative emotional expressions increase the informative value of the reviews and polarize consumers' product evaluations in the respective direction
Korfiatis, García-Bariocanal, & Sánchez-Alonso (2009)	37,221 reviews collected from Amazon UK	Field data	Review length; Review rating; Review qualitative characteristics	Helpfulness score	Review readability has a greater effect on the helpfulness ratio of a review than its length.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Kostyra, Reiner, Natter, & Klapper (2016)	771 respondents	Experiment	Valence; Variance; Volume; Importance of product brand; Importance of price; Importance of technical attributes	Probability of consumer's choice	Review volume and variance do not affect customers' choices directly but that they moderate the impact of valence on customers' choices. Online reviews decrease the importance of brand for customer purchase decisions.
Kronrod & Danziger (2013)	342 university students	Experiment	Consumption goal (hedonic vs. utilitarian); eWOM content language (figurative vs. literal); Format (ads vs. review)	Hotel evaluation	Reviews containing more figurative language lead to more favourable attitudes in hedonic, but not utilitarian consumption contexts. Reading a review containing figurative language increases the choice of hedonic over utilitarian options. Consumers use figurative language more when sharing experiences about hedonic than utilitarian consumption.
Lee & Lee (2009)	121 online shoppers	Experimental survey	eWOM rating; Product type (quality vs. preference goods)	Perceived quality; Perceived preference; Purchase intention	In quality goods, as the eWOM average increases, the impact of quality on purchase intention decreases. In preference goods, as the eWOM average increases, the impact of quality on purchase intention increases.
Lee & Shin (2014)	201 participants	Experiment	Review quality; Product evaluation; Reviewer photo; Product type	Purchase intention; Product evaluation; Reviewer	High-quality positive reviews elicit more favourable product evaluation and in turn, lead to stronger purchase intention. High-quality reviews enhance reviewers (primary source) evaluation, but only

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
				evaluation; Website evaluation	enhanced website evaluation (secondary source) when the reviewers' photos were present.
Lee & Song (2010)	400 and 234 participants	Experiment	Consensus; Vividness	Attribute to company; Company evaluation	The results showe that informational factors, such as vividness and consensus, facilitated consumers' attribution to companies' responsibility for the negative events, and lead to changing their evaluation of the companies.
Lee & Youn (2009)	247 undergraduate students	Experiment	eWOM platforms; Valence; eWOM scepticism	Causal attributions; Product judgements	The effect of the eWOM platforms on consumer willingness to recommend the product to friends was found only when the review was positive. The effects of negative reviews on consumer willingness to recommend the product to friends were found with regardless of the eWOM platform.
Lee, Jeong, & Lee (2017)	520,668 online reviews involving 488 hotels from Tripadvisor.com	Field data	Review valence; Negative intensity of emotional expressions	Review helpfulness	Negative reviews are considered to be more helpful than positive reviews when potential customers read online hotel reviews for their future stay. When intensively negative emotions were expressed, the degree of helpfulness was diminished.
Lee, Park, & Han (2007)	248 college students	Experiment	Proportion of negative reviews; Quality of negative review;	Product attitude	As the number of negative online consumer reviews increases, high-involvement consumers tend to follow the reviewers, depending on the quality of the reviews, in contrast, low-involvement

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
			Involvement (high vs. low)		consumers tend to conform to the reviewers regardless of the quality.
Levy & Gvili (2015)	530 responses	Survey	Interactivity; Information richness; Social capital-bridging; Social capital-bonding	eWOM credibility	The factors most heavily affecting e-WOM channel credibility are information richness, and social-capital bridging, which represents the informational value of diversified, unrelated e-WOM sources.
Li, Huang, Tan, & Wei (2013)	120 participants	Experiment	Authorship of product review (customer vs. expert written); Content abstractness (concrete vs. abstract);	Review helpfulness	The source and content-based review features have a direct impact on product review helpfulness. A customer-written product review with a low level of content abstractness yields the highest perceived review helpfulness.
Liang (2016)	157, 150 participants	Experiment	Ratings of product similarity; Difference in number of congenial vs uncongenial reviews; Difference in time spent on congenial vs uncongenial reviews	Post-decision dissonance; Post-selection dissonance	Readers expressed biased review selection. The reviews they read affected and increased their cognitive dissonance.
Liang, DeAngelis, Clare, Dorros, & Levine (2014)	337 Amazon reviews with helpful ratings	Field data	67 linguistic categories from LIWC; Review relevance; Review	Review helpfulness	Helpful and unhelpful reviews differ on the basis of their linguistic content (from LIWC). Review descriptiveness predicts helpfulness, relevance and

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
			descriptiveness; Rating discrepancy.		evaluation discrepancy interactively affect helpfulness.
Lin, Lee, & Horng (2011)	263 undergraduate students	Experiment	eWOM quality; eWOM quantity; Need for cognition	Purchase intention	Review quality and quantity increase purchase intention. Shoppers with a high (low) need for cognition take the central (peripheral) route informing attitude.
Lis (2013)	634 online user of discussion forum	Survey	eWOM credibility; Expertise; Homophily of reviewer; Aggregate rating	eWOM credibility; eWOM adoption	Reviewer expertise, review trustworthiness, and aggregate rating have a positive impact on online recommendation credibility.
Liu & Karahanna (2017)	52, 99 and 34 students for experiments 1,2 and 3	Experiment	Overall numeric rating (high vs. low); Attribute-information conflict (high vs. low); Motivation to process review information (high vs. low)	Attribute preference	The amount of information about attribute-level performance, the degree of information conflict about attribute-level performance, the relationship between the overall numeric rating and the attribute-level performance information in the reviews influence attribute preferences. Attribute preferences are influenced more by these online review characteristics than by the relevance of the attributes to the consumers' decision context.
Liu & Park (2015)	2,500 reviews of 35 restaurants in London and 2590	Field data	Identity disclosure; Expertise; Review ratings; Length;	Review usefulness	A combination of both messenger and message characteristics positively affect the perceived usefulness of reviews. Qualitative aspects of

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
	reviews of 10 restaurants in New York		Perceived enjoyment; Review readability		reviews were identified as the most influential factors that make travel reviews useful.
Liu, Hu, & Xu (2017)	268 public university students	Experiment	Brand image (prestige vs. function); Category similarity (low vs. high); eWOM message type (positive vs. negative)	Evaluations of products	eWOM is more effective in influencing evaluations of functional brand extensions than prestige brand extensions. Negative eWOM does equally bad on both high and low-similarity brand extensions, positive eWOM is more effective in improving evaluations of high similarity extensions than low-similarity extensions
López & Sicilia (2014)	325 responses	Survey	Sender behaviour; Receiver behaviour	Perceived trustworthiness; eWOM influence on decision-making	Perceived source trustworthiness partially mediates the relationship between opinion-seeking behaviour and eWOM influence on decision making but fully mediates the relationship between opinion-giving behaviour and eWOM influence.
Ludwig, de Ruyter, Friedman, Brügger, Wetzels, & Pfann (2013)	18,682 customer reviews of 591 books	Field data	Affective content in the review; Linguistic style matching score	Conversion rates	The influence of positive affective content on conversion rates is asymmetrical, such that greater increases in positive affective content in customer reviews have a smaller effect on subsequent increases in conversion rate.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Luo, Luo, Schatzberg, & Sia (2013)	199 online forum user's field data	Field data	Recommendation persuasiveness; Recommendation completeness; Recommendation source credibility	Recommendation credibility; Recommendation adopting	Source credibility significantly moderates two informational factors' effects on readers' perception of recommendation credibility, each in a different direction. Source credibility negatively moderates the effect of recommendation credibility on recommendation adoption.
Mafael, Gottschalk, & Kreis (2016)	538, 262, 131 and 124 participants for experiments	Experiment	Review valence; Priming focus; Cognitive impairment	Brand attitude; Behavioural intention; Argument persuasiveness	Consumers perceive positive (negative) arguments in online reviews as more (less) persuasive when having a positive (negative) attitude towards the brand. Perceived persuasiveness, in turn, influences behavioural intentions and acts as a mediator on the relationship between attitude and behavioural intentions.
März, Schubach, & Schumann (2017)	Reviews from Qype (German opinion platform); 225 participants for experiment	Field data and experiment	Style characteristics (function words, verbal immediacy); Mobile; Device congruence; Perceived compatibility; attributions about the reviewer's motives	Perceived helpfulness	Consumers discount the helpfulness of mobile reviews due to their text-specific content and style particularities. Recipients rely on device information as a source cue to assess compatibility. If they perceive themselves as compatible with the device, recipients perceive the review as more helpful because they attribute the review's content to the quality of the reviewed object.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Maslowska, Malthouse, & Bernritter (2017)	470 participants	Experiment	Valence; Volume	Purchase probability	More positive ratings and more reviews do not simply result in higher sales. The effect of positive reviews on purchase can be nonlinear, the probability of purchase increases with the rating to a certain level and then decreases.
Mauri & Minazzi (2013)	349 responses	Survey	eWOM valence	Purchasing intention; Level of expectations	The valence of the review is positively correlated with purchase intention and customers' expectation.
Melián-González, Bulchand-Gidumal, & López-Valcárcel (2013)	26,439 hotel reviews from TripAdvisor	Field data	Number of reviews submitted by customers	Customer evaluation (Average rating of hotel)	Reviews of business at early stage tend to be more negative. The negative effect can be mitigated as the number of reviews increases.
Moore (2015)	200 Amazon reviews, 132 and 159 participants for experiments	Field data and experiment	Explanation type (action vs. reaction); Attitude predictability; Product type	Review helpfulness; Product choice	Review writers explain their actions more than their reactions for utilitarian products but do the opposite for hedonic products. Explained actions increase attitude predictability for utilitarian products, whereas explained reactions increase attitude predictability for hedonic products.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Mudambi & Schuff (2010)	1578 reviews from Amazon.com	Field data	Review extremity (rating); Review depth (word count); Product type (search vs. experience)	Review helpfulness	Review extremity, review depth, and product type affect the perceived helpfulness of the review. Product type moderates the effect of review extremity on the helpfulness of the review.
Park & Kim (2008)	222 college students	Experiment	Level of experts; Type of reviews (attribute-centric vs. benefit-centric); Number of reviews; cognitive fit	Purchase intention	The effect of cognitive fit (the type of reviews) on purchase intention is stronger for experts than for novices. The effect of the number of reviews on purchase intention is stronger for novices than experts.
Park & Lee (2008)	334 college students	Experiment	Review type (simple recommendation vs. attribute-value information); Review quantity (small vs. moderate vs. large number of reviews); product popularity	Purchase intention; Product popularity	Consumers have more favourable attitude toward a product as a greater number of positive reviews are offered while consumers may be confronted with too much information, which results in information overload.
Park & Nicolau (2015)	5,090 Yelp reviews of 45 restaurants in	Field data	Review valence	Review helpfulness; review enjoyment	People perceive extreme ratings (positive or negative) as more useful and enjoyable than moderate ratings, giving rise to a U-shaped line.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
	London and New York				
Park, Lee, & Han (2007)	352 college students	Experiment	Review quality; Review quantity; Involvement	Purchase intention	Both quality and quantity of online reviews have a positive effect on consumers' purchasing intention. Low-involvement consumers are affected by the quantity rather than the quality of reviews, but high-involvement consumers are affected by review quantity mainly when the review quality is high.
Phillips, Barnes, Zigan, & Schegg (2017)	74,432 reviews for 442 hotels	Field data	Positive and negative reviews of hotel	Hotel performance	Hotel attributes, including the quality of rooms, Internet provision and building show the highest impact on hotel performance, and that positive comments have the highest impact on customer demand.
Phillips, Zigan, Santos Silva, & Schegg (2015)	235 hotels for the period 2008-2010, with 59,688 positive reviews from 69 online sources	Field data	Number of Sources; Number of Reviews; Percentage of Positive Reviews	Hotel performance	Room quality, positive regional review, hotel regional reputation negative impacts on hotel financial performance and regional room star rating has a positive impact.
Prendergast, Ko, & Yin (2010)	150 participants	Survey	Source similarity	Persuasiveness of an online forum; Purchase intention;	Both similarity between a user's interests and a forum's topic and user attitudes towards the forum strongly predict purchase intentions as well as

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
				Member's positive attitude	having an indirect effect through helping determine the forum's persuasiveness.
Purnawirawan, De Pelsmacker, & Dens (2012)	413 participants	Experiment	Review balance; Review sequence	Perceived usefulness; Attitude towards hotel; Intention to purchase	Review balance matters, but also reveal that review sequence has an important effect on the perceived usefulness of a set of reviews
Qiu, Pang and Lim (2012)	168 internet users	Experiment	Conflict ratings; Review valence;	Attributions of review; Perceived review credibility; Perceived review diagnosticity	Conflict aggregated rating decreases review credibility and diagnosticity via its negative effect on consumers' product-related attributions of the review. These effects are more salient for positive reviews than for negative ones.
Racherla & Friske (2012)	3000 reviews from Yelp.com	Field data	Reviewer identity disclosure; Reviewer expertise; Reviewer reputation; Review elaborateness; Review valence; Type of services (search/experience/credence)	Review helpfulness	A combination of both reviewer and review characteristics are significantly correlated with the perceived usefulness of reviews.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Salehan & Kim (2016)	35,000 online reviews of 20 different products from Amazon	Field data	Longevity; Title sentiment; Title length; Review length; Review sentiment; Title polarity; Review polarity	Readership; Review helpfulness	Consumers tend to read reviews with high positive sentiment in the title, and they perceive lengthy, longevity and neutral sentimental reviews to be more helpful.
Schindler & Bickart (2012)	42 business school students	Experiment	Total number of statements in message; Proportion of positive evaluative statements; Proportion of negative evaluative statements; Proportion of product-descriptive statements; Proportion of reviewer-descriptive statements;	Value of review	Review value is associated with the positive review with moderate review length, non-evaluative product, contains reviewer information, more clarity, and more entertaining stylistic elements.
Schlosser (2011)	147 reviews from Yahoo!; 201, 231 and 119 undergraduates for experiments	Field data and experiment	Argument sidedness; Rating extremity	Review helpfulness	Review containing two sides argument is not always more helpful. The effects of two- versus one-sided arguments depend on the perceived consistency between a reviewer's arguments and rating.

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Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Singh, Irani, Rana, Dwivedi, Saumya, & Roy (2017)	622,494 reviews from Amazon across different product categories.	Field data	Rating; Review content (language characteristics)	Helpfulness ratio	Wrong words, stop words, length (number of words), and the number of one-letter words are other textual characteristics of reviews that are not so important parameters for helpfulness.
Sparks & Browning (2011)	554 community members	Experiment	Review target (core features vs. customer service); Valence (high vs. low); Frame (positive vs. negative); Ratings (present vs. absent); Levels of trust	Booking intention; Levels of trust	Consumers seem to be more influenced by early negative information, especially when the overall set of reviews is negative. Positively framed information together with numerical rating details increases both booking intentions and consumer trust.
Utz, Kerkhof, & van den Bos (2012)	100 students and 131 students for experiment 1 and 2	Experiment	Review (negative vs. positive); Store reputation (low vs. high); Dispositional trust; Assurance seal (yes vs. no)	Perceived trustworthiness	Store reputation had no significant effect. However, dispositional trust affects perceived trustworthiness. High thrusters were more influenced by the reviews of other consumers, and only high thrusters tended to be influenced by assurance seals.
Vermeulen & Seegers (2009)	168 respondents	Experiment	Review valence (positive vs. negative reviews); Hotel familiarity (well-known	Hotel awareness; Hotel attitude; Consideration set	Exposure to online reviews enhances hotel consideration in consumers, whereas positive reviews improve attitudes toward hotels. These effects are stronger for lesser-known hotels.

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
			vs. lesser- known hotels); Reviewer expertise (expert vs. non-expert reviewers); Review exposure (pre vs. post)		
Walther, Liang, Ganster, Wohn, & Emington (2012)	410 undergraduate students	Experiment	Valence; Responds to review (agree vs. disagree); Involvement; Source evaluation	Helpfulness of review; Attitude toward product	Review valence, other users' aggregated helpfulness rating of the review, and another user's verbal agreement or disagreement are proved to be influential in determine attitudes toward a product, toward reviewers, and commenters.
Wang, Zhang, Li, & Zhu (2010)	data of 51 movies released from November 2006 to March 2009	Field data	Volume; Dispersion; Innovation probability; Imitation probability; Media publicity	Movie's marketing performance	Pre-release media appearance and online WOM conversation influence movie going decision making, but they play different roles. Media publicity determines moviegoers' innovation probability, whereas WOM determines both innovation and imitation probability.
Willemsen, Neijens, Bronner, & de Ridder (2011)	42,700 reviews from Amazon	Field data	Valence; Argument density; Argument diversity; Expertise claims	Perceived usefulness	Argumentation and review valence are significant predictors of perceived usefulness, and the effect is contingent on the type of product (search or experience). The presence of expertise claims

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
					appeared to be weakly related to the perceived usefulness.
Wu & Wang (2011)	211 respondents	Survey (Scenario-based)	Message appeal; Message source credibility; Product involvement	Brand attitude	Positive eWOM message with higher message source credibility indicates a better brand attitude. The rational appeal indicates a better brand attitude than the emotional appeal with a high degree of product involvement but not low product involvement.
Wu (2013)	40,755 customer reviews for 88 book items from amazon, 292 and 205 participants for experiments	Field data and experiment	Valence; Readability; Word count; Baseline valence (positive vs. negative)	Review helpfulness	When review quality is controlled, negative reviews are not perceived to be more helpful than positive reviews.
Wu, Wu, Sun, & Yang (2013)	127 undergraduate students for the experiment; 29 products with product and seller reviews on Amazon and eBay	Experiment and Field data	eWOM towards product vs seller; Valence; Volume	Willingness to pay	Consumers' WTP is not only affected by the online user reviews for products and sellers, but also moderated by their risk attitudes. The volume and variance can have either positive, or insignificant, or negative impact on consumers' WTP, depending on their attitudes as risk-averse, risk-neutral, or risk-seeking.

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Xia & Bechwati (2008)	85 and 82 undergraduate students for experiment 1 and 2 respectively	Experiment	Type of review (experiential vs. factual); Type of product (airline ticket vs. digital camera); Personalization; Affect Intensity; Review valence	Cognitive personalization; Perceived usefulness of the review; Purchase intention;	The level of cognitive personalization influences consumers' purchase intentions. The effect of cognitive personalization on purchase intention is moderated by valence (positive vs. negative).
Xie, Miao, Kuo, & Lee (2011)	274 undergraduate students	Experiment	Personal identifying information (PII); Consumers' pre-decisional disposition	Perceived credibility of the online reviews; Hotel booking intention	The presence of PII positively affects the perceived credibility of the online reviews. When coupled with ambivalent online reviews, the presence of PII significantly lowers consumers' hotel booking intentions.
Xie, Chen, & Wu (2016)	Time-series data of 56,284 hotel reviews from TripAdvisor	Field data	Quality; Quantity; Consistency; Recency	Offline hotel occupancy	Online consumer review factors are able to affect offline hotel popularity when controlling for other hotel characteristics. The effect of review quality lasts for at least a couple of quarters, whereas that of other online consumer review factors remains short-term.
Xu, Chen, & Santhanam (2015)	71 undergraduates	Experiment	eWOM presentation formats (text vs. image vs. video)	Review Credibility; Review helpfulness;	Presentation format of online reviews has a substantive impact on consumer perceptions.

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
				Review persuasiveness; Intentions to purchase	Product type significantly moderates the effect of presentation format on consumer perceptions.
Yang, Hlee, Lee, & Koo (2017)	1,776 reviews from Yelp.com	Field data	Review length; Review readability; Number of images; Number of good and beverage images	Review enjoyment; Helpfulness	Both attributes of textual format and aspects of imagery format are positively related to review helpfulness and enjoyment respectively. Review length and food and beverage images are the most important factors affecting both review usefulness and review enjoyment
Yang, Guo, Wu, & Ju (2015)	742 physicians' review data	Field data	eWOM source (user generated vs. system generated information)	Search and decision stage (number of visiting and consultant)	Positive patient-generated and system-generated information on physicians' service quality positively impact patients' reactions at different stages. Synergies between patient-generated and system-generated information are positively associated with patients' decisions to consult a physician.
Ye, Law, & Gu (2009)	3625 reviews for 248 hotels for 12 months from Ctrip	Field data	Average rating; Variance of rating; Price; City rank; Stars	Number of hotels booking; Number of reviews	Positive online reviews and reviews with higher ratings can significantly increase the number of hotel bookings, and the variance or polarity of reviews and higher room rate decrease online sales.

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Ye, Law, Gu, & Chen (2011)	40,424 user reviews of 1639 hotels from Ctrip	Field data	Valence; Variance of the review	Sales	Positive sentiment in online reviews can boost the number of online bookings. Higher variance in the opinion polarity among hotel reviews does not result in fewer online bookings.
Yin, Bond, & Zhang (2013)	78 and 73 participants for experiments and 187,675 reviews from Yahoo shopping website	Experiment and Field data	Emotions Embedded in Reviews (anxiety vs. anger); Perceived Cognitive Effort	Perceived Review Helpfulness	Reviews containing content indicative of anxiety were considered more helpful than those containing content indicative of anger, and their differential impact was explained by beliefs regarding the cognitive effort of reviewers.
Yin, Bond, & Zhang (2016)	1,623,497 reviews from Apple's App Store, 128 undergraduate students take part in survey; 81 and 157 participants for experiments	Field data, experiment and survey	Expressed emotional arousal in the review; product category (Utilitarian value); perceived effort	Review helpfulness	The expressed arousal in the reviews affects reader perceptions of review helpfulness in a nonlinear manner of diminishing returns. The nonlinear effect of arousal operates through reader inferences regarding the effort expended by the reviewer in constructing his or her review
Yin, Mitra, & Zhang (2016)	106045 reviews from Apple's App Store	Field data	Review rating; Rating deviation; Confirmation bias	Review helpfulness	In the post-purchase stage, consumers tend to perceive reviews that confirm their initial beliefs to be more helpful, and their confidence in the initial beliefs moderates the relationship.

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Zhang, Craciun, & Shin (2010)	150 undergraduate students for experiment and 27,985 reviews from Amazon.com	Experiment and Field data	Consumers' consumption goals (promotion vs. prevention); Review valence (positive vs. negative)	Perceived persuasiveness; Review helpfulness	Consumers who evaluate products associated with promotion consumption goals perceive positive reviews to be more persuasive than negative ones. Conversely, consumers who evaluate products associated with prevention consumption goals perceive negative reviews to be more persuasive than positive ones.
Zhang, Ma, & Cartwright (2013)	63,121 reviews of 1,292 cameras from Amazon	Field data	The total review number; The average review rating; The percentage of five-star reviews; The percentage of one-star reviews.	Sales	Average online customer review, the number of online reviews, the price and the camera's physical properties have significant influence on digital camera sales. Sales from the previous period, change in price, change in average online review rating, and change in the total number of online reviews are all significantly associated with future sales.
Zhang, Wu, & Mattila (2016)	83 adult consumers and 123 adults older than 18 years	Experiment	Information load; Temporal distance (today vs. next week); Valence of the review to which the incidental similarity cue was	Attitude; Behavioural intention	Information load has a dual function in influencing the effectiveness of peripheral cues, depending on which peripheral cue is used in hand.

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
			attached: (positive vs. negative)		
Zhang, Ye, Law, & Li (2010)	Review data of 1242 restaurants from Dianping.com	Field data	Review number; Food rating; Service rating; Star; Environment; Service expense; Web traffic	Online popularity; Intention to visit the restaurant	Ratings and the volume of online consumer reviews are positively associated with the online popularity of restaurants, whereas editor reviews have a negative relationship with consumers' intention to visit a restaurant's webpage.
Zhang, Zhao, Cheung, & Lee (2014)	191 users of an online review site	Survey	Argument quality; Perceived quantity of review; Source credibility	Behavioural intention (purchase)	Both heuristic and systematic information are able to affect purchase. The two heuristic factors further demonstrate positive influences on argument strength, which elucidates the interrelationship between heuristic and systematic factors.
Zhao, Wang, Guo, & Law (2015)	269 respondents	Survey	Reviewer expertise; Timeliness of online reviews; Volume of online reviews; Positive online reviews; Negative online reviews; Comprehensiveness of online reviews	Intention to book hotel	Review usefulness, reviewer expertise, timeliness, volume and comprehensiveness positively influence respondents' online booking intentions. Negative online reviews decrease online booking intentions however positive online reviews do not affect booking.

Table 2. 2: Empirical Research on eWOM and Consumer Decision-Making

Study	Context	Method	eWOM Variable(s)	Consumer Decision-making Variable(s)	Empirical Findings
Zhu & Zhang (2010)	Sales data of video game and review data on GameSpot.com	Field data and secondary sales data	Number of online reviews; Ratings; Consumer characteristics; design of online review systems)	Consumers' reliance on online reviews; Consumers' purchase decisions	Number of online reviews, ratings are more influential for less popular games and games whose players have greater Internet experience.

The content analysis shows that the most dominate research methods are using online data and experiment (Table 2.3). Forty-two out of one hundred and thirty-one studies (37.2%) involve analyzing online data (for example, online product reviews crawled from Amazon or movie reviews collected from Yahoo! Movies). Similarly, forty-one (36.3%) publications adopt experiments. On the contrary, 17.7 % of the selected studies (twenty studies) employ survey to collect data. According to the sample study recruited in this study, participants for experiment and survey heavily rely on university students, in which only 10% of the studies employ online consumers, Internet community users as sample whereas the majority of them recruit university students as subjects. Additionally, some of the the ten papers (8.9%) adopt more than one research design with multiple studies included in their research.

Table 2. 3: Research Method Statistics

Methods	Frequency	Percent
Studies recruit single method		
Online data	41	37%
Experiment	41	36%
Survey	20	18%
Study recruit multiple methods		
Online data and experiment	9	8%
Experiment and survey	1	1%
Online data, experiment and survey	1	1%
Total	113	100%

eWOM Characteristics Statistics

The selected studies must directly or indirectly investigate variables related to eWOM characteristics. Based on the statistic (Table 2.4), most of the studies (eighty-one) focused on the persistence and observable nature of eWOM, as digital information is both measurable and traceable for researchers. Therefore, it leads to the growth this stream of research that tackling information such as online content and eWOM source characteristics. Fifty-nine studies explored the impact of eWOM valence and twenty-three of them focused on the volume effect. It is worth noting that few papers investigate the dimensions of eWOM which are not covered by King et al (2014)'s model. The new dimensions will be discussed in detail in the finding section (Section 2.4). Very few studies explored only one eWOM characteristic, instead, the majority of them have studied more than one characteristic. Therefore, the figure is presented by frequency rather than the percentage

Table 2. 4: eWOM Characteristics Statistics

eWOM Characteristic Studied	Frequency
Enhanced Volume	23
Dispersion	7
Persistence and Observability	81
Anonymity and Deception	14
Salience of Valence	59
Community Engagement	0
Other Dimensions	2

Decision-making Stages Statistics

With regard to the theme of consumer decision-making process, most of the studies (74.3%) examine single stage of consumer decision-making process, of which, forty-four studies examined the linkage between eWOM and information search stage, nine articles studied the importance role of eWOM in alternative evaluation stage, twenty-nine studies investigated how eWOM affect consumer's purchase decision and four studies focused on the influence of eWOM on post-purchase evaluation stage of decision-making process (Table 2.5). Nonetheless, only one study addresses the influence of eWOM on problem recognition. Twenty-nine studies (25.7%) out of one hundred and thirty-one studies cover more than one stages of the process and investigate the interactive connection between decision-making stages.

Table 2. 5: Decision-making Stages Statistics

Decision-making Stage(s) Examined		Frequency	Percent
Single stage	Information search	42	37%
	Evaluation	10	9%
	Purchase	29	26%
	Post-decision Evaluation	4	4%
Total		86	75%
Multiple Stages	Recognition; Evaluation	2	2%
	Information search; Purchase	7	6%
	Information search; Evaluation	4	4%
	Information search; Evaluation; and Purchase	4	4%
	Evaluation; Purchase	11	10%
	Total	28	25%
Total		113	100%

2.4.1.2 Theoretical Foundations of Previous eWOM and Consumer Decision-making Studies

This section explains the common theories adopted in prior eWOM and decision-making literature. Among 113 studies identified in the current study, the dual process theory of information system theory was the most commonly cited theoretical foundation in the eWOM and consumer decision-making literature. Other theory streams such as social and cognitive theory, as well communication and learning theory have also been used to support the empirical investigation of previous literatures. These theories are discussed in this section with regard to how they are applied to support the examination of the impact of eWOM on consumer decision-making journey.

(a) Information System Theories

Dual-process theory (Elaboration Likelihood Model and Heuristic-systematic Model)

The dual-process theory is the most frequently applied theoretical foundation in studying eWOM and consumer decision-making phenomenon. The dual process theory in cognitive psychology explains how individual processes information at the different level. The theory has been widely adopted in many other field such as social, cognitive and even clinic psychology research. The dual process theory proposes that individuals follow two distinct pathways to process information.

One of the two main models specify the two routes and explains how attitude can be changed based on different ways of information processing is known as the Elaboration Likelihood Model (ELM). ELM was proposed and developed by Petty & Cacioppo (1986). Two major routes are presented in ELM that leads to persuasion are central route and peripheral route. The former one deals with the high level of

information elaboration and cognition, whereas the latter one concerns the information cues that are able to make the simple inference and less related to the core context. Similar to ELM, Heuristic-systematic Model identifies systematic and heuristic processing paths (systematic processing is comparative to central route and heuristics is similar to peripheral route) and advocates that people chose to process information in one of these two paths trying to reduce the use of their cognitive effort. Studies such as Liu & Park (2015), Yang, Hlee, Lee, Koo (2017), Filieri (2015), and Baek, Ahn, & Choi (2013) adopt this framework to examine how consumer assess eWOM information usefulness, while other studies (for example, Mafael, Gottschalk, & Kreis (2016; Lee, Park, & Han, 2007; Park & Lee, 2007) applied it with regard to how eWOM change consumers' attitude towards the product.

Cognitive fit theory

The cognitive fit theory was developed by Vessey (1991) which advocates that the correspondence between task and information processing mode is able to enhance task performance. The theory is adopted in eWOM literature to support the notion that consumers would have a better attitude towards the object they are evaluating (a certain product or service) if the eWOM message type and their 'information processing strategies' are consistent (Vessey & Galletta, 1991; Wu & Wang, 2011). For example, Wu & Wang (2011)'s study found that consumers with high expertise perceive attribute-centric framed reviews more favourably compare to benefit-centric reviews. Similarly, building upon cognitive fit theory, Xu, Chen, & Santhanam (2015)'s study revealed that eWOM presented in image or video are better fit consumer's information processing strategy when they are looking for experienced goods; and when there is a better fit, better attitude towards the information and product/service are generated.

Information processing theory

Information processing theory is developed based on the assumption that individual proactively processes the information (the message they are given), instead of merely responding to it. Previous research also show that humans have limited capacity for processing information and how information is presented to have an impact on the information processing efficiency. Therefore, researchers are trying to explore the way of improving information processing efficacy in order to enhance decision-making. For example, Gao, Zhang, Wang, & Ba (2012) investigated the role of information quality and quantity in enhancing information processing and how are they affecting consumer decision-making outcome. The study showed that not only information presentation but also the individual's thought mode has an impact on decision-making outcomes. Furthermore, Fogg et al. (2001) found that the exposure of reviewer's name and photo in the information source have a positive influence on information receiver's attitude towards the website.

Information-richness theory

Information-richness theory is also known as the media-richness theory. Information richness theory was developed in 1986 as an extension of information processing theory. The framework is constructed to explain the phenomenon that not only the information itself but also the communication medium is able to alter information processing through reproducing the information. In information richness theory, Daft & Lengel (1986) describe information richness as the 'ability of information to change understanding within a time interval' and specified four attributes that are able to facilitate the richness of information, namely feedback capacity, multiple cues, language variety and personalization. In other words, information richness refers

to ‘the capacity of the channel to provide detailed and timely information’ regarding the message being transmitted and the relevant information of its source (Levy & Gvili, 2015). In eWOM research, researchers use the information richness theory to the impact of eWOM information on consumer decision-making across different channels (Levy & Gvili, 2015; März, Schubach, & Schumann, 2017).

(b) Social/Cognitive Psychology Theories

Attribution theory

Attribution theory belongs to social psychology theory. In social psychology, individuals tend to explain the cause of their own behaviour or other people’s behaviour. According to attribution theory, people are trying to attribute, in other words, assign or make an inference of the possible causes (could be internal or external reasons) for certain behaviour. In eWOM and decision-making research, a few studies in the sample adopt attribution theory to explain how consumer attempt to understand eWOM and make the judgement of both eWOM information and product or company by attributing feelings and intentions to the eWOM characteristics. For example, reviews with temporal contiguity cues lead to the inference of causality for product experience rather than the reviewer (Chen & Lurie, 2013). Moreover, consumers perceive online reviews with extreme emotion (such as anger) less valuable as they make the inference that less effort is required to produce online reviews when consumers are angry (Yi, Bond, & Zhang, 2014).

Category diagnosticity theory

Category diagnosticity theory was developed based on the fact that sometimes consumers perceive negative reviews are more helpful or trustworthy than the positive

ones; because the negative information is more diagnostic than the positive ones, and therefore more useful in decision-making (Ahluwalia, 2002; Willemsen, Neijens, Bronner, & de Ridder, 2011; Ketelaar, Willemsen, Steven, & Kerkhof, 2015). This phenomenon is also known as ‘the negativity bias’. However, there are times that consumers rely on positive information more, depending on the processing goals (Ahluwalia, 2002).

Appraisal-based approach

Appraisal theory is a theory in psychology that advocates that emotions are derived from the individual’s evaluation of the certain events. In other words, individual’s emotion is depending on how they interpret/evaluate an event. Furthermore, the events are evaluated by people based on certain dimensions, for example, valence, certainty, fairness and anticipated needs to expend effort and etc (Ahmad & Laroche, 2015). In eWOM research, studies build on appraisal-based approach to explain how emotions embodied in the review, such as anxious, angry (Yin, Bond, & Zhang, 2013) and hope and happiness (Ahmad & Laroche, 2015) affect review value.

Cognitive dissonance theory

Cognitive dissonance theory describes the tendency of individual seeking for consistency among their cognitions. In cognitive psychology, cognitive dissonance refers to a mental status where an individual holds conflicting views, opinions or mind-sets, for example, when they are confronting the new ideas that contradict their prior beliefs (Festinger, 1962). When one or more cognitive elements are inconsistent with one another, cognitive dissonance occurs, and people tend to ‘depreciate disconformity evidence to reduce discomfort and maintain consistency (Garley and Gross, 1983; Yin,

Mitra, and Zhang, 2016). Building upon cognitive dissonance theory, researcher such as Yin, Mitra, and Zhang (2016) in the field of eWOM explores the confirmation bias regarding rating deviation. While other researcher focuses on how individuals who experience cognitive dissonance select and process online reviews (Y. (Jake) Liang, 2016).

Warranting theory

Warranting theory was introduced by Walther and Parks (2002) and it's developed based on the phenomenon that people may potentially misinterpret or mis-present his or her identity-related information in the presence of anonymity. The theory provides insights for understanding how self-presentations are produced and evaluated (DeAndrea, 2014). eWOM communication often occurs in the online setting where the community is relatively anonymous. Some of the social identity cues such as gender, age and occupation are no longer available. However, information source (the person who produce the information) is considered an important predictor of information evaluation and the warranting value. The greater the warranting value is, the more suspicious the information is perceived to be. In eWOM research, warranting theory is used to investigate how the anonymity and deception nature affect consumer assessing the credibility and trustworthiness of the information. For example, DeAndrea, Van Der Heide, Vendemia, & Vang (2015) focus on how the warranting value of user-generated information can vary and thus differentially affect viewers' evaluations of a target. Moreover, Utz, PeteKerkhof, & van den Bos (2012) explore the impact of online store reviews on consumer trust in online stores. Based on the warranting theory, the study reveals that consumer reviews are a more important cue for judging the trustworthiness of an online store than the overall reputation of the store or assurance seals.

(c) Communication Theory

Apart from information system theory and social/cognitive psychology theory, some of the eWOM and decision-making research adopts communication theory to support the research in the way that eWOM communication is studied as a technical process of information or process of human communication. For example, according to communication accommodation theory (Giles & Baker, 2008), the synchronization of communication styles can decrease the communicators' perception of social distance and increase approval and trust. Building on communication accommodation theory, Ludwig, de Ruyter, Friedman, Brügger, Wetzels, & Pfann (2013)'s study found that the language style matching between online product reviews and the reader can result in positive changes in financial performance. Furthermore, signalling theory is also used in eWOM research to explain how certain information affects consumer evaluating the product and make a purchase decision. Certain information such as brand popularity/strength (Ho-Dac, Carson, & Moore, 2013) rereleased media publicity (Wang, Zhang, Li, & Zhu, 2010) and user-generated information (Yang, Guo, Wu, & Ju, 2015) can be considered signals that reflect product quality and reduce perceived risk of decision-making.

(d) Learning Theory

In addition, a few researchers employed learning theory to construct their research framework. Learning theory describes how knowledge is obtained and observed by individuals. In eWOM studies that apply learning theory, researchers consider the process of consumers looking for and reading eWOM information as a process of acquiring knowledge. Theories such as Machine Learning theory, Social learning theory and Associative learning theory are used to study the impact of eWOM

on different stages of consumer decision-making (e.g. evaluating review value and product).

In the section that follows (Section 2.4.2), the analysis results are discussed in more depth in terms of how eWOM characteristics affect consumer's decision journey in the respective stages. Appendix B presents the results of content analysis by authors and year of publication.

2.4.2 Analysis of Empirical Findings - The Impact of eWOM Evolution on Consumer Decision-making Journey

In this section, findings are presented based on the proposed framework. Instead of focusing on the impact of one particular characteristic throughout the decision-making journey, this study chooses to organise the findings based on how eWOM evolution (which is conceptualized as eWOM characteristics in this study) affect each stage of consumer decision-making process. The reason to do so is twofold. Firstly, most of the paper analysed in this study investigate the influence of more than one characteristic of eWOM (as shown in table 2.2) on a single decision-making stage. There would be many overlaps if the results are presented following each eWOM characteristic. Secondly, interpret multiple features of eWOM characteristics with regard to one particular stage allow us to show the pattern of how the characteristics interactively work on consumer decision-making behaviour.

2.4.2.1 eWOM Evolution and Needs Recognition

(Relevant eWOM characteristics: enhanced volume, salience of valence, persistence and observability)

According to the findings of this study, very few studies have explored the impact of eWOM on needs recognition stage. Vermeulen & Seegers (2009)'s study is one of the few studies in the sample examined how eWOM is related to the needs recognition stage. The study found that eWOM exposure (include both negative and positive reviews) increases consumer awareness of the hotel. However, positive reviews encourage positive attitudes towards the hotel. The result implies that review volume is more influential rather than valence in the recognition stage. In the same vein, Zhang et al. (2010) looked into the effect in the restaurant context, and the results showed that both review volume and valence matter in deciding online popularity of the restaurant, where positive reviews significantly increase the popularity of restaurant web traffic. Furthermore, Zhang et al., (2010) not only focused on review characteristics, such as volume and valence but also take reviewers identity into account. The study evinced that unlike consumer reviews, editor (sponsored author)'s rating and review content were not found to be influential due to the authenticity suspicion from consumers.

2.4.2.2 eWOM Evolution and Information Search

(Relevant eWOM characteristics: dispersion; persistence and observability; anonymity and deception; salience of valence)

Papers analysed in this study that related to eWOM and information search stage can be classified into two themes. The first theme deals with how eWOM characteristics determine review value, usefulness and helpfulness. As the proliferation of information and communication technologies, millions of reviews are available in certain platforms (e.g. Tripadvisor and Yelp). Consumer needs to utilize information process to reduce the amount of information they would adopt to assist making the decision (Baek et al., 2012). In other words, before consumer move on to evaluate the choice, they need to

filter the relevant information to support evaluation as well. Hence, this theme of study is supported by the fact that consumer often require only a small set of useful reviews when they are exposed to too much information online (Yin, Bond, & Zhang, 2013a).

Studies under this theme dig into the effect of variables that related to online review characteristics on eWOM value/helpfulness/usefulness. Given the review value is associated with individual review, eWOM characteristics such as volume and dispersion which in most case are representing for an aggregate value, have not been examined as antecedent of review value. However, enhanced volume of WOM information online provides more available opportunities and options for both senders and receivers. When consumers are confronted with too many information, the amount of available information may exceed the limit of consumer processing capacity and resulting in information overload (Gao, Zhang, Wang, & Ba, 2012) . Because of the *persistence and observability* of online reviews, consumers are able to assess various components of online content to weight the information. Some of the studies researched on the visible elements of the review, for example, numeric rating (Baek et al., 2012a; Chua & Banerjee, 2016; Y. Hong, Huang, Burtch, & Li, 2016; Korfiatis et al., 2012a; Y. (Jake) Liang, DeAngelis, Clare, Dorros, & Levine, 2014; Z. Liu & Park, 2015; Schlosser, 2011; Singh et al., 2017; Yin, Mitra, & Zhang, 2016); review length (Cheng & Ho, 2015; Chua & Banerjee, 2016; Fang et al., 2016; Korfiatis et al., 2012; Liu & Park, 2015; Salehan & Kim, 2016; Yang et al., 2017); number of image in the review (Cheng & Ho, 2015; Yang et al., 2017) as well as reviewer characteristics, for instance, reviewers identity exposure (Baek et al., 2012; Liu & Park, 2015; Racherla & Friske, 2012); reviewer expertise (Li, Huang, Tan, & Wei, 2013a; Racherla & Friske, 2012); reviewer's popularity (Cheng & Ho, 2015) and reviewer's rating distribution (Fang et al., 2016). Elaboration likelihood model is the most cited theory amongst the studies

under this theme. Elaboration likelihood model is a dual process theory that explains how attitude can change based on different ways of information processing. Two major routes are presented in the model that lead to persuasion: central route and peripheral route. The former one deals with high level of information elaboration and cognition, whereas the latter one concerns the information cues that are able to make simple inference and less related to the core context. This stream of research utilizes elaboration likelihood model to examine the role of both central route (review content) and peripheral route (reviewer characteristics) in determining review value.

The observability also provides researchers possibilities to take a deeper look of the content and dig into the factor that influence consumers' decision-making without awareness from themselves. Apart from the studies researched on the visible elements of the review (for example, studies aforementioned that examined numeric rating, review length of the review or the number of images in the review), some researchers. Other researchers focus on the practical value of the information and discrete emotions behind the text. For example, researchers such as Korfiatis et al. (2012), Wu (2013), Liu & Park (2015), Chua & Banerjee (2016), Salehan & Kim (2016), Fang et al. (2016) and Yang et al. (2017) studied the effect of review readability on review value. Review readability refers to the understandability of the text that representing how easy the reader can comprehend a piece of review (Korfiatis et al., 2012). The empirical evidence showed that review readability had an even greater effect on helpfulness ratio than other visible review characteristics (Korfiatis et al. 2012). Furthermore, previous study also found that other review style characteristics, such as review framing (Cheung et al., 2009), review extensiveness (Racherla & Friske, 2012), content abstractness (Li et al., 2013a) are associated with review value. Moreover, consumers assess multiple information cues from not only textual properties but also emotional cues that embodied

in the review. Sentiment characteristics have also been explored by previous researchers and their empirical findings reveal that emotion such as emotional arousal (Yin, Bond, & Zhang, 2016) and negative emotions (Yin et al., 2013a) directly affect perceived review value through the attributed effort from reader to writer. Both of these two empirical papers adopted a serious lab experiments and field data, the findings revealed that the review readers consider reviewer devoting less effort in writing reviews when their emotional intensity are high (e.g. when the consumer is angry). Lee et al. (2017) also confirmed this finding by using online hotel review data from TripAdvisor, the result points out that intensive negative emotions exposed in the review remedies the positive effect of review helpfulness.

The second theme in information search stage behave towards review credibility and trustworthiness. Given the *anonymity* nature of online WOM, consumer intent to assessing information carefully to avoid *deception*. According to the prior literature, consumers generally rely on review content to assess review credibility, for example, they could look at word count (Baek et al., 2012), review framing (Cheung et al., 2009), argument strength (Fang, 2014), interactivity and information richness (Levy & Gvili, 2015), timeless and comprehensiveness (Cheung, 2014) and quality of the review (Filieri, 2015). As early back to 1960s, Dichter (1966) has noted that the two key motivations of WOM acceptance, which are the interest that an information receiver placed on the sender and the expertise of the sender are. In order words, WOM acceptance is associated with the credibility of sender (Sweeney, Soutar, & Mazzarol, 2008). In eWOM context, Fang (2014) investigates how reviewer's quality associated with eWOM credibility and found that source expertise plays a positive role in determining the value of recommendations. It also has been found that the homophily of reviewer, the perceived similarity between reviewer and information searcher positively

affects eWOM credibility (Lis, 2013). It implies that people access reviewers' identity and more likely to adopt information from others who have similar identity, for example, people belong to same social economic group or have similar taste (Sweeney et al., 2008). Moreover, consumers' behaviour, for example how often do they search for online reviews also influences perceived trustworthiness of online reviews (M. López & Sicilia, 2014).

Dispersion is an important unique feature of online WOM information, which could also affect a consumer's searching behaviour. Consumers are able to find reviews available on various platforms. Drozdenko, Jensen, & Coelho (2012) conducted a research towards the types of websites consumers visit to gather information for purchasing products. The study confirmed that there are differences among the reported frequency of use of online product information sources. Consumers prefer to use the retailer's website for searching product reviews, whereas group pages on social networking sites were used least often.

The *valence* of word-of-mouth in online context is more salient as it can be presented as numerical ratings. Online retailer (e.g. Amazon.com) and review aggregator (e.g. Yelp.com and TripAdvisor.com) provides five-star rating system. The rating system require the eWOM sender to 'quantify' their experience and represent in the form of numeric ratings. The eWOM reader can therefore easily process these numeric ratings. The overall rating of the product is able to give reader an idea of consumers' average evaluation of certain product or service. The numeric rating is widely studied as the operationalization of review valence and has been found to be the decisive factor for review assessment, as well as perceived product quality (will be further discussed in the following section - purchase stage). Regarding the research

question of how review valence affects review value, researchers (such as Chua & Banerjee 2016; Filieri, 2015; Lis, 2013; Z. Liu & Park, 2015; Utz et al., 2012) found that ratings are positively associated with information credibility, trustworthiness and usefulness. While other researchers provided contradictory evidence (e.g. Casaló et al., 2015; Chen & Lurie, 2013; Lee et al., 2017) that consumers perceive negative reviews to be more credible and helpful, thus pointing out the existence of ‘negativity bias’ in the online review environment. In the context of eWOM, negativity bias represents the phenomenon that consumers tend to value negative reviews more than the positive ones. The basic psychological tenet of negativity bias is that people pay more attention to things of a more negative nature than the ones with positive nature, and the negative things in turn have greater effect on people’s behaviour and cognition (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Lewicka, Czapinski, & Peeters, 1992; Rozin & Royzman, 2001). However, Wu (2013)’s study examines the problem of negativity bias with data from both online reviews and experiment settings, the study found that negativity bias does not exist when the information quality is controlled. By contrast, Schlosser (2011) indicates that the reviews including both pros and cons are perceived to be more persuasive. On the other hand, Mudambi & Schuff (2010)’s study empirically showed that consumers find extreme ratings (implies both negative and positive ratings) helpful compared to moderate ratings. Park & Nicolau (2015) also explained that the reason why previous researches conclude inconsistent results regarding the relationship between review valence (rating) and review usefulness, is that the relationship is not linear (U-shape line).

It is worth noting that ‘*the context within which interpersonal and non-interpersonal factors interact*’ may impact the effectiveness of WOM outcome (Sweeney et al., 2008). In other words, WOM might be more persuasive in certain

circumstance than others might, or across different individuals. Following this arguing, some researchers explored the link between eWOM valence and eWOM evaluation with the consideration of other external and internal influences: how consumer process reviews actually depend on the situation they confront and dispositional differences between each individual. For example, Zhang et al. (2010) found that when consumer is associated with promotional consumption goals, they tend to weigh positive reviews or reviews with higher ratings more valuable than the negative or the lower rating reviews. Whereas, consumers who are attached with higher reviewer risk aversion (Casaló et al., 2015) find negative reviews more useful. Furthermore, consumer also compare the rating of individual review with the total aggregate rating of certain product or service in information evaluation. If there's a conflict between single reviewer rating and overall rating, consumers tend to rely more on the reviews have less variations compare to the average ratings (Yin et al., 2016) and consider the individual review less credible and diagnostic, especially when the rating given by reviewer is higher than the average rating (Qiu et al., 2012).

2.4.2.3 eWOM Evolution and Alternative Evaluation

(Relevant eWOM Characteristics: Enhanced Volume, Persistence and Observability, Dispersion, Anonymity and Deception, Salience of Valence)

After completion of information selection, consumer starts to evaluate the product/service related attribute in the eWOM information, in order to make reasonable judgement about the product/service. The extent research establishes how eWOM characteristics such as review volume, valence and other observed components in the online review content affect how consumers judge a certain product.

Enhanced volume of reviews in online environment can bring benefit as well as distress to consumers. Great volume of eWOM information reflects the popularity of product (Park & Lee, 2008; Zhang et al., 2010) and encourage consumers to further consider and evaluate the product (Aggarwal & Singh, 2013). However, the more is not always the merrier, eWOM volume can also induce negative effects. When large number of reviews exposed to the consumers, they would become less confident and more confused in evaluation stage, due to the worries of missing capturing the key information (Park & Lee, 2008). Park & Lee (2008)'s study further indicates that even the given review quantity remains the same, the effect of eWOM overload on consumer various, depending on the type of reviews. Attribute-level reviews, which contain rational and concrete information of products attributes, evoke the effect easier compare to whose reviews incorporate just simple recommendations. The influence of eWOM volume is also moderated by consumer characteristic, where low-involvement consumers mainly focus on the popularity reflected by review quantity in product evaluation stage rather than process the content of information and therefore can remedy the effect of information overload (Park & Lee, 2008). However, the effect of information overload is not always negative in consumer decision-making process. Zhang et al. (2016) found that under the condition of high information load, consumers generate more positive product/service attitude when they are making decisions for the distant future.

In order to solve the problem of information overload and prevent this heavy burden that challenges consumer choosing relevant information, information filter tools and electronic decision aids are now available in the most of platform to improve consumers' decision-making experience. These tools are designed to help providing structured information to minimize the negative effect of information overload and

enhance the decision efficiency in evaluating product through reviews. Bechwati & Xia (2003) and Häubl & Trifts (2000) examined the role of online decision aids on consumer decision-making process, the results of two studies showed that interactive decision tools are not only able to help consumer to save searching effort (as mentioned before in information search section), but also can decrease the size and increase the quality of alternatives in consideration set in evaluation stage. Nevertheless, the helpfulness of decision aids is depending on the complexity of the decision, greater use would lead to poor decision quality if choice conflict is high (Lurie & Wen, 2014).

Apart from the countless reviews in one particular site (e.g. Yelp), eWOM is also everywhere, consumers can find products recommendation on social media website (e.g. facebook), crowd-sourced reviews on third-party review website (e.g. TripAdvisor), product reviews on retailers website (e.g. Amazon.com) and brands' website (e.g. www.microsoft.com); as well as open box videos on youtube.com and personal blogs. eWOM information from every platform enables customers acquire products related opinions to assist product evaluation (Jabr & Zheng, 2014) . If this is the case, does platform (*dispersion*) really matter in product evaluation? Previous research such as Chih et al. (2013) and Huang et al. (2012) provide initial evidence showing that consumer's perception towards platform (e.g. perception towards certain virtual community and website reputation) indirectly influence product attitude. Additionally, Baum & Spann (2014) and Yang et al., (2015) shed light on the role of eWOM platform plays in product evaluation and state that consumers don't really mind the source when the recommendations are consistent between platforms. Bronner & de Hoog (2010) also indicates that in holiday related decision-making situation, the level of trust for independent and marketer-generated platforms are equal. However, when conflicts exist between consumer generated sources and marketer-generated

information, consumer would have negative attitude towards retailer (Baum & Spann, 2014; Yang et al., 2015). Two studies examined the role of personal blog in the stage of consumer evaluate alternatives and make decisions. Lee & Youn (2009) propose that blog as an independent source, have greater impact on consumer's product judgment than brand's website. However, the result did not support the results. Aggarwal & Singh (2013) examine the influence of blogs across different stages of decision making among venture capitalists. The study constructed a three-stage model (screening, choice, and contract) and found that blogs as an information source are only influential at the screening choice (evaluation) but not affect other stage.

Moreover, prior study found that consumers consults information from different platforms (*dispersion*) when they are making different type of decisions. Bronner & de Hoog (2010)'s study found that consumers tend to use consumer-generated information for decision-making when making experience-determined decision (for example, making decision for purchase an experienced product, which product attributes cannot be fully known until purchase and use). While, other researchers point out that information from each platform are complementary for consumers, they check more than one platform to acquire product information for evaluating one single product. This can also cause the problem of free riding (is discussed in detail in the section of purchase stage).

The phenomenon of word-of-mouth evolution faces challenges embodied by the characteristics of the online environment (Dellarocas, 2003). Electronic word-of-mouth appeared as "*a viable mechanism for fostering cooperation among strangers in such settings by ensuring that the behaviour of a trader toward any other trader becomes publicly known.*" The publicity allows magnitude of potential consumers make

judgement of service provider's behaviour and in turn affect their attitude or even behaviour towards the business in the future. In terms of *persistence and observability*, similar to how consumer process information to determine the value of information (which has been discussed in the previous section), consumer also pay attention to the content of eWOM to evaluate products. Product judgement is not only depending on what is in the review, but also related to who write it. Priors studies provide ample evidence on how review content, such as eWOM quality (Lee & Shin, 2014; Park et al., 2007) , eWOM consensus and vividness (Lee & Song, 2010), the language and format of the review (Kronrod & Danziger, 2013), explanation type (Moore, 2015) improve product evaluation. Particularly, Liu & Karahanna (2017) explored how review characteristics affect the perceived importance of product attribute (attribute preference) rather than the effect on product evaluation. The study claimed consumers' desire to evaluate each product attribute are influenced by the review content (e.g. rating, attribute-level information and the degree of information conflict) and the results confirmed the swaying effect of online product reviews. In addition, reviewer characteristics such as trustworthiness of reviewer, reviewers identify, reviewers' reputation and exposure (Chiou, Hsiao, & Su, 2014; Dou, Walden, Lee, & Lee, 2012; Hu, Liu, & Zhang, 2008) are proved to be positively associated with product judgement. However, information load alters consumer processing information through suppressing information under peripheral route (e.g. reviewer characteristics). The results generated by Zhang et al. (2016)'s study showed that consumer exhibit more favourable attitude towards the product or service when incidental similarity cues (e.g. similarity between reviewer and reader) are presented when information load is low, whereas consumer's attitude are mainly influenced by central information (e.g. valence) when the information load is high.

With regard to how consumer using the *salient of valence* characteristic of eWOM information to evaluate product, previous research showed the pattern that positive reviews yield higher expectations (Mauri & Minazzi, 2013) as well as positive attitudes towards hotels. In comparison with positive reviews, negative reviews generate negative attitudes (Vermeulen & Seegers, 2009) and as the proportion of negative review increases, consumer's attitude toward product becomes less favourable, and the effect becomes even more salience when negative reviews have high quality (Lee et al., 2008). Furthermore, Chu et al. (2015) investigated the phenomena of dispersed and conflict rating, the study found that highly dispersed rating can actually enhance the evaluation of hedonic products. In addition to the main effect of review valence on product evaluation, factors that able to moderate the relationship are also identified in prior studies. As aforementioned (in section 4.2) argument that suggested by Sweeney et al. (2008), '*the context within which interpersonal and non-interpersonal factors interact*' could alter the effectiveness of word-of-mouth communication. For example, WOM is more persuasive and influential for certain product type. Hao, Ye, Li, & Cheng (2010) provided evidence following this argument that the effect of online consumer reviews valence is asymmetrically moderated by product type, where the effect of positive reviews is greater for search goods than that for experience goods, while the effects of negative reviews have no significant difference between these two types of goods. Similarly, Lee & Lee (2009) classify product type into quality (products that mainly evaluated by quality, e.g., laptop) and preference goods (products mostly assessed by consumers' preference, e.g., movie and music). The study revealed that the effect of eWOM rating (either average rating or rating variance) on perceived quality and preference are not symmetric. Kim & Gupta (2012) found that intensive emotions expressed in the review remedies the negative effect of reviews on product evaluation.

Furthermore, Mafael et al. (2016)'s study using experiments investigated the interaction effect of brand attitude and review valence, revealed the interesting biased assimilation effects in eWOM context. The findings indicate that consumers' product evaluation based on eWOM can be biased based on consumer's existing brand attitude, where consumer perceive positive (negative) reviews are more (less) persuasive as the review contents to some extent confirm (disconfirm) consumer's prior beliefs.

2.4.2.4 eWOM Evolution and Purchase Decision

(Relevant eWOM Characteristics: Enhanced Volume, Dispersion, Anonymity and Deception, Persistence and Observability, Salience of Valence)

A considerable amount of studies has investigated the linkage between eWOM and purchase decision. Fifty-one out of 113 studies (45%) of the current sample have focused on consumers purchase intention. Some of the studies under this theme employed secondary data to examine the link between online word-of-mouth and consumers' purchase decision. Purchase decision in these studies are operationalized to the consumers' actual purchase and measured by industrial figures such as product sales (e.g. Cui et al, 2012; Ye et al, 2011; Zhang et al, 2013); hotel financial performance (e.g. Phillips et al., 2017, 2015; Xie et al., 2016); hotel booking number (Ye, Law, & Gu, 2009); firm conversion rates (e.g. Ludwig et al., 2013); box office (e.g. Dellarocas et al., 2007; Duan et al., 2008a) and daily revenue (Duan, Gu, & Whinston, 2008b) for movie. While other studies investigated this linkage using experiment to capture the consumers' perception towards purchasing through the manipulation of eWOM characteristics (e.g. Lin et al., 2011; Floh et al., 2013; Ketelaar et al., 2015; Kostyra et al., 2016; D.-H. Park et al., 2007; Prendergast et al., 2010). Experiments allow researchers to explore the casual and effect in terms how certain eWOM elements

influence consumers' purchase decision, as well as the underlying mechanism of this association.

Unlike traditional word-of-mouth, eWOM can be documented and cumulated in the digital computer-mediated context. Therefore, the number of reviews can be observed by consumers and considered one of the cues to make the decision. The findings of online eWOM volume and purchase linkage revealed from prior literature present interesting patterns. The extent of research indicates that *volume* enhances sales. For example, prior studies (such as Lin et al., 2011; Duan et al., 2008b, 2008a; Park & Kim, 2008; Park et al., 2007; Wu et al., 2013; Zhang et al., 2013; Zhu & Zhang, 2010; Zhao et al., 2015) provided evidence on the dominant role of online review volume in driving sales and the awareness effect. Moreover, research shows that the influence is heterogeneous across consumers. The impact of review volume is even stronger for decision maker if he or she is not that much involved in the process or does not have much experience with the online decision-making environment. (e.g. consumer with limited internet experience or novices), and for decision-makers with higher level of involvement, the volume mainly affect them when the review quality is high (Park & Kim, 2008; Park et al., 2007). Similarly, the relationship between review volume and purchase is contingent based on the product category. For instance, Cui et al. (2012)'s study found that review volume is more influential for experience product (compare to search product); and the effect is not homogeneous even in the same product category. Zhu & Zhang (2010) suggest that even in the same product category, consumers are more sensitive to volume for less popular ones due to the mere exposure effect.

However, other researchers state that this is not always the case. They believe the quantity of online reviews is not able to affect sales and sometimes can decrease

sales as too many reviews can cause cognitive overload and generate the adverse judgemental decision making (Maslowska, Malthouse, & Bernritter, 2017). The possible explanation of this conflict result is the role of time plays in this effect. Previous research provides evidence on how review volume affects purchase differently over time. For example, Cui et al (2012) conducted their study using firms' sales data and online review data of 332 new products from Amazon.com over nine months period and found that the effect of review volume varies in the different stage of product life cycle. The findings show that the volume of reviews significantly affects new product sales and the effect decreases as the product grow and mature in the market. Similarly, Cadario (2015) supported this finding in a different industry. By combining the data of 41 TV shows view ship and online review, his study concluded that the relationship between volume and view ship does vary overtime. Moreover, this study claims that that this relationship presents a U-shaped curve, where the effect is not significant in the early episode but increasing as it exposures and decrease again in the later stage.

Mixed findings are also presented in terms of how review *valence* affect the purchase decision. Some researchers (e.g. Cui et al., 2012; Ho-Dac et al., 2013; Moore, 2015; Sparks & Browning, 2011; Wu et al., 2013; Ye et al., 2009; Lin Zhang et al., 2013; Zhu & Zhang, 2010) found the positive correlation between positive reviews and purchase intention. Furthermore, Floh et al. (2013) reported that consumers are not only affected by the valence of reviews, but also the valence intensity. Strong positive reviews are found to be most influential for consumer's purchase intentions, whereas consumers do not care how strong or weak is the negative review when they are making purchase decisions. However, other researchers found their review valence has no significant impact on purchase decision (Cadario, 2015; Duan et al., 2008b; Maslowska et al., 2017). Duan et al. (2008b) further explained that when controlling other inherent

factors, review rating itself may not be able to play a significant role in determining purchase decision because the consumer does not blindly believe the ‘star’ but focus more on the content (e.g. sentiment in the review). Hu et al. (2014) confirmed this claim by showing that ratings have the indirect impact on sales through sentiment but not able to directly affect sales. Following this argument, researchers (such as Chong et al., 2016; Ludwig et al., 2013; Ye et al., 2011) also provided evidence that positive sentiment (e.g. positive affective content) in online reviews can boost online hotel booking.

This implies that except the quantitative characteristics of online reviews such as number of reviews and rating that are relatively easy to be observed by consumers, the qualitative element of online reviews such as sentiment in the review content, quality and review type also varies and differentiates the influences of eWOM on the decision to purchase (Korfiatis et al., 2012; Liu & Park, 2015). From this perspective, researchers found that review quality and comprehensiveness are positively associated with consumers’ purchase intention (Lin et al., 2011; Park et al., 2007; Zhang et al., 2014). Furthermore, reviews framed as attribute-centric (compare to benefit-centric reviews) have the strong and direct effect on purchase intention (Park & Kim, 2008). Similarly, compared to a simple recommendation, reviews contain product attributes information can indirectly predict purchase intention (Park & Lee, 2008). Moreover, reviewer related factors such as source similarity (how similar the review reader perceive the sender to be with him/herself), expertise and average rating agreement of the reviewer are able to predict sales as well along with the review characteristics (Jabr & Zheng, 2014; Prendergast et al., 2010).

Anonymity nature of eWOM makes the consumer being more cautious when they consider adopting the information. As discussed in the information search stage, a considerable amount of research studied consumers' evaluation of eWOM helpfulness, credibility and attitude toward information acceptance. Factors such as review quality, timeless, comprehensives and information relevance are tested among studies, and it proved influential for eWOM credibility and acceptance. Further, these factors are in turn predicting consumer's purchase intention as well (Cheung, 2014; Chih et al., 2013; Fan & Miao, 2012; Zhang et al., 2014). Furthermore, Sparks & Browning (2011) indicate that review characteristics such as rating, and content framing also determine consumers' perceived trust towards service provider (e.g. Hotel).

Dispersion denotes that reviews can be found, read and transmitted on various platforms online. The prior study indicated that platform does matter in the process consumer making decision. Consumers' attitude towards the platform, for example, online communities or forum, can be a strong predictor for purchase intention (Chih et al., 2013; Huang et al., 2012; Prendergast et al., 2010). In other words, if consumers particularly like or trust one platform than another, they would like to make purchase on that platform. This cross-platform characteristic of eWOM, therefore, leads to the phenomenon of the free-rider problem. The free-rider problem refers to consumer acquire information of the product from one source and make the actual purchase through another retailer. As available eWOM information is not only available on the retailer's website, plus consumers perceive independent user-generated platform to be the more trustworthy source, the free-rider problem arises. Huang et al. (2009) studied this phenomenon in the online context and indicated that free rider are more likely to happen on consumer purchase search goods rather than experience goods.

However, the free-rider problem not only happens in the online environment across the different website but also crossways online and offline context. Consumers visit the brick and mortar stores to experience the product and then purchase online. Rippé, Weisfeld-Spolter, Yurova, & Sussan (2015)'s study pointed out consumers do not stick in the same channel but switching channels between online and offline context when they are searching information and make the actual purchase.

2.4.2.5 eWOM Evolution and Post-purchase Evaluation

(Relevant eWOM Characteristics: Enhanced Volume, Persistence and Observability, Anonymity and Deception, Salience of valence, others)

Outcome stage concerns what happens after consumer make purchase. Understanding what happens after the sale is also important because it can be considered an evaluation of decision-making and the purchase. It often links to consumer's intention of repurchase, spread word-of-mouth and develops loyalty. The outcome of evaluation can be both positive and negative. Positive outcome generates consumer satisfaction, whereas negative outcome cause dissatisfaction (Bamossy & Solomon, 2016).

Studies investigate eWOM, and post-purchase evaluation often focuses on the antecedent, in other words, what makes people talk about their experience. However, only a few studies in the literature have examined how consumer consider peer opinion after purchase (e.g. how consumer feel about the decision) or how customer reviews alter the overall evaluation of decision-making process (also refer to decision-making process satisfaction). Zhang & Fitzsimons (1999) indicate that the process through which a decision or choice is made can be considered an indivisible part of decision-making satisfaction. Researchers such as Cheung & Xia (2003) and Xia & Sudharshan

(2002) explored factors that affect decision-making process satisfaction and found that, in online environment, electronic tool (decision aids) was able to assist consumer saving decision-making effort and in turn improve decision-making satisfaction, on the contrary, online advertising interruption in consumer's decision-making experience reduces consumer decision-making process satisfaction, but would not affect decision satisfaction.

In eWOM context, Gao et al. (2012)'s study investigated the effect of eWOM on the consumers' decision satisfaction and post-consumption satisfaction about the quantity and quality of eWOM information. The study exposes a large amount of online information decreases decision and post-consumption satisfaction, on the other hand, it is the quality that able to enhance both the decision and post-consumption satisfaction. The study also addresses the interesting and necessary role of thought mode in solving the problem of a large amount of online information: the thought mode moderates the relationship between eWOM quantity, quality and decision-making outcome. That is to say; consumer makes better decision or experience higher post-purchase satisfaction under unconscious thought compare to conscious thought, especially when they confront with a large amount of information.

On the other hand, Liang (2016) points out that from the consumers' perspective, their motivation to process reviews differs based on '*whether a decision has taken place*' (p 464). Consumers look for reviews in pre-purchase stages to reduce the risk of decision-making, while they may read reviews to justify their decisions (Fischer & Greitemeyer, 2010). Building upon cognitive dissonance theory, Liang (2016)'s findings demonstrate that the reviews consumers read after they make the actual purchase (or the decision is made) can alter how they feel about the decision.

2.4.2.6 Other Characteristics of eWOM Evolution – Communication Medium

In addition to the variables that related to King et al. (2014)'s six eWOM characteristics, some of the eWOM variables cannot be allocated to King et al. (2014)'s model. For example, the media or channel that eWOM information is presented or transmitted through. These characteristics also reflect the development of word-of-mouth and are able to alter the way consumer process eWOM to make purchase decision. Furthermore, the mediums that carry word-of-mouth matters as the effectiveness of communication depends on the richness of the communication media (Maity & Dass, 2014). According to the studies analysed in the systematic review, there are two types of communication mediums that carries word-of-mouth which were neglected by King et al. (2014)'s model. These elements are therefore discussed in this section.

(a) Visual eWOM

The word-of-mouth research in offline context has been centred on verbal communication, and this focus has been carried over to electronic word-of-mouth research too where verbal content dominates (Ring et al., 2016). Substantial research has been conducted with regard to the textual feature of eWOM content. Take online reviews as an example. Researchers have investigated variables such as review length (Fang et al., 2016; Korfiatis et al., 2012; Salehan & Kim, 2016), basic textual characteristics (Cao, Duan, & Gan, 2011), if the review is well written with details (Black & Kelley, 2009) and even emotion (J. Kim & Gupta, 2012) expressed in the review text and temporal cues (Chen & Lurie, 2013) within the text. Traditional WOM information is exchanged through conversations, which cannot be easily documented, whereas eWOM information can be presented in various formats. Even most common

format of eWOM information is online written reviews, however, the majority feedback systems and review aggregators (for example, TripAdvisor.com, Yelp.com and Amazon. com) now allow (even some of them encourage) consumer to uploading pictures along with written comments. In addition, unboxing video are becoming popular on social media. However, just a few researchers have turned their attention to visual elements in eWOM information. Visual eWOM in this study refers to those online word-of-mouth information that are represented in the visual format, for example, pictures of the food/restaurant posted in the reviews (hereafter, the term visual eWOM and visual reviews are used interchangeably).

In terms of the effect of visual eWOM, Cheng & Ho (2015)'s study provided evidence that images speak louder than words in online word-of-mouth context. Their study concluded that the number of images included in the review is associated with the practical value of the review because consumer considers images included in the review as the additional information and source of argument quality that can help with choice making. In the same vine, Xu et al. (2015) explicitly investigated the effects of presentation format of online reviews by comparing each of the format (text, image and video) in an experimental setting. The research confirms the substantive and nuanced impact of presentation format of online reviews have on consumer's perception in information evaluation and purchase intention. Compare to textual reviews, visual content such as image and video are relatively more realistic, which provide more vivid evidence (Xu et al., 2015). The results thus provide strong evidence that reviews in visual are perceived to be more credible, persuasive and helpful than text reviews, and these factors are in turn positively associated with purchase intention. Furthermore, Xu et al., (2015)'s study also revealed that consumer reply on the visual eWOM more when they are shopping for experience products online due to the need for the sensory and

vicarious feel of the experience attributes through concrete and vivid information in the review. More recently, Yang et al. (2017) conducted a study in restaurant context and generated similar results regarding how imagery format reviews enhance perceived review value, as well as enjoyment.

Both Cheng & Ho (2015) and Xu et al. (2015)'s study adopts Elaboration likelihood model (KLM) as a backdrop and investigate the impact of visual reviews on review evaluation. However, the two studies conceptualize visual reviews differently in terms of theoretical support. Cheng & Ho (2015)'s study treats the number of images in the reviews as constructs of argument quality and therefore belongs to central route. While Xu et al. (2015) consider visual reviews are able to boost eWOM effectiveness through information attractiveness, vividness and selinenes, which are the source of the peripheral route. On the contrary, Yang et al. (2017) adopt dual coding theory, and argue that pictures are encoded in both memory stores (verbal and non-verbal), and therefore can be remembered better than textual reviews. The assertion of the dual-coding theory is that two system (verbal and non-verbal) are operating independent of each other (Paivio, 1991). Thus, if the information is presented in both verbal and non-verbal format, in other words, via multi-channel/media, the effect is able to stimulate the sensory channels through both verbal and non-verbal systems and therefore strengthen the learning and understanding (Jiang & Benbasat, 2007).

(b) Mobile eWOM

Most of the prior studies in eWOM literature consider that eWOM as a technologically homogeneous activity regarding the way that consumers access information and provide their opinions, without a specific focus on the mobile context and the characteristics mobile technology artefacts. King et al. (2014) pointed out the

characteristic of platform dispersion for eWOM information in a way that eWOM information is available in a broad range of communities (e.g. online discussion forum, consume review site, personal blogs, social networks, shopping website, company website, etc.). However, King et al. (2014) neglect the distinction of eWOM effects across device/media channels.

Considering eWOM activity in a mobile context (mobile eWOM), Burtch & Hong (2014) studied the characteristics of mobile eWOM and demonstrated that reviews generated via mobile devices appear to have lower and more varied star ratings, contain more concrete and emotional text, and are perceived to be more helpful. Furthermore, Lurie et al. (2014) used field data of a restaurant review platform and specified that compared to non-mobile reviews, reviews created through mobile devices are shorter, less extreme, one-sided (either positive or negative) and contain more affective and less cognitive cues. Lurie et al. (2014) also provided insights regarding the particularities of mobile review creation process by revealing that real-time engagement, perceived cost and the relationship with mobile device influence the way consumers generate reviews in the mobile environment.

About the impact of mobile eWOM, März et al. (2017)'s study is the only study examined how consumer consideration device information as a source cue to evaluate eWOM helpfulness. März et al. (2017) extended Lurie, Ransbotham, & Liu (2014) study and further investigated how technology facilitates the reception of WOM. The findings further confirmed the influential role of the communication channel (mobile vs non-mobile) on eWOM information content by showing that mobile reviews differ from non-mobile ones regarding mobile-specific linguistic characteristics. Furthermore, März et al. (2017)'s study also indicates that how consumer weighs online reviews depends

on the device they use to read. More specifically, if consumers are reading review produced by the mobile device on a mobile device, they perceive the review to be more helpful through the perceived compatibility of the device.

2.5 Discussion and Future Research Directions

This paper reviewed 113 empirical studies concerning the impact of eWOM as the outcome of eWOM evolution, on consumer decision-making journey. Research on eWOM and consumer decision-making is large and fragmented. As evidenced by the studies analysed, eWOM characteristics are studied more frequently in pre-purchase phase (e.g. Information search, product evaluation and purchase decision) than post-purchase phase (e.g. post-purchase evaluation). It is understandable that a considerable amount of study (45% of the current sample) focus on how people use eWOM information facilitating purchase decision as sales present profit of the firm. However, post-purchase evaluation often links to consumer's intention of repurchase and develop loyalty. There are studies investigate eWOM and post-purchase evaluation dealing with what makes people talk about their experience and reveals that if the evaluation is negative, the consumer might spread negative word-of-mouth to punish the firm and warn others (Balaji, Khong, & Chong, 2016; Shin, Song, & Biswas, 2014).

Regarding eWOM consumption, previous researcher (Fischer & Greitemeyer, 2010) noted that the reason why consumer looks for reviews various in the different stages of decision-making journey. Consumers not only read reviews before purchase to reduce risk but also after the decision is made, to justify their decisions. According to social comparison theory, people compare their opinions with others to gain accurate self-evaluations, (Festinger, 1962). In reality, consumers do consult their peers' opinion for the decision they have made. Some consumers choose to search online reviews after

purchase to make sure they have just made a wise choice. Those opinions and reviews that they are exposed to can change how they feel about the decision through the cognitive dissonance, and consumers intend to read the reviews that confirming their purchase decision (Liang, 2016). Therefore, what firms can do to encourage positive evaluation after the point of purchase become a key issue that needs to be explored in this field.

In addition to the evaluation of the product per se, how the consumer feels about the decision-making process is another dimension of consumer decision-making journey. Zhang and Fitzsimons (1999) subcategorized post-purchase satisfaction into decision-process satisfaction and decision satisfaction. Decision-process satisfaction refers to the degree of satisfaction with the choice process whereas decision satisfaction denotes the decision with the outcome of the choice per se. Process satisfaction pertains to the characteristics of choice set and product presentation. When consumers can easily find their preferred products due to the adequate presentation of choice size and product information, their decision-process satisfaction increases (Heitmann et al., 2007). However, only one study (Gao et al., 2012) in this review considered this dimension of post-purchase evaluation. Online decision aids save efforts for consumers and lead to high process satisfaction (Bechwati and Xia, 2003). Xia and Sudharshan (2002) provided further evidence that decision-process satisfaction differentiates with decision satisfaction in online shopping setting, where the interruptions during decision-making process decrease consumer process satisfaction but do not affect decision satisfaction. eWOM is also embodied with internet-based technology, how these characteristics enhances, or hinder decision-process satisfaction is what research should focus in the future. Such focusing will contribute to a more comprehensive understanding of consumer decision-making journey in the information-rich environment.

Within the pre-purchase phase, the impact of various eWOM characteristics on consumer's needs recognition is received insufficient attention from researchers. Only three papers examined how eWOM is related to the needs recognition stage. However, the impacts of other eWOM characteristics on needs recognition remain unexplored. With people increasingly rely on online information, consumers not only access eWOM information when they need to make decisions but proactively search them to get inspiration for future purchase, or they are exposed to eWOM information without searching (for example, their friends talking about a product on social media site). The way that eWOM information inspires consumer, and how various eWOM characteristics affect consumer's desire of owning a product can be the further direction of research.

In information search stage, consumers rely on eWOM characteristics such as review valence, quality, combined with reviewers' characteristics, for example, reviewer expertise to assess a) the value of information (eWOM usefulness and helpfulness) and b) eWOM credibility and trustworthiness to protect themselves from deception. In evaluation stage, the enhanced volume is not only the beneficial reflection of popularity but also can be considered distress. Previous studies agreed that positive review yields positive attitude towards product or service and negative review brings negative effects on product evaluation. Often, they are confronted with dispersed ratings, and it enhances the evaluation of hedonic products. Moreover, variables related to the context of decision-making, for instance, product type, as well as review characteristics, such as review quality, are provided to have moderation effect between such links. Regarding dispersion, consumer-generated and marketer-generated sources are complementary for consumers. Consumer perceives consumer generated review being more influential than the market-generated source. In addition, the characteristic

of anonymity and deception was not studied link to the evaluation stage. The reason is that Baek et al. (2012) suggested that information search stage of consumer decision-making process is not only include searching behaviour itself, but also contain the process that consumer first filter information to reduce the amount information they would use to evaluate the product. Therefore, the process that consumer evaluates eWOM trustworthiness is concluded into information search stage in this study.

All of the characteristics are investigated by previous studies link to purchase decision. Both valence and intensity of valence are associated with purchase intention. Factors such as review quality and information relevance are proved influential in predicting eWOM credibility and acceptance that are in turn affect the purchase decision. eWOM dispersion could cause the problem of free-ride which means consumer were not necessarily conduct purchase on the same website they obtained information from.

It can be noticed that two of the other characteristics of eWOM were added to the discussion. Except the six characteristics that King et al. (2014) conclude, visual eWOM and eWOM media channel have been received scarce attention from researchers.

eWOM in web context tend to be more diverse regarding presentation format. The traditional word-of-mouth research has been focused on verbal communication, and this focus has been carried over to electronic word-of-mouth research (Ring et al., 2016). Online word-of-mouth information is digitalized and therefore the influence of textual features of eWOM on consumer decision-making are well documented (Cao et al., 2011; Fang et al., 2016; Korfiatis et al., 2012; Salehan & Kim, 2016). However, visual eWOM such as image and video eWOM have received insufficient attention from

researchers. Few recent studies provided evidence that images do speak louder than words (Cheng & Ho, 2015; Xu et al., 2015; Yang et al., 2017). According to framing theory, how people decide to process information is depended on the way the information is presented. In reality, most of the online reviews are accompanied by either textual information only or textual with visual cues. Further research can focus on the interaction effect of eWOM presentation format on the decision-making process. For example, how consumer process textual and visual information together when evaluating information and product. Also, Consumers tend to rely on easy-to-process information in the reviews when evaluating a product or service (Sparks & Browning, 2011). Xu et al., (2015) suggest that visual cues in the eWOM information are ‘distinctive, contextualized and facilitate information processing without added overload’, and therefore able to enhance information delivery. However, in the information-rich environment, when consumer already confront with millions of textual reviews, will video still be the best option for product reviews? Video reviews are often combined with explanations in the media, and it takes extra time and effort to process this information. In this case, adding peripheral cues to the review might not always be helpful. Furthermore, consumers are not able to respond to all the stimuli in an overland environment. According to selective attention theory (Treisman, 1969), people rely on heuristic cues and filter out information that is less relevant because of limited information process capacity (Maslowska et al., 2017). In this case, consumers might rely on the visual cues to filter out the information that they do not want to process further. In what circumstance and to what extend a video or image could speak louder than words are the research question that researcher should denote efforts to.

eWOM channel is another aspect that has been added to the discussion in addition to King et al. (2014)’s model. Litvin, Goldsmith, & Pan (2008) define eWOM

as “*all informal communication cations directed at consumers through Internet-based technology related to the usage or characteristics of particular goods and services, or their sellers*” (p.461). The definition stresses on the technology aspect of eWOM. In eWOM context, technology on the web-environment reduces the physical efforts of making a choice. However, channels such as e-commerce and m-commerce incorporated different capabilities (Maity & Dass, 2014a). In light of the rise of multi-channel shopping, which describes consumers’ use of different channels for completion of a particular purchase, consumer behaviour related to eWOM might also differ among channels. It is known that mobile channels add value to a consumer by providing personalized recommendations and related information based on his/her geographic location, personal preferences or search history (Xu, Teo, Tan, & Agarwal, 2009). For instance, review aggregators (e.g., Yelp) rank shops, restaurants, and hotels to prospective consumers based on previous consumers’ ratings. This kind of eWOM, where consumers access consumption experiences of other consumers or provide their own via a mobile device (e.g. through an app), can be characterized as mobile-based word-of-mouth or mobile eWOM (Okazaki, 2008; Wang et al., 2013). Mobile eWOM creates a new way of interaction for word-of-mouth production and consumption via mobile devices (Okazaki, 2008).

März et al. (2017) evidence that the technological heterogeneous nature of eWOM. The decision-making experience might be vary based on channel characteristics. Several researchers (e.g., Maity & Dass, 2014; Xu et al., 2015) have considered that the mobile context heterogeneous environment, since information presentation might differ among devices, operating system platforms, or service operators. For instance, consumers experience high media richness when they are scanning a large amount of eWOM information with the small size of the screen on the

mobile device. A previous study (Maity & Dass, 2014) studied the role of media richness of channels on channel choice and decision-making tasks and showed that consumers prefer undertaking complex decision-making tasks using PC channel (e-commerce) and traditional channel (in-store) and carry out simple decision-making tasks by using mobile channel. How consumer decision-making differs across the channel when eWOM is involved? Maity & Dass (2014)'s study also revealed that consumer's information search behaviour and post-purchase evaluation is different in various channels. Consumers prefer to conduct more information searches by using PC, and in-store channel generated most satisfaction experience. Numerous business now has extended their service to mobile channel (for example, Amazon mobile app) and allow consumers seek information without restraints of time. The apps are also able to provide personalized recommendations based on consumers' location, personal preferences and search history (Bruner II & Kumar, 2007). In providing these tools, information seeking practices are easier for consumers and can reduce cognitive cost, how are the trade-offs of mobile eWOM affect consumer decision-making journey is what is yet to be investigated. Therefore, eWOM characteristics in mobile contexts should be differentiated from those in general online environments and future studies of eWOM should also be extended in mobile contexts. With consumer increasingly rely on the portable devices such as mobile phones and tablets, the consumer decision-making experience in the portable eWOM channel should be one of the directions of future research. Further research could focus on exploring consumer's decision-making process satisfaction in various media channels

In addition, the eWOM characteristic of community engagement has not been fully investigated about how it can be influenced in each stage of decision-making. eWOM platforms enable consumers to form communities without geographically bond

which used to discuss product and service, as well as how to better use the product or service. Consumers involved in the community can be both sender and receiver of eWOM information. The community provides the consumer with the feeling of belonging compare to other external sources. The consumer would be more easily inspired or influenced by members of the same community for a product recommendation. Future research can explore the role of community engagement in consumer's information adoption behaviour as a receiver. Another direction could be how community engagement affects consumer's need recognition and product evaluation.

2.6 Conclusion

This paper reviews 113 empirical studies published between 2007 and 2017, concerning the impact of eWOM as the outcome of eWOM evolution, on consumer decision-making journey. The findings are discussed and interpreted with reference to six eWOM characteristics proposed by King et al. (2014) and Engle, Kollat and Blackwell's consumer decision-making model. The findings suggest that the literature captures how the phenomenon evolve concerning the impact eWOM characteristics on the consumer decision-making journey. However, there are still areas to explore. The findings highlight the discrepancies in the rich but fragment literature and make a chart for the future research. As word-of-mouth continues to evolve, future research could draw on the gaps and provide a better understanding towards the knowledge of how consumer utilize online word-of-mouth for the purchase decision-making.

Phase II

Empirical Research Phase

Chapter Three

Should Electronic Word-of-mouth (eWOM) be affective or cognitive? The Moderating Role of Visual Content

3.1 Introduction

In this chapter, an empirical study is presented. The study demonstrates the phenomenon that electronic word-of-mouth (e.g. online product reviews) in web context tend to be more diverse regarding the communication medium - presentation format. As one of the newly emerged aspect of electronic word-of-mouth communication, visual eWOM has been overlooked in the literature as precious research tend to focus on the textual properties (as discussed in Chapter 2). This study takes the initiative in this direction by investigating the interactive effect of psychological properties and visual contents in the online review. More specifically, the current study chooses to focus on how consumers evaluate eWOM value based on the psychological properties that embedded in the online reviews, and how visual content, as more vivid presentations in the online reviews, influence these judgement of the information.

As the proliferation of information and communication technologies, millions of reviews are available on certain platforms (e.g. Tripadvisor). The popularity of review aggregators has resulted in millions of crowd-sourced reviews, which are used by consumers to assist in decision-making. Confronting with millions of reviews, consumers have the urge to utilize the information processing by reducing the amount of information they would adopt (Baek, Ahn, & Choi, 2012). In fact, consumers often require only a small set of useful reviews when they are exposed to a plethora of information online (Yin, Bond, & Zhang, 2014). For this purpose, vendors started to identify and display the 'helpful review' voting mechanism to their platform. This mechanism is normally being executed by asking "Was this review helpful to you?" (e.g. Amazon) and by clicking "thumb up" or "thank the review publisher" (e.g. Tripadvisor). More recently, the reviews published in the review aggregator, Yelp, can

not only be recognised as useful but also as other entertainment values. For example, the users can also vote the review they read as a "funny" or "cool". Such a mechanism makes the website more user-friendly and gains a strategic advantage in consumers' attention and stickiness (Connors, Mudambi, & Schuff, 2011). On the other hand, the reviews that are perceived to be helpful, are more influential to consumers who are seeking product information and therefore bring benefit to vendors and companies. For instance, Amazon.com's annual revenue increased \$2.7 billion by the year 2009 after the platform first appending the simple question "was the review helpful to you?" under the product reviews (Spool, 2009).

Despite the practical influence that the helpful reviews have, previous researchers also provide ample evidence on the theoretical understanding of helpful reviews. Studies in this stream focus on (a) how reviewer-related characteristics affect review helpfulness, for example, reviewer identity, reviewer expertise, and reviewer popularity are found to be influential, which announce that who is writing the review matters; and (b) how review-related characteristics, for example, the numeric rating and the content of the review, have an impact on review helpfulness. In the online communication environment, the social cues that typically can be observed in offline setting (e.g. face to face communication) are no longer visible, individual therefore tend to compensate the reduced social cues by placing the greater amount of focus to linguistic or textual cues in a computer-mediated communication context (Walther, 1992). Research focusing on review-related characteristics confirms this phenomenon by exposing the significant effect of review textual content on consumer decision-making and reveals the fact that the semantic content is even more influential than the quantitative factors, such as ratings, word count of the review (Cheung et al., 2009; Yap, Soetarto, & Sweeney, 2013).

In online reviews, it is not difficult to observe that consumers share their product/service related experience by referencing their feelings and thoughts. For example, some consumers comment on a restaurant they just visited by emphasising the emotional aspect with phrases such as: "I loved the food and place!!". While other consumers might provide rational appraisal towards their dining experience: "I think the price was very reasonable". The former type of content refers to affective content which expresses the feelings and the emotional responses of the sender towards their experience (Sweeney, Soutar, & Mazzarol, 2012). Whereas the latter one is known as cognitive content, which reflects the thought and rational thinking generated in producing the content, to some extent reflects the depth of the experience reappraisal in review context (Sweeney et al., 2012). A consumer might express his or her experience in an affective and/or cognitive way without awareness in the same review. However, when considering the perceived helpfulness of a review to other consumers, which type of review content (cognitive or affective) makes a review more helpful is the question that yet to answer.

Current research in this stream have explicated that emotion expressions, as affective contents in the online reviews, have an impact consumers' decision-making, especially on consumers' perception of review helpfulness (Ahmad & Laroche, 2015; Yang et al., 2017; Yin et al., 2014) and product evaluation (Kim & Gupta, 2012). Studies in this stream are based on the claim that individuals generally recognize emotional cues from the message they read, even they are processing at a relatively superficial level (Yin, Bond, et al., 2016). However, building on the previous research, this study suggests that, apart from the emotional content, the cognitive content in the review can also be detected by the review readers. In this study, it is argued that the cognitive content in the review which reflects the effort the review writer donate to

produce the review can also be the source of information that enhances the review value. Review depth, as an aspect of cognitive content, has been studied in the literature as one of the determinants of review helpfulness, in most of the case it is measured by review length (Salehan & Kim, 2016; Wu, 2013). However, if the numeric cue is sufficient enough to capture and represent the cognitive aspect of the message raises some doubts. To this end, this study chooses to assess the effect of psychological properties embedded in the online review on review helpfulness. Linguistic Analysis Software (LIWC) was employed to efficiently evaluate the psychological and structural components of our review samples.

Furthermore, this study also investigates the role of visual content in the context of the online review in addition to textual content. Visual content in this study is considered the condition under which these effects (of affective and cognitive content) are likely to take place. A substantial amount of attention has been paid to the textual feature of review content (e.g. Black & Kelley, 2009; Cao, Duan, & Gan, 2011; Fang et al., 2016; Korfiatis et al., 2012; Salehan & Kim, 2016). However, the majority feedback systems and review aggregators (for example, TripAdvisor.com, Yelp.com and Amazon.com) now allow consumers uploading pictures along with written comments. Few studies (e.g. Cheng & Ho, 2015; Xu, Chen, & Santhanam, 2015; Yang, Hlee, Lee, & Koo, 2017) have explored the effect of visual elements in the review and expose the fact that images do speaker louder than words. However, if images do speak louder than words, how consumers would process textual content differently when the visual contents presence/absence in the review? Moreover, to what extent the consumers recognize and are influenced by the affective and cognitive contents in the review under such a condition?

In order to answer the aforementioned research questions, this study proposes and tests a theoretical framework in which both affective and cognitive review content are hypothesised to foster review value (review helpfulness), and such effects are proposed to be contingent on the presence of visual content. By using data from more than 60,000 real online restaurant reviews from TripAdvisor, results show that both affective and cognitive contents, as well as the visual content in the review text, are positively associated with review helpfulness. Furthermore, the findings suggest that consumers value affective content more favourably when they are exposed to (more) visual content. Conversely, cognitive content is more influential on the helpfulness of the reviews when they are exposed to no (or less) visual content.

The findings of this study contribute to the theoretical understanding of online review helpfulness by empirically showing that, apart from a review's quantitative characteristics, psychological properties embodied in the review narratives are another dimension that can enhance review helpfulness. Moreover, the study explicitly examines the condition under which these psychological properties are more influential, to specifically when do consumers rely on affective content and cognitive content. The study shows that the effect of psychological properties on review helpfulness varies depending on the level of visual content exposed in the review. The findings guide theorists and practitioners on the understanding of consumers' online review processing pattern. Practitioners should firstly establish incentive mechanisms to encourage users to generate review content with the visual element, and secondly provide instructions to guide users producing more affective content along with visual content in the reviews, and more cognitive content if users prefer to create a text-only review..

3.2 Literature Review

3.2.1 Review Helpfulness

Review helpfulness refers to the perceived value of the review. It is a way to measure how a piece of online review (normally is user-generated content that evaluates the seller) is perceived by consumers to facilitate their purchase decision-making process (Mudambi & Schuff, 2010; Yin et al., 2014). In the decision-making process, consumers intent to utilize information processing by reducing the amount of information they need to go through (Baek et al., 2012b). In this case, helpful reviews can alter consumer's decision-making by improving the outcome of information search and product evaluation (Hong, Xu, Wang, & Fan, 2017).

By recognizing the value of the helpfulness review, the question 'what makes a review helpful' has received increasing attention in electronic word-of-mouth research and the scholars in this field have provided ample insights on the determinants of helpfulness reviews (Baek, Ahn, & Choi, 2012; Fang, Ye, Kucukusta, & Law, 2016;). Review helpfulness reflects the subjective valuation of the message by readers (Huang, Chen, Yen, & Tran, 2015). Because of the observability of online reviews, consumers are able to assess various components of online content to weight the information. Research in this stream can be categorised into two categories: (a) studies investigate the impact of reviewer-related characteristics, and (b) studies focus on how review-related characteristics affect review helpfulness. Studies investigating reviewer-related characteristics point out that who is writing the review matters. Reviewer characteristics such as reviewers identity exposure (Baek et al., 2012; Z. Liu & Park, 2015; Racherla & Friske, 2012), expertise (Li, Huang, Tan, & Wei, 2013b; Racherla & Friske, 2012),

popularity (Cheng & Ho, 2015) and rating distribution (Fang et al., 2016) are all proved to have impact on review helpfulness. The second research stream has been looking into the review-related characteristic. For example, ratings. For each review, there is an assigned numerical rating, normally ranged from one to five stars. Online review valence which is represented by numerical rating received adequate attention in the online review research, and the findings on its effect have been equivocal (King et al., 2014). Some researchers found that ratings are positively associate with review value (Chua & Banerjee, 2016; Filieri, 2015; Lis, 2013; Z. Liu & Park, 2015; Utz et al., 2012). While other researchers provided contradictory evidence that consumer perceives negative reviews to be more valuable (e.g. Casaló, Flavián, Guinalú, & Ekinci, 2015; Chen & Lurie, 2013; Lee, Jeong, & Lee, 2017). These studies which found the reverse effect of review ratings revealed the phenomenon of 'negativity bias' in the online review environment, where negative rating reviews tend to have received more votes as helpful reviews. The basic psychological tenet of negativity bias is that people pay more attention to things of a negative nature than the ones with positive nature, and the negative things, in turn, have a greater effect on people's behaviour and cognition (Lewicka et al., 1992; Rozin & Royzman, 2001). However, Wu (2013)'s study examines the problem of negativity bias with data from both online reviews and experiment settings and found that negativity bias does not exist when the information quality is controlled. Park & Nicolau (2015) explain that the reason why previous researches conclude inconsistent results is due to the non linear (U-shape) curve relationship between review valence (rating) and review usefulness. In fact, the consumer finds extreme ratings (implies both negative and positive ratings) helpful compared to moderate ratings (Mudambi & Schuff, 2010) and the reviews include both pros and cons are perceived to be more persuasive (Schlosser, 2011).

However, the quantitative aspects of the review (for instance, review rating) are not able to sufficiently capture those semantic characteristics expressed in the review content. Apart from the quantitative aspects of the online reviews, review helpfulness may also depend on the review semantic content, for example, how the review is formulated/framed (Cheung et al., 2009; Yap et al., 2013), how easy a review can be understood which is known as readability (Korfiatis et al., 2012), or the extensiveness (Racherla & Friske, 2012) and abstractness (Li et al., 2013) of the review. Grounded on the previous review helpfulness literature, this study intends to extend the understanding of the composition of helpful reviews by focusing on the psychological properties embedded in the online review.

3.2.2 Psychological Properties in Online Reviews: Affective and Cognitive Content

The current study chooses to focus on the psychological properties embedded in the review, namely affective and cognitive content. The role of affect and cognition has long been recognized in persuasion literature. Researchers in social psychology have been trying to understand the role of affective and cognitive component in attitude formation. Affective-based attitude formation is typically contrasted with cognitive contents of attitude, however, the distinction between affective and cognitive component of attitude has always been a debate. For example, Ajzen & Fishbein (1977) influential model, affective component of attitude is post-cognitive which is derived evaluation. On the other side, (Lazarus, 1984; Zajonc, 1980, 1984) argued that affect and cognition are separate processes and partially independent.

Despite the long debate of affective-based and cognitive-based approach in attitude formation, the distinctions between the attitude content are well accepted.

Affective content includes “*emotions, feelings, or drives associated with an attitude object*”, whereas the cognitive content is related to *beliefs, judgments, or thoughts associated with an attitude object*” (McGuire, 1969; p68). Researchers such as Edwards (1990), Fabrigar & Petty (1999) and Haddock, Maio, Arnold, & Huskinson (2008) validated the noticeable discrepancy between affective and cognitive content in fostering persuasive message. In the online review context, it is not difficult to observe that consumers share their product/service related experience with the reference of affective and cognitive content of attitude. For example, in the restaurant review page, you might have crossed the following review: “I loved the food and place!!”. In this particular review, the consumer is expressing the positive feelings and emotions towards the experience. While other consumers might stress more on the rational aspect of the experience, for instance, “I think the price was very reasonable”. There is empirical evidence in the literature support the association between affective content and review helpfulness. For example, by using text mining approach, Cao et al. (2011) validated the prestige of emotion embodied in the review by showing that the semantic characteristics are more influential than other characteristics in affecting how many helpfulness votes reviews receive. Furthermore, previous research also showed that emotional components such as negative emotions (J. Kim & Gupta, 2012; Yin et al., 2014) and intensity of emotional arousal (Ahmad & Laroche, 2015; Yin et al., 2014) affect perceived review helpfulness by analyzing online data.

In addition to the evidence provided by content analysis of online reviews, Yin, Bond, & Zhang (2014) also conducted a series of lab experiments to examine the underlying mechanism further. The studies revealed that the review reader, considers reviewer is devoting less effort when their emotional intensities are high (e.g. when the consumer is angry), that is when they are writing extremely negative or positive

reviews. Lee et al. (2017)'s study also confirmed this finding by using online hotel review data from TripAdvisor, the result points out that intensive negative emotions exposed in the review remedy the positive effect of review helpfulness. Nevertheless, despite the investigation of the cognitive response (e.g. the attributed effort aforementioned that evoked by emotional content in the review), the cognitive content of the review has received limited attention.

Sweeney, Soutar, and Mazzarol (2012)'s study conceptualized word of mouth communication by referencing previous literature (Harrison-Walker, 2001; Mazzarol, Sweeney, & Soutar, 2007) and Aristotle's discussion of rhetorical theory. The study suggested three characters of word-of-mouth content: *“first, favourableness or valence; second, an emotional aspect reflecting emotion or enthusiasm; and third, a cognitive aspect related to the details of what is said”* Soutar, and Mazzarol, 2012, p239). The particular study validated three dimensions of word-of-mouth communication, namely: cognitive content, emotive content and strength of delivery Therefore, in addition to the emotional aspect, the cognitive aspect related to the details of the information is another vital component that composites word of mouth message. However, the impact of *“logical characteristics”* in the review content has not been adequately studied in the literature (Hong et al., 2017, p23). Therefore, building upon Sweeney et al. (2012)'s study, this study intends to investigate two types of psychological properties in the review narratives, namely affective and cognitive contents, and its impact on review helpfulness. Following Sweeney, Soutar, & Mazzarol (2012), in the current study, affective content is conceptualized as the expression of the feelings and the emotional responses of the sender whereas cognitive content is defined as the details of what is said and reflects the in-depth reappraisal of the purchase experience. Review depth has been studied in the literature as one of the determinants of review helpfulness, in most of

the cases, it is measured by review length (Salehan and Kim, 2016; Wu, 2013).

However, the numeric cue is not sufficient to capture and represent the cognitive aspect of the message.

3.2.3 Visual Content in Online Reviews

The research on online reviews has been centred on verbal communication. Substantial research has been conducted with regard to the textual features of the review content, such as basic textual characteristics (Cao et al., 2011), if the review is well written with details (Black & Kelley, 2009) and temporal cues (Chen & Lurie, 2013) in the text. However, besides the textual content of online reviews, a considerable amount of online reviews now contains images. Few studies have explored the value of image-based reviews and exposed the substantive effect of the visual element on review helpfulness. For example, Cheng & Ho (2015)'s study provided evidence that images speak louder than words. Their study concluded that the number of images included in the review is associated with the practical value of the review because consumer considers images included in the review as the additional information and source of argument quality that can help with choice making. In the same vine, Xu et al. (2015) explicitly investigated the effects of presentation format of online reviews by comparing each of the format (text, image and video) in an experimental setting. The research confirms the substantive and nuanced impact of presentation format of online reviews have on consumer's perception in information evaluation and purchase intention. Compared to textual reviews, visual content such as image and video are relatively more realistic, which provide more vivid evidence. The results thus, provide strong evidence that reviews in visual are perceived to be more credible, persuasive and helpful than text reviews, and these factors are in turn positively associated with purchase intention.

Furthermore, Xu et al., (2015)'s study revealed that consumer reply on the visual element in the review more when they are shopping for experience products online due to the need for the sensory and vicarious feel of the experience attributes through concrete and vivid information in the review. More recently, Yang et al. (2017) conducted a study in the restaurant context and generated similar results regarding how imagery format reviews enhance perceived review value, as well as enjoyment. The study adopts dual coding theory, and argue that pictures are encoded in both memory stores (verbal and non-verbal), and therefore can be remembered better than textual reviews.

3.3 Theoretical Framework and Hypotheses

The study develops a conceptual framework where both affective and cognitive contents increase review helpfulness and the effects vary depending on the presence/absence of visual contents. The model is presented in Figure 3.1.

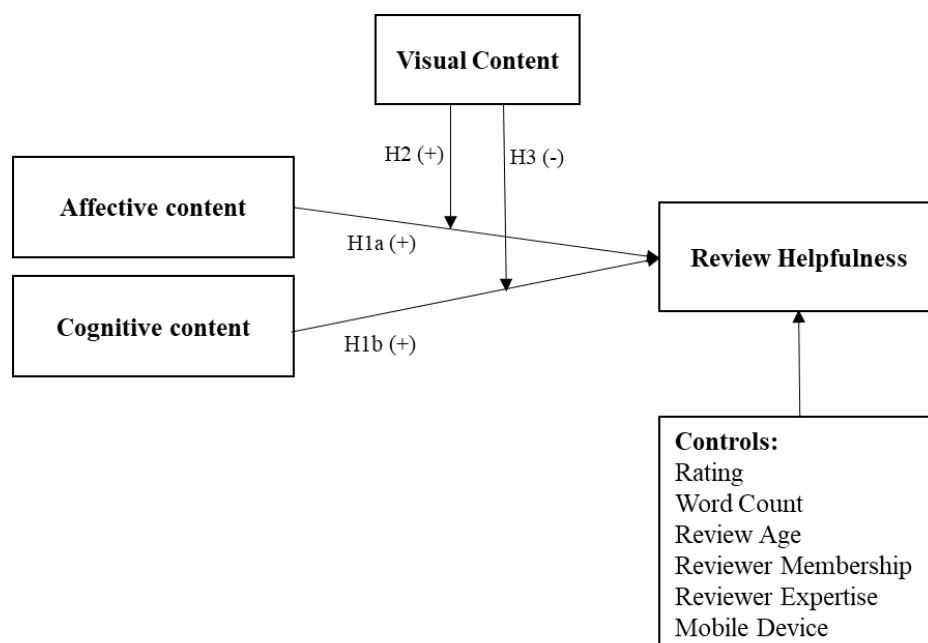


Figure 3.1: Theoretical Framework

3.3.1 Psychological Properties and Review Helpfulness

3.3.1.1 Affective Content in the Review

The term 'affect' refers to an "internal feeling state" which can be experienced by the individual (Cohen, Pham, & Andrade, 2008, p. 279; Van Kleef, 2010). However, when individuals are experiencing a certain feeling state, they may expose their feelings with or without their awareness. For example, people may unconsciously express their feeling through their facial expression or bodily; or they may purposefully express their feelings towards an object to influence others. Regardless of why and how, others observe individual express emotions, emotional expressions. There is ample evidence in the literature showing that individuals identify emotional cues in facial and bodily expression (Atkinson et al. 2004; Ekman and Friesen 1971), as well as verbal communication (Scherer, Feldstein, Bond, & Rosenthal, 1985).

In verbal communication, emotions expression is often reflected by the choice of words (Scherer et al., 1985). When consumers express emotions toward their purchase experience in the online review, the written review varies depending on whether the emotion is positive or negative, and the emotion certainty is high (e.g. anger) or low (e.g. anxiety). Previous research on the language of emotion reveals that readers recognize the discrete emotions in the written information and they can easily distinguish written-embedded emotions (Barrett et al. 2007; Lindquist et al. 2006). According to Emotions as Social Information (EASI) model, emotion expression (for example, feelings, desires, motives and intentions) can be considered a source of social information to disambiguate social interaction (Van Kleef, 2010). By observing others' emotions reflecting their needs, desires and intentions, individuals are able to acquire information and successfully navigate social interaction. In the online review context,

people are interacting with users that they are not familiar with (that are people with weak social ties). Therefore, accessing emotional cues can be helpful for them to disambiguate the social situation. The affective contents in a written online review carries the emotional response of customer's experience (for example, whether they are satisfied with their purchase) and expose their intentions (Ludwig et al., 2013), therefore they act as the source of social information that enhances the informative value of the message and increases perceived review helpfulness.

3.3.1.2 Cognitive Content in the Review

Consumers seek online reviews in order to reduce perceived risk before actual purchase. They observe the emotional attitude of their peers (e.g. whether they like the product) and the observation evokes effective response (e.g. whether they are going to like the product) (Van Kleef, 2010). However, consumers often mention the product details/attributions or describe the experience itself, which denotes to the cognitive content of the review. Sweeney, Soutar, and Mazzarol (2012) conceptualized the word-of-mouth communication and validated the cognitive dimension of the word-of-mouth message. Cognitive content in online reviews is the core of the message and it relates to what is said in detail (Sweeney, Soutar, and Mazzarol, 2012).

According to information processing theory, individuals proactively process the information or the message they are given and the effective persuasion is based on the argument comprehensiveness (McGuire, 1969). In the domain of online review research, there is evidence supporting that cognitive content in the review, results in a more favourable attitude. For example, previous literature revealed that reviews that are written in-depth (Mudambi & Schuff, 2010), with concrete contents (Li et al., 2013b), more comprehensive and specific (Chua & Banerjee, 2016) and more extensive

(Racherla & Friske, 2012) are more influential in decision-making. Furthermore, in an environment where word-of-mouth has become the most trustworthy source, consumers attempt to get additional product information in online reviews to assist their decision-making. Cognitive fit theory (Vessey, 1991) advocates that the correspondence between task and information processing mode is able to enhance task performance. Reviews that contain product attribute details (attribute-centric reviews) can enhance information processing performance by providing consumer cognitive content (detailed product or service information in the review) (Park & Kim, 2008). Therefore, along with this reasoning, we propose that:

H1a: Affective content in the review is positively associated with review helpfulness.

H1b: Cognitive content in the reviews is positively associated with review helpfulness.

3.3.2 The Moderating Role of Visual Content

In addition to textual content, it is not difficult to observe that consumers also provide images in online reviews. There is a general consensus in online review literature which images do speak louder than words. Because images in the review enrich the message by increasing practical value, providing additional information and argument quality (Cheng & Ho, 2015). Furthermore, visual contents, in general, are more realistic, provide more vivid evidence and can be better remembered compare to textual contents (Xu et al., 2015). However, except the substantive effect of visual content *per se*, the interaction effect of visual content and textual content on review helpfulness has been overlooked. Framing theory suggests that the way the information

is presented to the audience influences the choices people make about how to process that information. In the case of an online review, if the visual contents in a review are perceived to be more persuasive and helpful than textual content (Xu et al., 2015), how consumers would process textual content differently when the visual contents presence or absence in the review?

Previous literature in online review research explains the effect of visual content with regard to the Elaboration Likelihood Model (ELM). For example, Cheng & Ho (2015) consider visual contents in the review, reflect argument quality and therefore can be considered the central route. Similarly, Yang et al. (2017) conduct their study within restaurant online review context and indicate that consumers post the photos of food or physical environment to support their textual argument in the reviews. Following the previous literature, we firstly argue that visual contents are cognitive in nature, and therefore can be considered substitutes of cognitive contents that improves review comprehensiveness. Subsequently, consumers focus more on affective content. Furthermore, ELM was employed to argue that visual contents are able to alter attitude change in information processing. We build our argument based on the circumstance that affective cues are particularly potent determinants of attitude change when the ability or motivation to process information is low (Petty & Cacioppo, 1986). As visual contents are more attractive and vivid (P. Xu et al., 2015), consumers are less motivated to process textual information, and in turn, are influenced more by affective contents.

Nonetheless, we expect the reverse effect when visual contents are absence. Compare to affective content that contains the emotional response of the customer, and cognitive content involves an effortful reappraisal of customer experience. Previous literature suggests that, compared to cognitive content that reveals more about service

and product attribution, emotional expression (especially extreme emotions) are more likely to be attributed to reviewer's own irrational dispositions and in turn negatively affect perceived value (Chen & Lurie, 2013). In other words, consumers make inferences about the review content that they read, and affective content of attitude is easily assigned to the personal factors rather than product or experience related factors. Moreover, the larger the role of personal factor plays in the review contribution, the less the value of the review is perceived to be (Chen & Lurie, 2013). Furthermore, according to (Yin et al., 2014), consumers also make inference about the cognitive effort that a review writer expends on constructing a review, and the perceived review helpfulness is positively associated with the perceived cognitive effort. Cognitive content in the review reflects the thought and rational thinking generated in producing the content (Sweeney et al., 2012). Therefore, we argue that when visual contents are absent, cognitive contents are more influential in determining review helpfulness. Consequently consumers rely more on cognitive content than the affective content when no visual content is available in the review. Thus, along with this reasoning, we propose as follows:

H2: The presence of visual content in the review increases the effect of affective content on review helpfulness to a greater extent than cognitive content.

H3: The absence of visual content in the review increases the effect of cognitive content on review helpfulness to a greater extent than affective content.

3.4 Research Methodology

3.4.1 Research Context and Data collection

In order to collect data, a script was developed and crawled the content online.

Real online restaurant reviews were collected from TripAdvisor and analysed on an individual basis. TripAdvisor is an early adopter of peer-generated content, which offers travel-related content, such as hotel and restaurant reviews, as well as displayed booking system. The platform to date (Nov 2018) exhibitions 702 million reviews and opinions that cover eight million restaurants, hotels, airlines and other business. The website is now the world's largest travel site, which provides its users '*the wisdom of the crowds to help them decide where to stay, how to fly, what to do and where to eat*' (TripAdvisor, 2018). According to the statistical data online, 82% of the participated consumer report that they are aware of TripAdvisor as a platform for restaurant reservations and recommendations; of which, 23% of them have already used the platform in decision-making and 16% of them are the regular user (Statistic,2016). In total, 62,423 customer reviews for the 100 most popular restaurants, based on TripAdvisor popularity index, in London were extracted for this study. Restaurant reviews were selected , instead of other types of business (e.g. healthcare, grocery store or auto service since the most common type of local business that consumers search for online reviews found to belong under the category of restaurant/café, according to a survey conducted by Statistic (2016) in the U.S. Reviews for the 100 most popular restaurants are chosen for two reasons. First, popular restaurants attract more customers, which lead to a greater amount of reviews. Second, customers are more motivated to generate content if the place they are visiting is popular. The website enables the collection of restaurant name, review date, review texts, images, ratings, helpfulness vote and reviewer profile information such as location, membership history and total contributions (number of reviews generated), as well as the 'via mobile' symbol which indicates if the review is posted through mobile device. Figure 3.2 provides a sample review from Tripadvisor.com that illustrates the variables extracted.

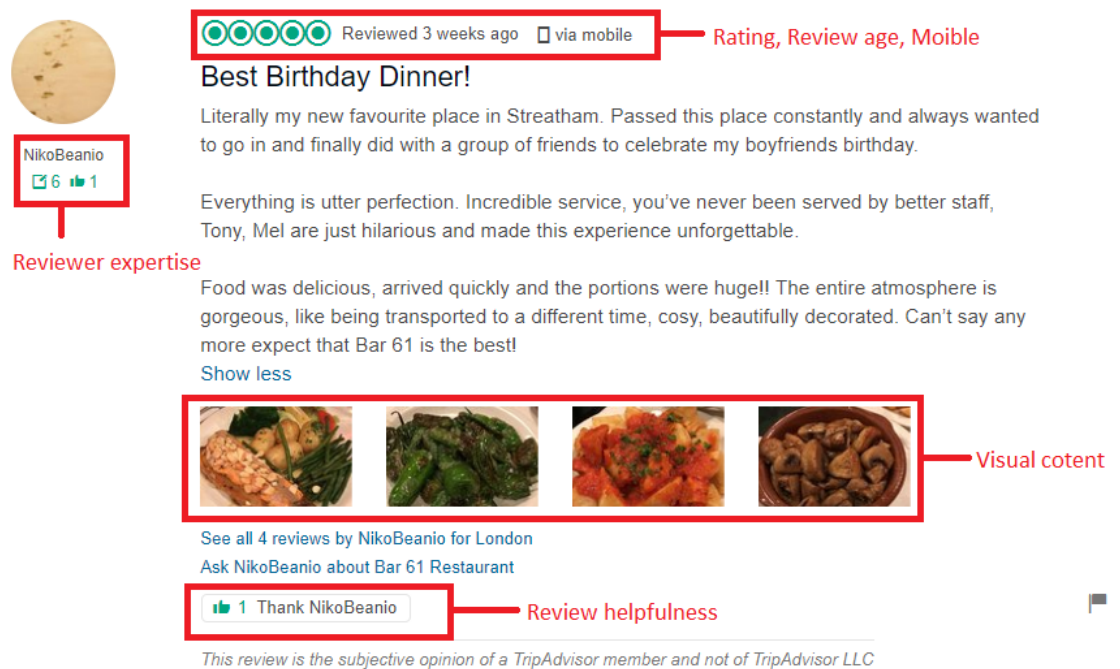


Figure 3.2: Sample Review from Tripadvisor.com

3.4.2 Conceptualization and Operationalization of Variables

3.4.2.1 Review Helpfulness

The dependent variable of interest in this study is the review helpfulness and was operationalised as the number of “*thank the reviewer*” votes for each review on the TripAdvisor website.

3.4.2.2 Psychological Properties and Visual Contents in the Review

Linguistic Inquiry and Word Count (LIWC) 2015 was used to measure the psychological properties (affective and cognitive content) of the review text. LIWC is designed to evaluate the psychological and structural components of text samples efficiently. The software package has been widely adopted in word-of-mouth research where its reliability and validity were extensively investigated (Pennebaker et al. 2007;

Pennebaker & Francis, 1996). The software package (LIWC) contains an internal dictionary displaying more than 4,000 words and word terms that have been psychometrically validated. The sample data with 62,423 customer reviews were submitted to LIWC, the package processes each word in the sample, one at a time. LIWC processes each word in our data sample and searches its internal dictionary. A specific category scale (e.g. positive emotion category) would be incremented if there is a match between word in our review sample and the word in its internal dictionary. At the end of this process, each word category generates a final score which is calculated based on the frequency of word match (percentage of words in the text sample matching that category). It is worth mentioning that, ‘the classification system includes categories tapping a variety of emotional dimensions, making it sensitive to differences among psychological properties. Affective content was measured as the percentage of expressions of positive and negative emotions (the mean score of positive and negative emotions), which has been employed in previous studies (e.g. (Ludwig et al., 2013; März et al., 2017; Yin et al., 2014). Cognitive content was measured as the mean score of sub-categories of causal and insights. The previous linguistic literature suggests that the use of causal and insight words describing past events can be considered an active process of reappraisal (Tausczik & Pennebaker, 2010).

Furthermore, visual content was measured in two ways: first, a dummy variable is created to indicate whether the review provides any visual content (images); second, following previous literature (S.-B. Yang et al., 2017), visual content is also measured by the number of images contained in the review.

3.4.2.3 Control Variables

Additional control variables to capture review and reviewer characteristics were

also included in the analysis and presented in Table 3.1. Review valence was operationalized as the rating submitted by the reviewer. The website uses a five-star rating. Reviewer expertise refers to the number of reviews that one reviewer contributed to the website since he/she became a member of the TripAdvisor website. The total number of contributions was collected when the real reviews were crawled. Furthermore, review age, reviewer membership and device choice were used as control variables for data analysis. Table 3.1 presents the operationalization of each variable used in the current study, as well as the relevant literature support.

3.5 Analysis and Results

3.5.1 Data Description

In total 62423 customer reviews were included in the data analysis. Word count of the review ranged from 1 character to 2198 characters. The majority of the reviews (91.6%) contain only textual narratives, whereas only 8.4% (5255) of the reviews include images along with narratives; of which, more than half (51%) of the reviews only contain one image. With regard to the device choice of review posting behaviour, 31.8% of the users posted reviews via mobile devices. Table 3.2 offers correlations and statistic descriptive of all the variables employed in the current study. It shows that all the variables are correlated at an acceptable level.

3.5.2 Model specification

Considering the nature of the dependent variable, Zero-inflated negative binomial regression was used to test the theoretical framework. This was done for two reasons: (a) the number of “*thanks vote*” was skewed toward zero (77% of reviews

collected received no compliments and 17% received only one compliment) possibly due to exposure inequalities, and (b) the variance (0.71) of the dependent variable exceeded the mean (0.37). Zero-inflated negative binomial regression models can jointly estimate a logistic regression with predictions of the probability for attracting zero compliments. Therefore, we modelled review helpfulness using negative binomial regression with robust standard errors. The model is specified as follows:

$$\begin{aligned} \text{Review Helpfulness} = & \beta_0 + \beta_1 \text{ Affective properties} + \beta_2 \text{ Cognitive properties} + \beta_3 \\ & \text{Rating} + \beta_4 \text{ Word Count} + \beta_5 \text{ Review Age} + \beta_6 \text{ Reviewer Membership} + \beta_7 \\ & \text{Reviewer Expertise} + \beta_8 \text{ Mobile} + \beta_8 \text{ Visual Content (Dummy)} + \varepsilon \end{aligned}$$

(Model 1)

$$\begin{aligned} \text{Review Helpfulness} = & \beta_0 + \beta_1 \text{ Affective properties} + \beta_2 \text{ Cognitive properties} + \beta_3 \\ & \text{Rating} + \beta_4 \text{ Word Count} + \beta_5 \text{ Review Age} + \beta_6 \text{ Reviewer Membership} + \beta_7 \\ & \text{Reviewer Expertise} + \beta_8 \text{ Mobile} + \varepsilon \end{aligned}$$

(Model 2/3)

$$\begin{aligned} \text{Review Helpfulness} = & \beta_0 + \beta_1 \text{ Affective properties} + \beta_2 \text{ Cognitive properties} + \beta_3 \\ & \text{Visual content (Continuous)} + \beta_4 \text{ Rating} + \beta_5 \text{ Word Count} + \beta_6 \text{ Review Age} + \beta_7 \\ & \text{Reviewer Membership} + \beta_8 \text{ Reviewer Expertise} + \beta_9 \text{ Mobile} + \varepsilon \end{aligned}$$

(Model 4)

$$\begin{aligned} \text{Review Helpfulness} = & \beta_0 + \beta_1 \text{ Affective properties} + \beta_2 \text{ Cognitive properties} + \beta_3 \\ & \text{Visual content (Continuous)} + \beta_4 \text{ Affective properties} * \text{Visual content} + \beta_5 \text{ Cognitive} \\ & \text{properties} * \text{Visual content} + \beta_6 \text{ Rating} + \beta_7 \text{ Word Count} + \beta_8 \text{ Review Age} + \beta_9 \\ & \text{Reviewer Membership} + \beta_{10} \text{ Reviewer Expertise} + \beta_{11} \text{ Mobile} + \varepsilon \end{aligned}$$

(Model 5)

3.5.3 Results

Model 1 is specified to test hypothesis 1a and 1b. Results of Model 1 (Table 3.3) confirmed the main effects of psychological properties in the review (both affective contents and cognitive contents) on review helpfulness. The results suggest that if the review content contains more affective contents, the review is more likely ($\beta=0.011$, $p<0.001$) to be voted as helpful. Likewise, the cognitive contents in the review are also able to increase ($\beta=0.020$, $p<0.001$) review helpfulness. Thus, both hypotheses 1a and 1b are supported, indicating that both affective and cognitive contents are contributing to review value. Moreover, visual content in this model is operationalized as a dummy variable (to indicate whether the review contains visual contents, visual content = 1 if the review does contain the image, otherwise visual content = 0) and included in the model as a control variable. Results in model 1 confirm the substantive effect of visual content on review helpfulness by showing that reviews provide visual content are more likely ($\beta=0.070$, $p<0.05$) to get helpfulness vote, compared to reviews not including any visual content. It shows the initial evidence that visual contents enhance review value.

In order to directly test the hypothesis 2 and 3, we divide our data into two subsamples based on whether the review includes visuals. We test the specified model 2/3 with two data sets prospectively to compare the effect size of affective content and cognitive content in each condition. It is hypothesized in this study that the effect of affective content on review helpfulness is stronger than cognitive content when the visual contents present (H2).

Table 3. 1: Operationalization of Variables and Control

Variables	Definition	Operationalization	Support from Literature
Review helpfulness	Perceived review value	The number of ‘thank the reviewer’ vote generated.	Fang, Ye, Kucukusta, & Law (2016); Yin, Bond, & Zhang (2014)
Affective Content	Affective property in a review includes all feelings and responses, positive or negative, related to emotion, knowledge, or beliefs.	The score obtained from LIWC2015 results (based on the frequencies of words in the review matching the supplied dictionary, e.g., nice, happy)	Lurie, Ransbotham, & Liu (2014); Marz, Schubach, & Schumann (2017)
Cognitive Content	Cognitive property in a review reflects the effort of producing a review and the depth of the event reappraisal.	The score obtained from LIWC2015 results (based on the frequencies of words in the review matching the supplied dictionary, e.g., think, consider)	Tausczik & Pennebaker (2010)
Visual Content	Whether a review contains the image in the review).	The number of images contained in the review.	Yang, Hlee, Lee, & Koo (2017)
Control Variables			
Rating	The star rating (1-5) given by the user of tripadvisor.com.		
Word Count	Review length obtained from LIWC2015 word count results.		
Review Age	The number of days between publication and collection date.		
Reviewer Membership	The year difference between the year that a user registered as membership and the current year (2017).		
Reviewer Expertise	The number of total previous reviews posted by a user.		
Mobile	Dummy variable that indicates if the review is published via mobile.		

Table 3. 2: Correlations and Statistic Descriptive (N = 62423)

Variables	1	2	3	4	5	6	7	8	9	10
1. Review Helpfulness	1									
2. Affective Content	-.033**	1								
3. Cognitive Content	.015**	-.080**	1							
4. Visual Content	-0.005	0.002	-.037**	1						
5. Rating	-.122**	.237**	-.025**	.068**	1					
6. Word Count	.109**	-.380**	.054**	.038**	-.223**	1				
7. Review Age	.088**	-.074**	.014**	-.098**	-.049**	.098**	1			
8. Reviewer Membership	-0.001	-.116**	.025**	-.055**	-.067**	.118**	.370**	1		
9. Reviewer Expertise	-.070**	-.165**	.020**	.019**	-.093**	.114**	.128**	.468**	1	
10. Mobile	-.010**	.119**	-.035**	.184**	.039**	-.142**	-.294**	-.241**	-.128**	1
Minimum	0	0.00	0.00	0	1	1	12	0.5	1	0
Maximum	33	50.00	15.91	1	5	2198	3506	15.0	993	1
Mean	0.37	4.358	1.036	0.08	4.32	83.85	735.93	5.307	65.95	0.32
Std. Deviation	0.908	2.431	1.099	0.278	0.944	70.821	546.427	3.024	101.793	0.466

** . Correlation is significant at the 0.01 level (2-tailed).

The results of model 2 show that the presence of image enhances the effect of affective contents and decrease the effect of cognitive contents on review helpfulness. Consistent with hypothesis 2, when visual contents are presented in the review, affective contents have an effect ($\beta=0.051$, $p<0.001$) on review helpfulness, whereas cognitive contents ($\beta=0.005$, $p>0.05$) does not show a significant result. Therefore, Hypotheses 2 is supported by the fact that affective content is more influential in the condition that visual contents present. Moreover, the results from model 3 indicate that, when the visual contents are absent in the review, cognitive contents significantly influence review helpfulness, and affective content becomes insignificant. Thus, Hypotheses 3 is supported. Furthermore, we measure visual content as a continuous variable (model 4 and model 5 in Table 3.4) to examine whether a similar pattern in the results is obtained. . Following (Yang et al., 2017)), visual contents were measured by the number of images contained in the review. A consistent result was obtained. Firstly, the results in model 4 also show that both affective content ($\beta=0.011$, $p<0.001$) and cognitive contents ($\beta=0.021$, $p<0.001$) are able to increase review helpfulness, which confirmed the results in model 1 provide wider support for H1.

Table 3. 3: Regression Results

Dependent Variable Review Helpfulness	Model 1 (<i>N</i> =62423)		Model 2 Presence of Visual Content (<i>N</i> =5525)		Model 3 Absence of Visual Content (<i>N</i> =57168)	
	<i>Coefficient</i>	<i>SE</i>	<i>Coefficient</i>	<i>SE</i>	<i>Coefficient</i>	<i>SE</i>
Independent Variables						
Affective Content	0.011**	0.004	0.051***	0.013	0.007	0.004
Cognitive Content	0.020**	0.008	-0.005	0.032	0.023**	0.008
Control Variables						
Rating	-0.173***	0.009	0.0153	0.041	-0.180***	0.009
Word Count	0.002***	0.000	0.002***	0.000	0.002***	0.000
Review Age	0.275***	0.011	0.258***	0.036	0.278***	0.011
Reviewer Membership	-0.033*	0.015	-0.060	0.046	-0.032*	0.016
Reviewer Expertise	-0.122***	0.006	-0.096***	0.021	-0.123***	0.006
Mobile	0.105***	0.020	0.032	0.067	0.108***	0.021
Visual Content	0.070*	0.032				
Model Fit Statistics						
Log-Likelihood		-96,685		-8,021		-6,079
Pseudo – R^2 (McFadden)		0.024		0.0171		0.0281

*Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$*

Table 3. 4: Regression Results (Visual content as continuous variable)

	Model 4 (N=62423)		Model 5 (N=62423)	
	<i>Coefficient</i>	<i>SE</i>	<i>Coefficient</i>	<i>SE</i>
Independent Variables				
Constant	-1.899***	0.081	-1.909***	0.081
Affective Content	0.011***	0.004	0.011***	0.004
Cognitive Content	0.021***	0.008	0.020**	0.008
Visual Content	0.048***	0.014	0.049***	0.014
Interaction effects				
Affective Content × Visual Content			0.020***	0.006
Cognitive Content × Visual Content			-0.031*	0.015
Control Variables				
Rating	-0.174***	0.009	-0.173***	0.009
Word Count	0.002***	0.0001	0.002***	0.0001
Review Age	0.276***	0.011	0.277***	0.011
Reviewer membership	-0.033**	0.015	-0.034**	0.015
Reviewer Expertise	-0.123***	0.006	-0.123***	0.006
Mobile	0.103***	0.020	0.100***	0.020
Model Fit Statistics				
Log-Likelihood		-96,678		-96,663
Pseudo - R^2 (McFadden)		0.024		0.024

Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Moreover, the results show that while the number of images in the review increase, the review is more likely to be voted as a helpful review ($\beta=0.048$, $p<0.001$). Secondly, regarding the proposed moderating effects (H2 and H3), results in Model 5 show that the number of visual cues positively moderate ($\beta=0.020$, $p<0.001$) the effect of affective content on review helpfulness, and negatively moderate ($\beta=-0.031$, $p<0.05$) the cognitive content and review helpfulness relationship. It implies that affective content is more influential in determining review value when a review comprises relative more imagery content. On the other hand, consumers rely more on cognitive content in evaluating review when it contains very few or no visual contents. Table 3.5 summarizes the results with corresponding hypotheses proposed in this study.

Table 3.5: Hypotheses and Results

Hypotheses	Results
H1a: Affective content in the review is positively associated with review helpfulness.	<i>Supported</i>
H1b: cognitive content in the reviews is positively associated with review helpfulness.	<i>Supported</i>
H2: The presence of visual content in the review increases the effect of affective content on review helpfulness to a greater extent than cognitive content.	<i>Supported</i>
H3: The absence of visual content in the review increases the effect of cognitive content on review helpfulness to a greater extent than affective content.	<i>Supported</i>

3.6 General Discussion

The advances in communication technologies have resulted in online information proliferation. Millions of online reviews have developed intangible assets for the company which not only indicate popularity, customer satisfaction, but also service quality of the firm. How to manage online reviews has become increasingly critical to marketers and the focus of the research in this stream. Prior research focuses solely on numerical (e.g. rating) and textual properties (e.g. text readability) of the online review, while this study attempt to investigate the impact of psychological properties (e.g. affective content and cognitive content) on review helpfulness. Furthermore, the current research sheds light on the critical role of visual content in the review by empirically showing that affective content is more influential than cognitive content when the visual contents exist.

3.7 Theoretical Implications

The findings contribute to a theoretical understanding of online review helpfulness by empirically showing that apart from quantitative characteristics of the review, psychological properties embodied in the review content also contribute to review helpfulness. Previous literature provides evidence on the direct impact of emotion regarding both valences such as emotional arousal (Yin et al, 2014) and negative emotions (Yin et al, 2014) on review helpfulness. The findings of the current study confirm the significant effect of effective content, represented by positive emotion and negative emotion, on review evaluation and corroborate previous research regarding these well-established relationships.

Furthermore, the current study also considers the cognitive aspect of the review

content. Unlike affective content, that expresses feelings and the emotional responses of the sender, cognitive content represents the logical appeal of the message and reflects the sender's depth of thinking (Sweeney, Soutar, & Mazzarol, 2012). Building upon linguistic research, we argue that cognitive content in the review embraces causal and insight words which can exemplify the 'active process of reappraisal' of consumer's purchase experience (Tausczik & Pennebaker, 2010). The findings of this study point out that cognitive content as 'the core of the message' can enhance review helpfulness along with affective content. The findings are consistent with previous studies indicating that the cognitive factors (for example, richer descriptions) in the review have stronger effect on review helpfulness (López & Farzan, 2015; Yang et al., 2017), as well as other evidence from previous research that demonstrates the cognitive aspect of the online review. For example, reviews that are written in-depth (Mudambi & Schuff, 2010), with concrete contents (Li et al., 2013), more comprehensive and specific (Chua & Banerjee, 2016) and more extensive (Racherla & Friske, 2012) are perceived to be more useful and more influential in decision-making.

The findings of the current study suggest that both affective content and cognitive content increase review helpfulness, which is also in line with previous persuasion literature. In persuasion literature, affective content and cognitive content are allocated to the Elaboration Likelihood Model (ELM) to explain their effects on forming an attitude, which is achieving persuasion. Cognitive cues involve an effortful reappraisal of the experience, is therefore treated as central cues which can activate the rational dimension of consumer decision making; whereas affective cues contain emotional response is considered peripheral cues. Both central and peripheral routes lead to attitude change in a way that cognitive content reflects the rational aspect of the message and activate logical thinking; and affective content triggers affective

responses, which in turn influence consumer behaviour (Pappas, Kourouthanassis, Giannakos, & Chrissikopoulos, 2016).

This study also investigates the role of visual content in the context of the online review. Consistent with the previous studies that examine imagery elements of the review, the initial results of the current study firstly confirm that visual contents positively associated with review helpfulness (Lin, Lu, & Wu, 2012; P. Xu et al., 2015; S.-B. Yang et al., 2017). On top of the main effect of visual content (which was not directly hypothesized), this study further explores the conditions under which affective and cognitive content are likely to be more dominant in determining review helpfulness. The results suggest that consumers value affective contents more favourably when they are exposed to (more) visual content. Conversely, cognitive content is more influential on the helpfulness of the reviews when they are exposed to no (or less) visual content. The findings can also be explained in a way that affective content in the review to some extent boost the effect of visual content on review helpfulness. In other words, building on the fact that 'images speak louder', our findings provide insight into the boundary condition of visual effect, which is 'when do images speak louder' in online review context.

Previous literature on advertising have investigated the role of imagery information in print ads, suggest that pictures used in print advertising can be identified as either central cue (of Elaboration Likelihood Model) as an additional argument and as peripheral cue (Miniard, Bhatla, Lord, Dickson, & Unnava, 1991). In the context of this study, we use real online restaurant reviews as a data sample. In online restaurant reviews, consumers often uploaded images of food and restaurant physical environment (S.-B. Yang et al., 2017), so that potential consumers can get information that is related

to their decisions from the image. Thus, visual content in the review can be considered additional argument or information which add weight to central cues (Edens & McCormick, 2000).

Furthermore, according to Edwards (1990), individuals weight the components of affect and cognition differently when are associated with particular motivations. Another possible mechanism to explain the finding is that image is a concrete representation format that carries full details of the object, which increases receptivity and motivation to process such information (Yan, Sengupta, & Hong, 2016). When consumers are exposed to “visual argument”, the motivation to process textual argument is decreasing to the lower level as image-based information is easier to be elaborated compare to textual information. In line to this argument, Petty & Cacioppo (1986) also advocate that affective cues are particularly potent determinants of attitude change when the ability or motivation to process information is low As visual contents are more attractive and vivid (P. Xu et al., 2015), consumers are less motivated to process textual information, and in turn are influenced more by affective contents.

3.8 Practical Implications

The findings of the current study shows that psychological properties that embedded in the review can have an impact on review helpfulness. The results provide insight to practitioners that intent to leverage the online information and enhance the value of the message by stressing on the affective and cognitive aspects of the review.

The current study also confirms the substantive effect of visual elements in the online reviews, thus, online review platforms should try to encourage consumers to generate content with the visual contents in general. Incentive mechanisms should be

introduced. Application interface should be designed to encourage users to upload visuals. For example, the application designer could provide the background statement of "a picture is worth a thousand words. Do you have pictures to share?" (Implications are demonstrated with images in Figure 3.3, recommended design 1).

Furthermore, building on and beyond the direct effect of visual contents, the study also explores the moderating effect of visual content on the relationship between psychological properties and review helpfulness. This implies that the effects of affective and cognitive are contingent depending on the presence of visual content in the review. Therefore, the practitioners should provide distinct guidance for users to create textual content based on whether the user is going to upload images. If the user intends to post pictures, instead of guiding the consumer to "say something about the photo" (as TripAdvisor frames in the current interface), web/app designers can improve the interface design to encourage users to generate more affective content, by providing "Tell us how do you feel about your dining experience?" on the background (Implications are demonstrated with images in Figure 3.3, recommended design 2). Contrariwise, a guideline of cognitive content (for example, Tell us how was the food and the service.) should be given when users are producing pure textual reviews or with very few pictures.

3.9 Limitations and Future Research Directions

The findings of the current study contribute to the review helpfulness literature by showing that psychological properties embedded in the review can be observed by the review reader, which is consistent with the proposition that the semantic content in the review is even more influential than the quantitative factors, such as ratings and word count of the review (Cheung et al., 2009; Yap et al., 2013). This study attempts to

integrate textual and visual elements to understand when consumers reply on affective and cognitive content in the online review setting, the results therefore, posit both theoretical and practical contributions. Similar to other research, the study is not free from limitations which are identified in four main aspects.

First, the study did not take review valence into account. Prior research has revealed that negative reviews damage the business more than positive reviews promote it (Chevalier & Mayzlin, 2006). As the unproportioned effect of negative reviews, known as negativity bias, on consumer decision-making, it would be interesting to see how consumer value affective and cognitive differently with regard to positive and negative reviews, as well as the weight of visual content changes across the situation.

Second, consistent with prior literature, the study confirms the substantive effect of visual content in the review. However, the content of the visual elements was not further examined. Kuehn & Reimer (2005) suggested that tangible factors (such as restaurant physical environment) are more important than intangible factors (service quality) in determining the quality of restaurant customers' experience. Yang et al., (2017) show that the photo images of food, beverages and the physical environment have a different impact on consumers' information processing behaviour. Compared to physical environment images, food and beverage images can evoke both affective and cognitive response, whereas physical environment images enhance review value but have limited heuristic influence. Future research could further examine the content of visuals in determining review value and consumer decision-making.

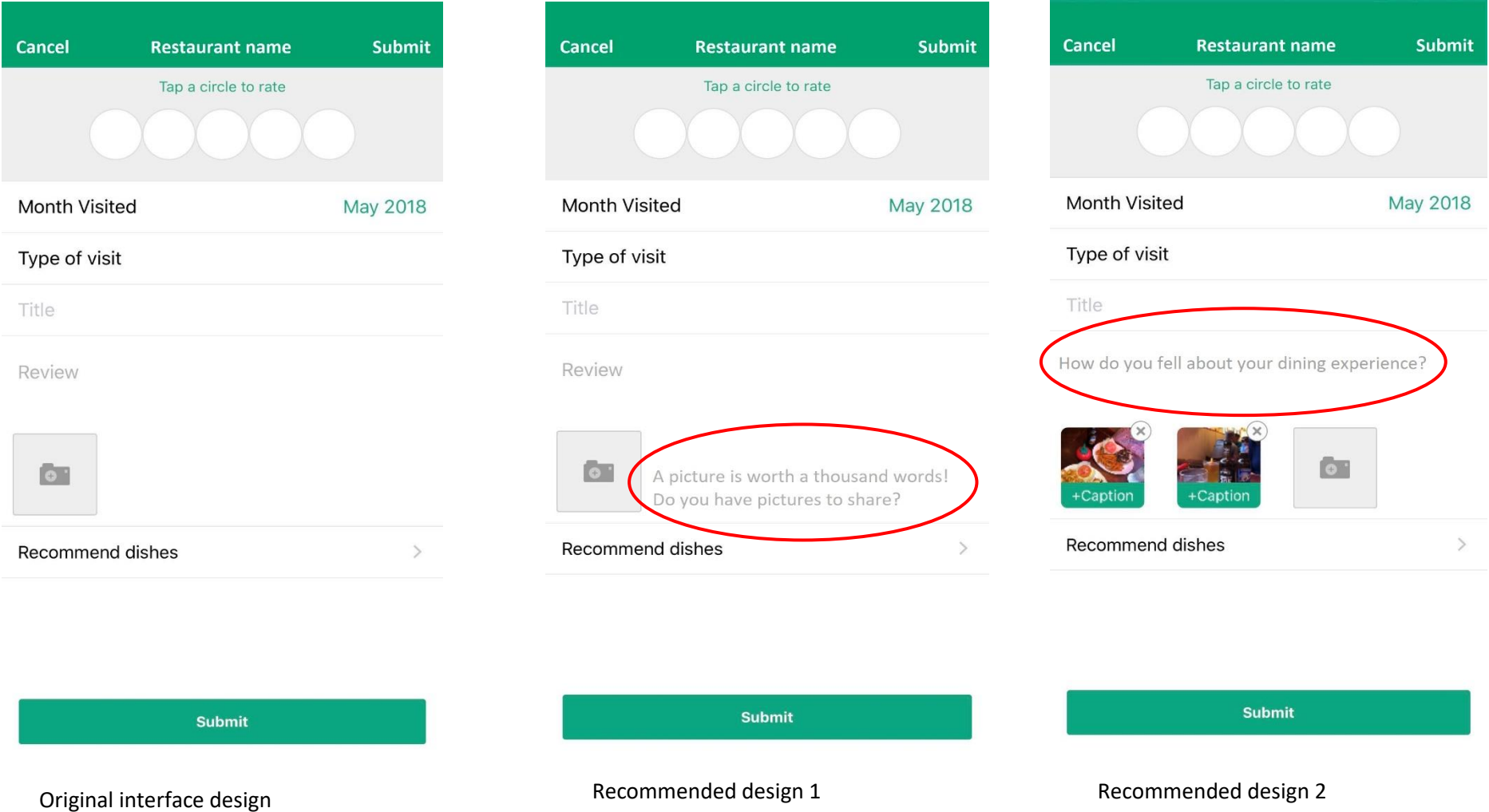
Third, we choose only restaurant reviews in our study. Further research could try to focus on other types of service industry, such as hotels or leisure centres.

Furthermore, restaurants are relatively high experiential in nature, research that employs

search goods in research design might deliver results in a different pattern (for example, product reviews on Amazon.com).

Forth, this study choose to focus on the effect of psychological properties on review helpfulness but did not examine the effect on consumer behaviour. (e.g. purchase intention). Future research could extend the scope to further explore the relationship.

Figure 3. 3: Recommended Interface Design



Chapter Four

Do Mobile Word-of-Mouth (mWOM) Searches Enhance Consumer Decision-Making Satisfaction? The Moderating Role of Market Mavenism

4.1 Introduction

In this chapter, the second empirical study of the research project is presented. The study focus on one of the contemporary aspects of electronic word-of-mouth, namely mobile-based word-of-mouth. In chapter two, eWOM communication medium has been discussed as one of the new characteristics of online word-of-mouth that receives limited attention from researchers. Most of the prior studies in eWOM literature consider that eWOM as a technologically homogeneous activity without a specific focus on the media characteristics. On the contrary, this study investigates consumer's eWOM activity in mobile device, regarding its impact on decision-making satisfaction.

Previous research shows that consumers actively search for online word-of-mouth in order to minimize risk of purchase (Kim, Mattila, & Baloglu, 2011; Sweeney, Soutar, & Mazzarol, 2008), reduce search cost and evaluation efforts (Dabholkar, 2006; Goldsmith & Horowitz, 2006), and look for social assurance (Bailey, 2005). However, these studies examining eWOM effects are carried out under the assumption that the online environment, to some extent, is homogeneous in terms of the way eWOM information is presented and processed, without a specific focus on the context in which eWOM communication is carried out. However, prior study (e.g. Chih, Wang, Hsu, & Huang, 2013; Prendergast, Ko, & Yin, 2010) show that channel characteristics do matter in the process of consumer making decision. As the matter of fact, eWOM communication is a rather complicated phenomenon in today's technology-enabled society (e.g. mobile technology). According to data revealed by Google trends on 2017, there is 80% growth in mobile search in the last two years, which means no decision is too small for today's consumers as they intend to get information to make the right

purchase decision anytime and anywhere with their smartphone in hand. The new form of eWOM (mobile eWOM) has emerged, and it creates a new way of interaction for word-of-mouth production and consumption via mobile devices (Okazaki, 2008).

Several researchers (e.g. Berger, 2014; Lang & Hyde, 2013; Okazaki, 2008; Shankar et al., 2016; Wang, Shen, & Sun, 2013) have suggested that eWOM characteristics in mobile contexts should be differentiated from those in general online environments and they encourage future studies of eWOM to be extended in mobile contexts. In addition, in light of the rise of multi-channel shopping, which describes consumers' use of different channels for completion of a particular purchase, consumer behaviour related to eWOM might also differ among channels. Several researchers argue that similar to the computer-mediated environment, mobile environment is heterogeneous, since information presentation might differ among devices, operating system platforms, or service operators (Maity & Dass, 2014b; Xu, Peak, & Prybutok, 2015). Moreover, Fritz, Sohn, & Seegebarth (2017) point out that the mobile context can no longer be simply considered a homogenous technology environment that encompasses limited service and network; instead, it represents a high degree of heterogeneity. It is known that mobile channels are able to add values to consumers' decision-making journey by providing personalized recommendations and related information based on their geographic location, personal preferences or search history (Xu, Teo, Tan, & Agarwal, 2009). For instance, review aggregators (e.g., Yelp) rank shops, restaurants, and hotels to prospective consumers based on previous consumers' ratings. This kind of eWOM, where consumers access consumption experiences of other consumers or provide their own via a mobile device (e.g. through an application), can be characterized as mobile-based word-of-mouth or mobile eWOM (Okazaki, 2008; Wang et al., 2013).

Nonetheless, when compared to web-based eWOM, mobile eWOM has its particular characteristics because a mobile device can deliver customised timely information based on the users' locations and browsing history. This contextualised information enhances the consumer's searching experience and facilitates the process of decision-making, especially during the stages related to product/service search and decision choice (Xu, Carroll, Rosson, & Luo, 2011). For these crowd-sourced reviews to have an impact, it is necessary for marketers to understand the motivation for consumers to engage in word-of-mouth behaviour (e.g. the desire for accessing product or service related information).

The findings of previous studies are not consistent as regards to the effect of mobile characteristics on eWOM behaviour. Pescher, Reichhart, & Spann (2014) find that purposive and entertainment value are the main drivers for consumer referral behaviour in mobile viral marketing. On the other hand, Palka, Pousttchi, & Wiedemann (2009), based on grounded theory, suggest mobile WOM activities are decreased due to high perceived risks, which can be attributed to mobility and personalization. Mobility describes the accessibility of people and information without the constraint of time and place (Kim, Mirusmonov, & Lee, 2010; Ko, Kim, & Lee, 2009). Personalization is the provision of tailored products/services to consumers based on the understanding of consumers' interests and preferences (Mulvenna, Anand, & Büchner, 2000).

In order to clarify the inconsistency findings from prior literature and respond to the call of many researchers, this study aims to address the following research questions: (a) Do mobile technology characteristics (namely: mobility and personalization) influence consumer decision-making satisfaction? (b) What is the underlying mechanism for the effect of mobile technology characteristic (mobility and

personalization) on consumer decision-making outcome? (c) How market mavenism (as a consumer's behavioural tendency to be involved in the market place) affect these relationships?

Using survey data, the findings of current study show that both mobility and personalization positively affect process satisfaction, which is able to further enhance decision satisfaction. Moreover, consumers with high level of market mavenism do not favour personalized eWOM information and their affective evaluation of the decision process do not differ regarding the level of eWOM mobility. This study contributes to the marketing literature in three ways. First, it examines the controversial roles of mobility and personalization on the consumer decision-making process. Second, it aims to complement the ever-growing literature on purchase process satisfaction by establishing a link between mobile characteristics and decision-making processes satisfactions, the affective outcome derived from the use of mobile technology. Third, by extending prior studies, this study discusses the boundary conditions for this linkage by examining the moderating effects of market mavenism.

The remainder of this study is structured as follows: The literature review and a conceptual framework linking the hypothesis development with prior literature are provided in the subsequent sections. In the section of Research Methodology, an empirical study is presented, thereafter, establishing the discussion and the implications of the findings. This study concludes with a summary of the key findings, contributions, and future research directions.

4.2 Literature Review

4.2.1 Uses and Gratifications Theory

Previous research has built a rich theoretical foundation referring to media usage. In terms of mobile service/app, theories such as Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), and Theory of Planned Behaviour (TPB) have explicated the antecedents of technology adoption behaviour, which include perceived ease of use, perceived usefulness, attitude towards act of behaviour, subject norm and perceived behavioural control. However, these theories primarily focus on the utility or functional aspects of media use. Nysveen, Thorbjørnsen, and Pedersen (2005) indicated that *“in addition to the traditional antecedents of behavioural intention included in Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), and Theory of Planned Behaviour (TPB), uses and gratification research indicates that enjoyment, fun-seeking, and entertainment are significant motivations for using mobile services”* (p 332). From this perspective, other researchers also propose that the entertainment value (e.g. the affective outcome of making the choice that derived from the decision-making process) could be the driver of why individuals use technology artefacts in general (Dabholkar & Bagozzi, 2002; Flanagin & Metzger, 2001), and it has been shown to have an influence on consumers’ satisfaction regarding the decision as an outcome.

Uses and Gratifications Theory holds the notion that people satisfy their needs by voluntarily seeking and using media (Blumler & Katz, 1974; Luo, 2002). The underlying assumption is that individuals are goal-driven and they actively seek to use a certain type of media in order to gratify their needs, such as relaxation and

entertainment. Contextualizing that to technology use, the intrinsic motives could be derived from an either utilitarian or non-utilitarian aspect of technology artefacts usage. This study chooses to employ Uses and Gratifications Theory as the major theoretical foundation because (a) the theory has provided a cutting-edge theoretical approach in the initial stage of each new mass communication medium (e.g. computer-mediated communication), as well as the most relevant perspectives toward psychological and behavioral dimensions of media use (Ko, Cho, & Roberts, 2005; Ruggiero, 2000); and (b) this theory differentiates itself from other theories concerning media adoption by respecting the relations among motivations for using the media and the gratification of using. Therefore, the current study employs the Uses and Gratifications Theory to examine the causal relations between the motivation of using mobile eWOM service (mobility and personalization) and the gratification it brings by using the media (decision-making satisfaction).

Grounded in the Uses and Gratifications Theory, and the affective attributes associated with the hedonic use of technology artifacts from the information systems literature (E. Ko et al., 2009; van der Heijden, 2004), the current study choose to examine process satisfaction, which reflects the positive evaluation of the search experience and the choice process on mobile devices, as the motivations that consumers/users deliberately choose mobile device for eWOM searching. Entertainment value has been considered an intrinsic reward derived from the use of technology or services (Igbaria, Parasuraman, and Baroudi, 1996). Furthermore, affective attributes have positive effects on the amount of word-of-mouth transmission and post-purchase behaviour (Westbrook, 1987). Similarly, a considerable amount of literature (e.g., Ladhari, 2007; Nyer, 1997; White & Yu, 2005) has suggested that positive emotional responses, such as arousal, joy and enjoyment contribute to positive word-of-mouth.

Building upon prior literature, this study argues that process satisfaction, resulting from the use of mobile eWOM services in the decision-making process for eWOM information seeking, can be considered an underlying driver for the outcome of consumer decision-making (decision satisfaction in this case), thus mediating the impact of technology characteristics on decision satisfaction.

4.2.2 Mobile eWOM Behaviour

Past studies have provided valuable insights about ‘why do people search eWOM?’ Grounded on the tenets of consumer information search theories, research evidence show that consumers actively search for online word-of-mouth to minimize risk of purchase (Kim et al., 2011; Sweeney et al., 2008), reduce search cost and evaluation efforts (Dabholkar, 2006; Goldsmith & Horowitz, 2006), and look for social assurance (Bailey, 2005). Sequentially, these well-documented, persistent and ready to access online word-of-mouth information influences consumers’ decision-making. Studies that investigate the impacts of eWOM are contextualised in either individual or firm levels. From an individual perspective, eWOM significantly enhances customers purchase intention/ willingness to pay. Moreover, eWOM is not only able to increase the level of consumers’ trust and loyalty towards the product or service, but also encourages consumers’ engagement. With regard to the firm-level outcomes, eWOM directly boosts product sales (Chevalier & Mayzlin, 2006; Cui et al., 2012), revenues (Duan et al., 2008a; Phillips et al., 2017, 2015; Xie et al., 2016), and firm’s conversion rates (Ludwig et al., 2013).

In recent years, due to the advances in mobile technology, a new form of eWOM (mobile eWOM) has emerged. Mobile eWOM creates a new way of interaction for word-of-mouth production and consumption via mobile devices (Okazaki, 2008).

Numerous apps provide mobile eWOM (e.g. online reviews) who allow consumers seek information without restraints of time and place (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004) and also give personalized recommendations based on consumers' location, personal preferences and search history (Bruner II & Kumar, 2007). In providing these apps, firms are not only encouraging such information seeking practices, but also asking customers to provide ratings and reviews while on the go (März et al., 2017). Nevertheless, while investigating the eWOM behaviour, most studies consider that online environment is technologically homogeneous regarding the way consumers access information and provide their opinions, without a specific focus on the mobile context and the characteristics mobile technology artefacts.

Considering eWOM behaviour in the mobile context (mobile eWOM), Burtch and Hong (2014) studied the characteristics of mobile eWOM and demonstrated that reviews generated via mobile devices appear to have lower and more varied star ratings, contain more concrete and emotional text, and are perceived to be more helpful. Furthermore, Lurie et al. (2014) used field data of a restaurant review platform and specified that compared to non-mobile reviews, reviews created through mobile devices are shorter, less extreme, one-sided (either positive or negative) and contain more affective and less cognitive cues. Lurie et al. (2014) also provided insights regarding the particularities of mobile review creation process by revealing that real-time engagement, perceived cost and the relationship with mobile device influence the way consumers generate reviews in the mobile environment. März et al. (2017) extended Lurie et al.'s (2014) study and further investigate how technology facilitates the perception of eWOM. März et al. (2017)'s study provides insight on the impact of mobile eWOM by examining how consumer consideration device information as a source cue to evaluate eWOM helpfulness and reveals that consumer weighs online

reviews differently depends on the device they use to read. The findings further confirmed the influential role of the communication channel (mobile vs. non-mobile) on eWOM information content by showing that mobile reviews differ from non-mobile ones in terms of mobile-specific linguistic characteristics.

In contrast to previous mobile eWOM studies (e.g. Burtch and Hong, 2014; Lurie et al., 2014; März et al., 2017) which primarily focus on the discussion of the impacts of review contents *per se*, the theoretical positioning of this study chooses to examine how the characteristics of mobile eWOM services influence consumer's decision-making process and outcome.

4.2.3 Decision-making Satisfaction: The Process and the Outcome

Prior literature has provided evidence that consumer satisfaction is a strong predictor for product-related word-of-mouth and product loyalty (Anderson, 1998; Arndt, 1967; Maxham III, 2001; Richins, 1983; Westbrook, 1987). Therefore, it is essential to understand the antecedent of decision-making satisfaction as consumers are more likely to share their experience through positive word-of-mouth communication and become a loyal customer if they are satisfied with the decision they made (Ladhari, 2007; de Matos & Rossi, 2008).

Researchers have developed various consumer decision models that attempt to describe the process that consumers go through to make a purchase decision. Consumer decision-making models from cognitive paradigm treat consumer follows a problem-solving sequence of activities to make a decision (e.g. information search and evaluation). Previous research examining satisfaction with consumer decision-making has been primarily focussing on the outcomes (e.g. how consumer evaluate the decision

itself) and overlooked the evaluation of the process itself. In fact, in the consumer decision-making journey, one may report that he or she is happy with the way in which the decision is made, however, disappointed with the outcome. Westbrook, Newman, & Taylor (1978) first point out 'the need for evidence' in aspects that determining satisfaction/dissatisfaction in the purchase decision process, which means *how satisfied consumers were with their experiences in arriving at purchase decision* (p54). In the similar vein, Zhang and Fitzsimons (1999) categorize consumer decision-making satisfaction into process satisfaction and decision satisfaction, indicating that the process through which a decision or choice is made can be considered an indivisible part of decision-making satisfaction.

According to Zhang and Fitzsimons (1999), process satisfaction refers to the degree of satisfaction with the choice process whereas decision satisfaction denotes the decision with the outcome of the choice *per se*. Process satisfaction pertains to the search experience and the experience of deciding. Westbrook, Newman, & Taylor (1978)'s study reveals that how consumers felt about the main aspects of the purchase experience forms process satisfaction. The main aspects associated with process satisfaction in a purchase decision-making journey includes the adequate amount of product alternatives; access to desired repurchase information; the experience of the shopping experience; the task of evaluating and choosing among alternatives, and anxiety about making a satisfactory choice (Westbrook, Newman, & Taylor, 1978). For example, when consumers can easily find their preferred products due to the adequate presentation of choice size and product information, their process satisfaction increases (Heitmann, Lehmann, & Herrmann, 2007). In addition, the appropriateness of alignability of product features and comparability of choice options enhance process satisfaction.

On the other hand, process satisfaction can be attributed more to service providers, decision satisfaction pertains to the product or service itself (Bechwati & Xia, 2003). It is defined as the degree of a consumer's satisfaction regarding the decision of a purchase (Häubl & Trifts, 2000; Heitmann et al., 2007; Xia & Sudharshan, 2002).

There are further evidence in the literature show that process satisfaction and decision satisfaction are two distinct dimensions of decision-making. For example, Bechwati & Xia (2003) explore the factors that affect decision-making process satisfaction and decision satisfaction and show that, in the online environment, electronic tools (e.g. decision aids) are able to assist consumer by saving search effort and in turn improve process satisfaction rather than the decision outcome. In the similar vine, Xia & Sudharshan (2002) provide further evidence by showing that online advertising interruption in consumer's decision-making experience reduces consumer decision-making process satisfaction, but would not affect decision satisfaction in the context of online shopping.

Regarding eWOM and consumer decision-making satisfaction, Gao, Zhang, Wang, & B (2012)'s study investigated the effect of eWOM on the consumers' decision satisfaction and post-consumption satisfaction with regard to the quantity and quality of eWOM information. The study exposes a large amount of online information decreases decision and post-consumption satisfaction, on the other hand, it is the quality that able to enhance both the decision and post-consumption satisfaction. The study also addresses the interesting and necessary role of thought mode in solving the problem of a large amount of online information: the thought mode moderates the relationship between eWOM quantity, quality and decision-making outcome. That is to say, and the consumer makes a better decision or experience higher post-purchase satisfaction under

unconscious thought compare to conscious thought, especially when they confront with a large amount of information. However, the primary focus of this study is the decision-making outcome rather than the process. Prior research indicates that *‘people who are satisfied with the decision-making process they have used are likely to reuse the process in the future’* (Crossley & Highhouse, 2005, p258). It is crucial to understand how mobile eWOM searching behaviour foster decision-process satisfaction and decision satisfaction respectively. Therefore, the current study employs Zhang and Fitzsimons (1999) conceptualization of consumer decision-making satisfaction by considering process satisfaction (the process of choosing) and decision satisfaction (if the decision is ultimate) as two distinct constructs to provide a better understanding of the mobile eWOM searching behaviour and evaluations of decision-making satisfaction.

4.2.4 Consumer Characteristics: Market Mavenism

Payne, Bettman, & Johnson (1993) indicate that the decision-making strategies chosen by individual vary depending on their inner capabilities and motivations. This implies that the purchase decision-making path is not deterministic but associated with individual characteristics to a great extent (Chowdhury, Ratneshwar, & Mohanty, 2009; Ranaweera, McDougall, & Bansal, 2005; Völknér & Werners, 2002), for example, learning histories and values (Yan, Foxall, & Doyle, 2012). Park & Lee (2008)’s study provided evidence that consumers with different level of involvement in the decision-making process tend to have controversial decision-making experiences. The study found that low-involvement consumers (compare to consumer with high level of involvement) mainly focus on the easy to process information, such as review quantity in product evaluation rather than the content, and therefore experience less information overload. Furthermore, apart from decision-making involvement, Liang (2016)’s study

explores how the outcome-relevant involvement plays a role in consumer decision-making. The study reveals that consumers not only actively seek information before purchase but also after they make purchase to re-assure they have made the right decision, and the level of decision involvement affect the cognitive dissonance the consumer experienced in the post-decision context.

In relation to the consumer characteristics and decision-related outcomes, Karimi, Holland, & Papamichail (2018) investigate how consumers' maximizing trait, as one of the decision-making styles of the consumers, could have an impact on the cognitive and affective evaluation of the decision-making journey. Consumers' maximizing trait is the psychological concept which categorizes consumer into *maximizers*, who are more motivated to conduct intensive search and evaluate large numbers of alternatives to make the optimal choice; and *satisficers*, who are more likely to settle for the 'ok choice' by performing superficial searches. Karimi et al (2018)' study found that consumers' decision-making style (whether a consumer is maximize or satisficer) affect the structure and complexity of decision-making processes and therefore determine the decision and decision process related outcomes.

Apart from consumers' individual trait or disposition, previous literature also suggest that consumers' prior knowledge of the product or marketplace as part of inner capabilities shape their decision-making behaviour and may moderate the condition of process and outcome satisfaction (Heitmann et al., 2007). Build on previous literature, this study examines the role of market mavenism in the decision-making context to better understand and explain the pattern or path that consumers with different level of market mavenism making purchase decision in mobile context. Market mavenism is conceptualized in consumer behaviour literature as "*a role identity characterised by*

possession of generalised marketplace information, expertise, and influence over other consumers” (Collins, Kavanagh, Cronin, & George, 2014). Market mavens, those who have a higher tendency of market mavenism, are highly involved in the marketplace and more active in information diffusion (Feick & Price, 1987). Driven by the sense of obligation, a desire to help others and feeling of pleasure to share information, market mavens are keen to provide advice to others (Walsh, Gwinner, & Swanson, 2004). They are highly related to opinion leaders and are quite active in word-of-mouth activity (Clark & Goldsmith, 2005). Market mavenism is psychologically associated with self-esteem, tendency to conform, susceptibility to normative interpersonal influence, and need for uniqueness (Clark & Goldsmith, 2005) while behaviourally is related to intensive internet and media usage and everyday market helping behaviour (Abratt, Nel, & Nezer, 1995; Price, Feick, & Guskey, 1995; Walsh & Mitchell, 2009).

4.3 Conceptual Framework and Hypotheses Development

Based on the notion of Uses and Gratification Theory, this study develops a conceptual model where the consumers’ decision making satisfaction is caused by two mobile technology characteristics, namely mobility and personalization. The model is illustrated in Figure 1. More specifically, decision process satisfaction is proposed as the mediator to explain the underlying mechanism of why mobility and personalization lead to decision satisfaction.

The model also shows the boundary condition of the effect of mobile characteristics on process satisfaction. The link between mobile characteristics and process satisfaction is proposed to be contingent depending on the level of consumers’ market mavenism. A series of hypotheses are thus developed and discussed in the subsequent sections.

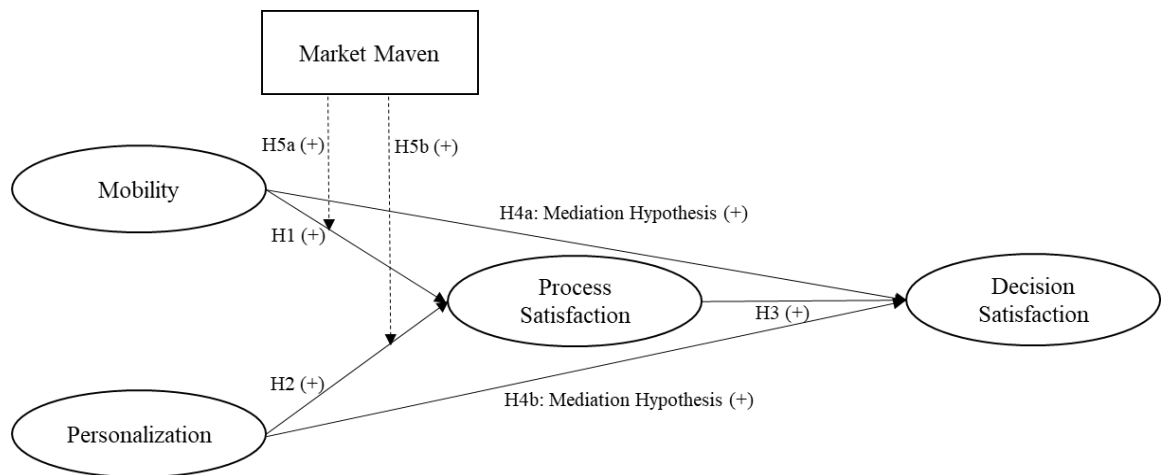


Figure 4. 1: Conceptual Framework

4.3.1 Mobile eWOM Searching and Consumer Decision-making

4.3.1.1 Mobility

In terms of mobile technology, mobility pertains to not only the portability of a mobile device as a reflection of its physical form but also the accessibility of people and information. Terms such as instant connectivity, ubiquity, and reachability are used by researchers to represent similar ideas (Chae & Kim, 2003; Kim et al., 2010; Ko et al., 2009; Okazaki, Li, & Hirose, 2009). This “anywhere and anytime” access enables consumers to enjoy instant access to information and social connections (Mallat et al., 2008; Okazaki & Mendez, 2013). Despite concerns about privacy, mobility has been found to increase intention to use a new technology as well as adoption and user satisfaction (Chatterjee, Chakraborty, Sarker, Sarker, & Lau, 2009; Kim et al., 2010; Ko et al., 2009; Mallat, Rossi, Tuunainen, & Öörni, 2008). In this study, mobility is theorised as the degree to which a user's perception of temporal and spatial freedom of accessing information via a mobile device.

Mobile eWOM services (e.g the TripAdvisor app) allow users to get access to mobile eWOM information anywhere and anytime (Clarke, 2001) as they provide flexible access to speedy and time-critical information (E. Ko et al., 2009; Okazaki, 2008). As such, the product search process through mobile devices becomes more convenient and efficient for consumer decision-making (Clarke, 2001; Kleijnen, de Ruyter, & Wetzels, 2007). For instance, when a consumer is browsing products in a store, and/or is attracted by a limited time product promotion, the instant reviews he/she finds through mobile will help his/her decisional judgment and support decision-making process. This ubiquity access to reviews fulfils consumer's instant needs and improve decision efficacy. According to Arnold (1960), positive emotions arise when events are appraised as being beneficial. In the same line, the benefits derived from the availability of time-critical information evoke the intrinsic enjoyment of using mobile eWOM services and therefore arise positive evaluation of the searching experience and choice process. Thus, it can be proposed that:

H1: When consumers are searching eWOM using mobile app services, mobility has a positive effect on process satisfaction.

4.3.1.2 Personalization

Personalization refers to the provision of tailored products/services to consumers based on sellers' understanding of consumers' interests and preferences (Mulvenna et al., 2000). This personal information can be obtained via consumers' browsing history, search keywords, and demographic information (T.-P. Liang, Lai, & Ku, 2006). In mobile commerce context, location-based recommendation systems increase consumers' motivations and intention to use the recommended services (Xu et al., 2011). The mobile location-based in-store advertising which delivers promotion

messages to consumers based on Bluetooth beacons in stores has been found to be effective (Klabjan & Pei, 2011). Recent evidence suggests that purchase intention is increased if consumers receive ads in proximity to the products (Bues, Steiner, Stafflage, & Krafft, 2017). As such, personalization, in this study, is defined as providing personalized products/services relying on the utilization of mobile technology with reference to the user, content, and context (E. Ko et al., 2009).

Personalization entails service customization such as adjustments for usability so consumers can effortlessly seek information (Palka et al., 2009). Coupling with mobility, consumers can, therefore, compare and evaluate personalized (or filtered) options with ease and efficiently make decisions. For example, a consumer is able to browse nearby restaurants with reviews which are recommended based on his/her geographic location. Furthermore, mobile eWOM information can also be represented according to consumer preferences (e.g., distance and ranking). This characteristic of mobile services makes consumer's decision-making experience easier and more enjoyable in its own right (E. Ko et al., 2009). Furthermore, as an affective outcome of decision-making, consumers' positive cognitive appraisal is positively related to the level of efforts saved (Bechwati & Xia, 2003). Following this line of reasoning, it can be argued that consumers will have better decision-making experiences while consuming word-of-mouth from personalized mobile services. As such, it could be asserted that:

H2: When consumers are searching eWOM using mobile app services, personalization has a positive effect on process satisfaction.

4.3.2 Decision-making Satisfaction in Mobile Context: From the Process to the Decision

Consumers' response to a certain mobile service is not only associated with the service content *per se*, but also the personal and emotional values connected to that experience (San-Martín et al., 2015). In the mobile context, process satisfaction is a positive evaluation of the decision-making experience via mobile services related to affective attributes. While, decision satisfaction refers to the degree of a consumer's satisfaction level regarding a purchase decision. It pertains to the product or service that he or she consumed (Bechwati & Xia, 2003). In this study, decision satisfaction captures the level of satisfaction of the purchase decision that consumer made through mobile devices with the assistant of eWOM information.

Consumers may initially be attracted to use the services because of the benefits it brings (e.g. anytime and anywhere access), but excessive ads interruptions or complicated sign-up interfaces will decrease their likelihood of continuous use (Xia & Sudharshan, 2002). For example, consumers intend to use eWOM service apps while on the go because of its convenience; however, the process may be complicated and hard to follow (i.e., searching and browsing information via mobile eWOM services). On the contrary, when consumers are content with the process of decision making, positive attitudes will emerge, and it will encourage continuous usage (Bechwati & Xia, 2003; Häubl & Trifts, 2000). Therefore, it can be argued that if the process that the users are going through to make the decision is easier (e.g. convenient or without interruption), it is more likely that the decision quality is assured when other conditions remain constant. In addition, when consumers are accessing timely eWOM information on mobile device, the time between information searching and the decision is made would

be shorter (for example, when consumers search online reviews in store), which reduces risk to a greater level, compare to information searching in a computer-mediated or offline environment. Along with the above reasoning, it can be proposed that:

H3: When consumers are searching eWOM using mobile app services, process satisfaction has a positive effect on decision satisfaction.

From the above hypotheses, it can be expected that mobility and personalization enhance the level of process satisfaction, and the decision-making outcome (decision satisfaction in this case) is built largely on how satisfied the decision-making process (e.g. searching, choosing product) that the users perceived to be in a mobile context. This implies that mobile eWOM services characteristics are expected to positively influence consumers' satisfaction towards the decision made through a better decision-making process. Thus, it can be predicted that process satisfaction mediates the relationship between mobility/personalization and decision satisfaction. Therefore, the following hypotheses can be proposed:

H4a: When consumers are searching eWOM using mobile app services, process satisfaction mediates the relationship between mobility and decision satisfaction.

H4b: When consumers are searching eWOM using mobile app services, process satisfaction mediates the relationship between personalization and decision satisfaction.

4.3.3 The Moderating Role of Market Mavenism

Consumers with higher market mavensim are highly involved in the marketplace, and prone to acknowledge and recommend others about the product and related information (Feick & Price, 1987; Higie, Feick, & Price, 1987). Market mavenism is related to opinion leadership and can be considered the important force of

word-of-mouth production (Clark & Goldsmith, 2005; Sun, Youn, Wu, & Kuntaraporn, 2006). In fact, market mavens are not only act as the sources of information but also the active seekers of information (Higie et al., 1987). Furthermore, market mavens are active in everyday market helping behaviour in the offline context (Abratt et al., 1995; Price et al., 1995), but also intensive internet and media user in the online environment (Walsh & Mitchell, 2009). Therefore, it can be argued that consumers with a high level of market mavenism are intrinsically motivated to search eWOM more frequently. To this extent, one can be arguing that market mavens will be more influenced by the technology characteristics as they are heavier users, and therefore relying on the technological assistance more than the non-market mavens.

However, with regard to decision-making strategy, market mavens are proved to be more accurate in product or service evaluation (Engelland, Hopkins, & Larson, 2001) because they spend more time and money in shopping compare to consumers that are categorized as non-market mavens (Goldsmith, Flynn, & Goldsmith, 2003). As an experienced customer in the market place, market mavens have distinguished characters (Feick & Price, 1987). For example, Clark & Goldsmith (2005) point out that market mavens have ‘the need for uniqueness’ as the psychological attributes. Moreover, market mavens recognize themselves as the unique group of consumers which act as a source of market information, and they are willing to show this uniqueness through purchase. Due to these characteristics, it can be argued that market maven are less likely to rely on the timely information and personalized recommendation when they are searching eWOM, as they are able to accurately evaluate the product/service as they have better knowledge of the marketplace, and tend to look for products or services that could distinguish them from the crowd (Clark & Goldsmith, 2005). Therefore, it can be hypothesized that:

H5a: When consumers are searching eWOM using mobile app services, mobility has a stronger effect on process satisfaction when the level of consumers' market mavenism are low.

H5b: When consumers are searching eWOM using mobile app services, personalization has a stronger effect on process satisfaction when the level of consumers' market mavenism are low.

4.4 Research Methodology

4.4.1 Research Context

The research context of this study considers UK consumers who use their smartphones for shopping, following a worldwide trend. Globally, the share of mobile-based retail transactions is rapidly advancing worldwide with PayPal reporting a 20% increase year by year (PayPal, 2016). In the particular case of the United Kingdom (UK), total mobile e-commerce sales (m-commerce) accounts for 20.6% of the total e-commerce sales in 2016 (eMarketer, 2016). Moreover, the UK is a smartphone society with a high user penetration rate of about 70%, of which the vast majority (90%) of young adults (16-24 years old) own at least one mobile device (Ofcom, 2015). The rise of smartphone ownership brings along the change of user's surfing preferences. A recent UK based survey reported that the smartphone has become the most popular device for accessing the internet by replacing the stand-alone PC and laptop (Ofcom, 2015). Given the potency of the UK's mobile sector, the theoretical model was examined empirically using data from mobile users in this country.

4.4.2 Measure Development

Hair, Money, Samouel and Page's (2007) recommendations were followed to ascertain the content validity of the measures. First, the initial version of the questionnaire was revised through in-depth discussions with three scholars familiar with research on word-of-mouth. Second, the second version of the questionnaire was reviewed by an academic researcher with a profound knowledge of digital marketing. Third, a pre-test was undertaken with 15 MBA students who did not participate in the main study. The pre-test disclosed no major problems with wording, clarity, or design of the questionnaire.

The structured survey questionnaire used to collect data contained five focal constructs: mobility, personalization, process satisfaction, decision satisfaction and market maven, as well as the filter questions at the beginning and questions related to demographics. Aside from the demographic questions, the questions all used a Likert 7-point scale, ranging from 1=*strongly disagree* and 7=*strongly agree* and are pre-tested. The dependent variable of this study, decision satisfaction, was operationalized as the degree of a consumer's satisfaction level regarding a purchase decision (Bechwati & Xia, 2003). In this study, decision satisfaction pertains to the product/service being purchased (based on participants' recall of last purchase experience after searching eWOM on mobile device).

Mobility is operationalized as "the level of perceived instant connectivity and information accessing of mobile eWOM services." The four items from the scales of Kim et al. (2010) and Ko et al. (2009) were used in this study.

According to Adomavicius and Tuzhilin (2005), personalization refers the e-commerce interactions between business and consumers which facilitated by the use of technology and available personal information (either previously obtained or collected in real time) in order to fit consumer's stated needs or potential needs perceived by the company based on the acquired information. The operationalization of personalization captures the level of consumers' perceived personalization of mobile eWOM service in terms of both content and geographic targeting. Five items were adapted from Xu et al. (2011) and Ho & Bodoff (2014)'s scales to measure this construct.

As this study mainly attempts to examine the drivers of consumers' decision-making satisfaction, the study adopts Bechwati & Xia (2003)'s conceptualization and measures of process satisfaction and decision satisfaction. The items to measure decision satisfaction were adopted from Heitmann, Lehmann and Herrmann (2007); scales of Bechwati & Xia (2003), Heitmann, Lehmann and Herrmann (2007) and Zhang & Fitzmons (1999) were employed for constructing the variable process satisfaction.

Finally, for testing the moderating effect of market maven, the original scale containing six items that was developed by Feick & Price (1987) was adopted, to measure the participants' level of involvement in the marketplace. **Appendix A** provides the complete version of questionnaire.

4.4.3 Sample and Data Collection

The questionnaire was administered to a pool of UK consumers through Amazon Mechanical Turk. Participants who were based in the UK and had the experience of using mobile eWOM services (e.g. the TripAdvisor app) were invited to participate in the survey. Instructions and examples of mobile eWOM services and

mobile eWOM were given at the beginning of the questionnaire to make sure respondents understand the purpose and the context of this survey (see **Appendix A** for the complete instruction).

In the survey, TripAdvisor was selected as the representation of mobile eWOM service to assess consumers' eWOM searching behaviour on mobile device.

TripAdvisor is an early adopter of user-generated content, which offers travel-related content, such as hotel and restaurant reviews, as well as displayed booking system. The platform to date (Dec, 2018) exhibitions 702 million reviews and opinions that cover eight million restaurants, hotels, airlines and other business. According to the statistical data online, 82% of the participated consumer report that they are aware of TripAdvisor as a platform for restaurant reservations and recommendations; of which, 23% of them have already used the platform in decision-making and 16% of them are a regular user (Statista, 2016). TripAdvisor launched the first iPhone and Android mobile apps in 2010, and the first native smartphone apps in 2013, the company continues to make improvements and now the app has over 150 million monthly unique mobile visitors and 42% of the mobile traveller market share, it is now considered the World's most popular travel app (Gonzalo, 2016; TripAdvisor, 2014).

Three questions were asked regarding their last experience of using TripAdvisor mobile app in order to help consumers recall their last experience of using the mobile eWOM service: "*When was your last time using the TripAdvisor mobile app?*", "*What product/service did you purchase after reading reviews on TripAdvisor?*" and "*How much did you spend?*". Then, participants were asked to answer the items for process satisfaction and decision satisfaction of their last experience (see **Appendix A**). In the second part of the questionnaire, participants were asked to answer the items for

mobility and personalization that accessing their perception of mobile characteristics based on their general use of mobile eWOM service (TripAdvisor app in this case), followed by a series question that assessing participants' trait of market maven. At the end of the survey, participants were asked to provide demographic information regarding their gender, age, education level, employee status and etc.

A total of 314 participants responded to the survey, 53 participants who answered that they have never used TripAdvisor mobile app and 38 participants who did not complete the questionnaire were excluded, thus, leaving 223 valid responses (Mean age=36.1 and 47.1% females) for further analysis The demographic profile of the sample is reported in **Table 4.1**.

4.4.4 Non-response Bias

The issue of non-response bias occurs in survey studies when the respondents are different from the group who did not participant the study, especially when their demographics or attitudinal variables related to the study varies significantly (Sax, Gilmartin, & Bryant, 2003). There are two types of nonresponses: *total nonresponse* which refers to the people who did not participate the survey at all and *item nonresponse* which is known as the respondents who started the survey did not complete it (Fraenkel and Wallen, 1993). In order to avoid non-response bias, the survey was designed carefully in terms of the instruction, survey flow, incentives and required time. The participants were informed clearly at the beginning of the survey regarding their rights, information confidentiality and anonymous conditions. To make sure the survey flows well, two academics and fifteen MBA students who did not participate in the study were consulted to ensure that the items were clear enough to follow. There was also progress reminder bar available at any page of the survey to

Table 4. 1: Demographic Profile of the Sample

Variable	Categories	Percent of Sample
Gender	Female	47.1%
	Male	52.9%
Age	20-29	28.3%
	30-39	42.1%
	40-49	18.8%
	50-59	6.8%
	60+	4%
Education Level	High school or less	13.5%
	College	39.9%
	University graduate	32.3%
	Postgraduate and above	14.3%
Experience of Use	0-3 years	65%
	4-7 years	31.9%
	7-10 years	3.1%
Frequency of Use	0-10 times per month	84.8%
	11-20 times per month	9%
	21-30 times per month	4%
	> 30 times per month	2.2%
Products/services of Last Consumption	Restaurants	66.4%
	Local Services	22.9%
	Cafés	4.0%
	Hotels	3.6%
	Delivery services	3.1%

remind the respondents where they were (e.g. you have so far completed 60% of the questions). Incentives were also provided to participants as motivation to complete the survey. The successful participants (who are able to pass the attention check and complete the survey) were provided with a code which they can paste in Amazon mTurk to get paid for their participation. Furthermore, the survey was designed to an appropriate length which requires participants approximately 8 minutes to complete.

The current study employs online survey to collect data, based on the information provided by Amazon Mechanical Turk, there were 38 item nonresponses who did not complete the questionnaire, indicating a relatively good response rate (88%). Among those item nonresponses, 32 of them were intervened as they did not pass the attention check questions in the survey. Three attention check question were randomly inserted in the survey flow, the attention check questions was designed to lookalike other survey items which deserve participants' attention to pass (e.g. *regardless of how easily TripAdvisor mobile app can search for you, please choose number three for this statement*). Regarding to the difference between total nonresponses and our participants, the demographic profile of our sample provide evidences that the sample were typical in terms of population characteristics (e.g. gender, age and educational level and etc.).

4.5 Research Findings

4.5.1 Common Method Bias

Since the literature has suggested that self-reported surveys may be subject to common method bias (CMB) (Podsakoff, MacKenzie, & Podsakoff, 2012). As the data was collected from same group of participants at the same time, so that CMB could pose a problem. In this case, a combination of *ex ante procedural* and *ex post statistical approaches* were employed to control and assess CMB (Podsakoff et al. 2003). For *ex ante procedural*, firstly the items were adapted from scales to fit the study context in a concise way, so that the participant would not confront with ambiguous terms in the survey. I then consult the survey with 2 academics and 15 MBA students who were not participating in the study to ensure that the items were easy to understand, and have no

problems with wording and clarity. Third, the participants were all informed at the beginning of the survey that it was anonymous and confidential. Fourth, to prevent that participants establishing or inferencing the links between items from each sections, the survey was structured under general topic section instead of the flow of our research framework. The instructions were also prepared before each sections to guide the flow. For *ex post statistical approaches*, first, an assessment of CMB was performed. During data analysis, Harman's single factor test was employed and the results show that the first factor accounted for 35.5% of the variance. The result of Harman's single factor test indicates that CMB did not seem to pose a problem in this study. Second, a confirmatory factor analysis is conducted with all the constructs restricted to loading on a single factor. The measurement model fit indices showed poor values (), indicating that CMB does not accounts for the observed relationships between constructs included in the current study (Podsakoff et al., 2003; Venkatraman and Prescott, 1990). Both of the statistical approaches suggest that CMB is not likely to intervene threaten the interpretation of the empirical results.

4.5.2 Measurement Model

The measurement model is assessed using Confirmatory factor analysis (CFA). The measurement model results indicated a good model fit (present in Table 4.2): Root Mean Squared Error of Approximation (RMSEA=0.06), Standard Root Mean Squared Residual (SRMR=0.05), Normal Fit Index (NFI =0.90), Tucker-Lewis Index (TLI=0.94) and Comparative Fit Index (CFI =0.95); χ^2 (220) =424.44, $p < .001$ with significant and large loadings (range from 0.74 to 0.92).

The convergent validity was examined based on several indicators. Item-to-total correlations indicate that items within the same construct are highly correlated provided

Table 4. 2: Measures and Loadings

Constructs and Scale Items		St. loading (t-value)
<i>Mobility (MOB): Adapted from Kim et al. (2010); Ko et al. (2009)</i>		
MOB1	I can use the TripAdvisor app anytime while travelling.	0.861 (12.597)
MOB2	I can use the TripAdvisor app at any time.	0.893 (13.309)
MOB3	I can use the TripAdvisor from anywhere.	0.853 (12.433)
MOB4	The TripAdvisor app is accessible at any time and place.	0.919 (13.901)
<i>Personalization (PER): Adapted from Xu, Luo, Carroll, & Rosson (2011)</i>		
PER1	The TripAdvisor app can provide me with personalized information tailored to my activity context.	0.880 (13.029)
PER2	The TripAdvisor app can provide me with more relevant information tailored to my preferences or personal interests.	0.083 (12.290)
PER3	The information shown in the TripAdvisor app is personalized to my preferences.	0.907 (13.667)
PER4	The information displayed in the TripAdvisor app matches my preferences.	0.810 (11.550)
PER5	The information in the TripAdvisor app is personalized to me.	0.875 (12.927)
<i>Process Satisfaction (PS): Adapted from Zhang & Fitzmons (1999); Nasr Bechwati, & Xia (2003)</i>		
PS1	I was satisfied with the way the TripAdvisor app searched information for me.	0.870 (12.770)
PS2	I was happy with the search experience using the TripAdvisor app.	0.805 (11.402)
PS3	I was satisfied with my experience of deciding which place to visit/service to choose in the TripAdvisor app.	0.737 (10.105)
PS4	I thought the choice selection provided in the TripAdvisor app was good.	0.814 (11.577)
PS5	I would be happy to choose from the same set of options provided in the TripAdvisor app on my consumption occasion.	0.839 (12.098)
<i>Decision satisfaction (DS): Adapted from Heitmann, Lehmann, & Herrmann (2007)</i>		
DS1	My choice made through the TripAdvisor app was a wise one.	0.905 (13.071)

DS2	If I could do it over again, I'd choose a different place/service ®.	0.657 (8.571)
DS3	I am sure it was the right thing to visit the place/use this service found in the TripAdvisor app.	0.767 (10.462)

Market Mavenism (MM): Adapted from Feick & Price (1987)

MM1	I like introducing new brands and products to my friends.	0.817 (11.690)
MM2	I like helping people by providing them with information about many kinds of products.	0.837 (12.110)
MM3	People ask me for information about products, places to shop, or sales.	0.897 (13.439)
MM4	If someone asked where to get the best buy on several types of products, I could tell him or her where to shop.	0.837 (12.115)
MM5	My friends think of me as a good source of information when it comes to new product or sales.	0.907 (13.678)
MM6	Think about a person who has information about a variety of products and likes to share this information with others. This person knows about new products, sales, stores, and so on, but does not necessarily feel he or she is an expert on one particular product. Please indicate the level of agreement that this description fits you.	0.737 (10.152)

Fit Indices: RMSEA=0.06, SRMR=0.05, NFI=0.90 TLI=.94, CFI=0.95, χ^2 (220)=424.44, $p<.001$

the initial evidence of convergent validity of constructs. Furthermore, the average variance extracted (AVE) estimates and Cronbach's alpha (α) of all constructs were above the recommended thresholds of 0.5 and 0.7 respectively (Table 4.3). In addition, composite reliability scores for all constructs were above the recommended threshold of 0.60, which also demonstrating a satisfactory convergent validity (Bagozzi & Yi, 2012).

Discriminant validity was assessed by following Fornell and Larcker's (1981) procedure was applied, and it showed that the lowest square root of AVE among all constructs was 0.73 higher than the highest correlation (0.70) among all constructs. Accordingly, the results of both assessments indicated the presence of discriminant

validity. Finally, concerning multicollinearity, the variance inflation factor (VIF) was estimated. Since the VIF values were below the recommended threshold of 5 (highest variance inflation factor is 2.96), it is suggested that a multicollinearity problem was not a serious concern. Table 4.4 presents the correlation matrix.

Table 4. 3 Measurement Model Results and Descriptive Statistics

Constructs	Cronbach's alpha (α)	AVE	Composite Reliability	Mean	St. Deviation
Mobility	0.93	0.78	0.856	6.26	0.86
Personalization	0.94	0.75	0.882	5.31	1.09
Process Satisfaction	0.91	0.67	0.834	5.98	0.91
Decision Satisfaction	0.76	0.52	0.632	5.82	1.12
Market Mavenism	0.94	0.71	0.879	5.08	1.31

Table 4. 4 Correlation Matrix

Constructs	1	2	3	4	5
1. Mobility	0.88				
2. Personalization	0.40	0.87			
3. Process Satisfaction	0.54	0.53	0.82		
4. Decision Satisfaction	0.37	0.40	0.70	0.72	
5. Market Mavenism	0.19	0.37	0.24	0.27	0.84

Note: Diagonal elements in bold represent square roots of the average variance extracted (AVE) for the constructs.

4.5.3 Structural Model

The hypothesized links were tested using a full covariate based structural equation model. Following established procedures for testing moderated relationships, a multiplicative approach to structural equation modelling was adopted (Ping, 1995). Actual estimation of the structural model was undertaken in R using a Maximum Likelihood model utilizing Heckman tables for robust standard errors. The constructs that were used for multiplicative interactive analysis were mean centered in order to minimize any multicollinearity problem. The results showed a reasonably close-fitting structural model: ($\chi^2(311) = 552$, NFI=0.90, CFI=0.94, RMSEA=0.06; TLI=0.94).

With regards to H1 which argues that mobility relates positively to process satisfaction, findings showed that mobility is indeed positively associated with process satisfaction and supported H1 ($\beta=0.43$; $t=5.63$; $p<0.001$). In line with H2, personalization is positively related to process satisfaction. Support was found for this hypothesis as the results show a significant relationship ($\beta=0.31$; $t=4.86$; $p<0.001$). The results also uphold H3, that the direct effect from process satisfaction to decision satisfaction, the result shows that process satisfaction is positively associated with decision satisfaction ($\beta=0.96$; $t=14.46$; $p<.001$).

A mediation analysis was conducted following Baron and Kenny (1986) to test Hypothesis 4. The results showed that the direct effect of mobility ($\beta=0.46$; $t=5.86$; $p<0.001$) to process satisfaction was significant. The direct effect of mobility on the dependent variable, decision satisfaction was significant ($\beta=0.29$; $t=2.18$, $p<0.05$). Moreover, the direct effect of process satisfaction to process satisfaction was significant ($\beta=0.96$; $t=14.17$, $p<0.001$). When the mediator (process satisfaction) is introduced to the model, along with the independent variable mobility, the effect size of mobility on

decision satisfaction became smaller ($\beta=-0.18$; $t=2.29$, $p<0.05$), indicating a partial mediation effect. Therefore, H4a is partially supported.

Regarding H4b, the direct effect of personalization ($\beta=0.34$; $t=5.57$; $p<.001$) to process satisfaction was significant. The direct effect of personalization on the dependent variable, decision satisfaction activity was significant ($\beta=0.30$; $t=3.28$; $p<.01$). The mediator, process satisfaction significantly affected decision satisfaction ($\beta=0.96$; $t=14.17$; $p<.001$). However, the direct effect of personalization to decision satisfaction ($\beta=-0.06$; $t=-1.06$) became insignificant after the mediator (process satisfaction) was controlled. As such, the results provided evidence that process satisfaction fully mediates the effect of personalization on decision satisfaction (X. Zhao, Lynch, & Chen, 2010). Therefore, H4b was supported. Table 4.5 presents the results of hypothesis tests in this study.

As of Hypothesis 5, it was hypothesized that the moderating effect of market mavenism on the link between mobility and process satisfaction (H5a), as well as the relationship between personalization and process satisfaction (H5b). The result did not empirically show market maven moderates the on mobility and process satisfaction ($\beta=-0.07$; $t=-1.18$), which implies that market mavens' decision-making experience are not contingent based on the 'anywhere' nature of eWOM service. Thus, H5a is not supported. On the other hand, the results confirmed the moderating effect that market maven ($\beta=-0.10$; $t=3.75$; $p<0.05$) has on the path between personalization and process satisfaction, thus supporting H5b. The findings revealed that consumers with a higher level of mavenism are less likely to experience process satisfaction in decision-making when personalized information is provided, but their experience of decision-making

does not depend on mobility of eWOM service. Table 4.6 summarizes the results with corresponding hypotheses proposed in this study.

Following Aiken, West, & Reno (1991), the relationship between personalization and process satisfaction under different levels of consumers' market mavenism was plotted. Specifically, the effects of personalization was estimated on process satisfaction under high versus low (one standard deviation below the mean values) of the process. Figure 4.2 reveals that the effect of personalization on process satisfaction when searching eWOM on mobile devices are mainly determined by consumers with low market mavenism.

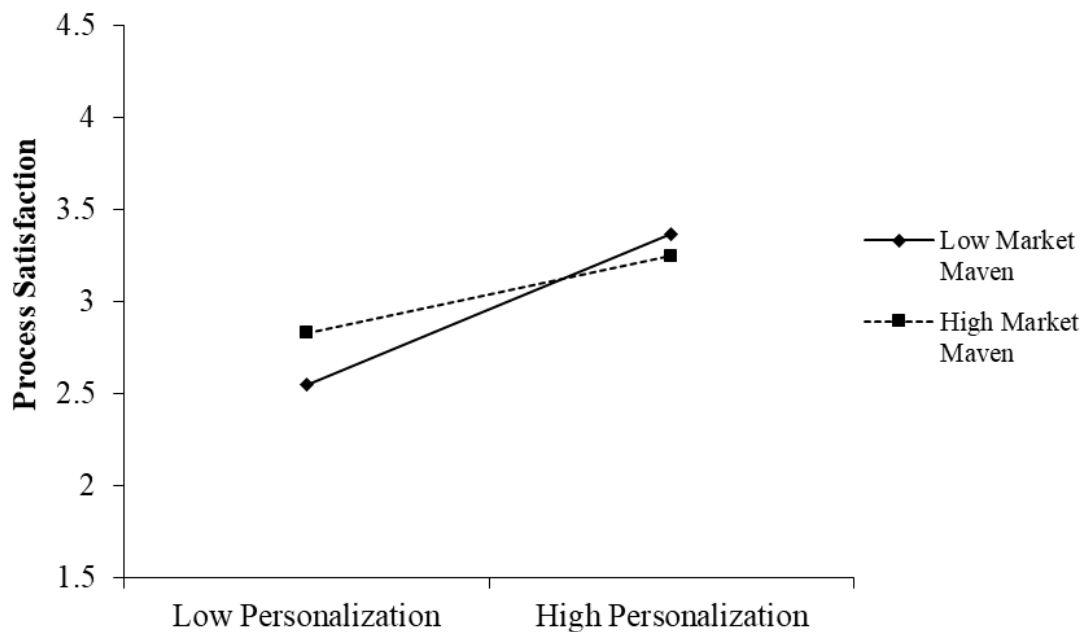


Figure 4. 2: Surface of the Moderating Effect of Market Mavenism on Personalization and Process Satisfaction Relationship

Table 4. 5: Structural Model Results

Dependent variable: Decision Satisfaction N=223						
Path and Hypothesis	Direct Effect		Mediation Effect		Moderation Effect	
	β	t-value	β	t-value	β	t-value
Mobility → Process Satisfaction (H1)			0.461	5.855***	0.434	5.628***
Personalization → Process Satisfaction (H2)			0.340	5.572***	0.307	4.863***
Process Satisfaction → Decision Satisfaction (H3)	0.959	14.169***	1.088	12.716***	0.960	14.463***
Mobility → Decision Satisfaction (H4a)	0.294	2.180*	-0.176	2.294 *		
Personalization → Decision Satisfaction (H4b)	0.304	3.275**	-0.062	-1.047		
Mobility × Market Mavenism → Process Satisfaction (H5a)					-0.078	-1.182
Personalization × Market Mavenism → Process Satisfaction (H5b)					-0.104	-2.178*
Control variables						
Age	-0.165	-0.782	-0.146	-0.784	-0.162	-0.852
Gender	-0.103	-1.080	-0.087	-0.911	-0.104	-1.066
Fit indices						
RMSEA	0.06		0.07		0.06	
SRMR	0.06		0.07		0.07	
NFI	0.93		0.91		0.90	
CFI	0.97		0.95		0.94	
IFI	0.97		0.95		0.94	
χ^2/df	$\chi^2 (73)= 138.29,$ $p<.001$		$\chi^2 (145)= 300.1,$ $p<.001$		$\chi^2 (311)= 552,$ $p<.001$	

* $p<.05$, ** $p<.01$, *** $p<.001$.

Table 4. 6: Hypotheses and Results

Hypotheses	Results
H1: When consumers are searching eWOM using mobile app services, mobility has a positive effect on process satisfaction.	<i>Supported</i>
H2: When consumers are searching eWOM using mobile app services, personalization has a positive effect on process satisfaction.	<i>Supported</i>
H3: When consumers are searching eWOM using mobile app services, process satisfaction has a positive effect on decision satisfaction.	<i>Supported</i>
H4a: When consumers are searching eWOM using mobile app services, process satisfaction mediates the relationship between mobility and decision satisfaction.	<i>Partially supported</i>
H4b: When consumers are searching eWOM using mobile app services, process satisfaction mediates the relationship between personalization and decision satisfaction.	<i>Supported</i>
H5a: When consumers are searching eWOM using mobile app services, mobility has a stronger effect on process satisfaction when the level of consumers' market mavenism are low.	<i>Rejected</i>
H5b: When consumers are searching eWOM using mobile app services, personalization has a stronger effect on process satisfaction when the level of consumers' market mavenism are low.	<i>Supported</i>

4.6 Discussion

The findings support the proposition that mobile characteristics contribute to the hedonic use of the technology artefacts (van der Heijden, 2004), and are able to enhance consumer decision-making through mobile devices. The results suggest that mobility which reflects the on the go nature of mobile devices, positively affects process satisfaction. Personalization is also found to be able to increase process satisfaction, which implies providing tailored eWOM service on mobile devices could improve consumers' decision-making experience. With the benefits of advanced technology, users are able to access desired eWOM information without the restraints of time and space, and therefore give rise to process satisfaction, the result confirms the proposition of the previous study stating that be able to access to desired information is an aspect of purchase process satisfaction (Westbrook et al., 1978). Personalization has been recognized as the factor that is positively associated with the consumers' intention to use a mobile service (Xu et al., 2011). The results demonstrate that personalization positively influences the consumer's satisfaction towards the (searching and choice) process. Consumers may face the problem of higher media richness (compared to looking up reviews in PC context) when scanning or browsing large amounts of word-of-mouth information on the small size screen of their mobile device. However, the attribution of personalization is able to assist consumers by filtering useful information as well as suggesting possible choices. To this end, mobility and personalization are capable of reducing the cognitive efforts of searching and processing word-of-mouth information. As a consequence, less required efforts and lower cognitive costs in the process of information processing could improve the decision-making experience (Bechwati & Xia, 2003) and prevent consumers suffering from information overload at

the same time (Maity & Dass, 2014). Furthermore, Maity and Dass (2014) also point out that consumers like to use mobile devices for simple tasks, and personalized eWOM services in mobile devices are able to record the user's history and avoid repeated efforts (e.g., typing the username and password every time to log-in to the service, or providing user preference).

Another crucial linkage that this study explored is the establishment of the relationship between process satisfaction and decision satisfaction. This study follows Zhang and Fitzsimons (1999)'s conceptualization of decision-making satisfaction, considering the decision-making process and outcome as two distinct constructs and argue that process satisfaction could be the driver of outcome satisfaction. The results confirm the notion that the process through which a decision is an indivisible part of decision-making satisfaction. The hedonic aspects of user experience (such as ease of use and enjoyment) has been broadly examined information technology literature and has been proved to be influential in mobile services (such as mobile games, mobile shopping, mobile chat services, and mobile internet service) adoption behaviour (Ha, Yoon, & Choi, 2007; Lee, Choi, Kim, & Hong, 2007; Nysveen, Pedersen, & Thorbjørnsen, 2005). Results of the current study indicate that process satisfaction positively predicts consumers' decision-making outcome (decision satisfaction). The first research question of this study is answered by the findings derived from the results that the mobile characteristics enhance consumers' decision-making outcome through the hedonic aspect of searching experience (which is derived from using mobile eWOM services). This study also responded to the unexplored research question in mobile marketing literature by clarifying how instantaneity (mobility) and interactivity (personalization) can be exploited to create instant gratification for consumers in purchase decision-making context (Shankar et al., 2016).

This study evaluated this linkage further by seeking to identify factors that enhance or weaken this relationship in relation to market mavens. It is proposed in this study that market mavens are less likely to rely on the support of technology due to their expertise in the market place (Feick & Price, 1987), therefore they do not often feel the urge to search eWOM in the decision-making process. Interestingly, the results show that market mavenism negatively moderates the relationship between personalization, while it does not significantly moderate the mobility and process satisfaction linkage. This implies that market mavens' decision-making process does not depend on the mobility of eWOM service, however, personalization information deters market mavens from having a better decision-making experience. Findings related to the impacts of market mavens are in agreement with prior studies which suggest that market mavens have more affinity for technology (Geissler & Edison, 2005). Moreover, previous literature reveals that market mavens are opinion leaders, market place influencers and early purchasers (Feick & Price, 1987). Therefore, consumers with high mavenism are more likely to be active in word-of-mouth generation activity, for example, communicate product related information and other referral behaviours (Abratt et al., 1995; Higie et al., 1987) to be a source and an influencer of market information, rather than consumers following recommendation most of the time. Furthermore, market mavens are features as a group of consumers with the higher need for uniqueness Clark & Goldsmith (2005), personalized or tailored information might interrupt market mavens' decision-making by providing a 'basic' (e.g. location-based) recommendation or presenting information filtered by distance and ranking. Market mavenism in an electronic context (e-maven) have been investigated in relation to both online content consumption and forward behaviour (Ho & Dempsey, 2010). However, this study extends the scope of market maven into the mobile context and focuses on word-of-

mouth content processing and decision-making satisfaction. Our findings demonstrate that market mavens could benefit from the on the go eWOM searching, however, the personalized 'decision aid' can have an adverse effect on their decision-making experience.

The study also provides insights into the role that process satisfaction plays in the relationship between mobile characteristics and decision-making outcome variable (decision satisfaction). The sense of mobile technology use in information searching facilitate process satisfaction and goes beyond it and increases decision satisfaction. Process satisfaction is found to have mediating power between mobile characteristics and decision satisfaction in this study. The findings demonstrate that both instantaneity (mobility) and interactivity (personalization) nature of mobile services increase the likelihood to make a better decision because consumers the effortless eWOM searching experience on the move via a mobile device. The findings of this study show that '*how satisfied consumers were with their experiences in arriving at purchase decision*' matters, especially when making a purchase decision with searching eWOM on mobile devices (Westbrook et al., 1978; p54). This finding is consistent with prior study that investigating the relationship between purchase process and decision satisfaction in offline (Goff, Boles, Bellenger, & Stojack, 1997; Tanner, 1996; Westbrook et al., 1978) and online (Kohli, Devaraj, & Mahmood, 2004; Thirumalai & Sinha, 2011) context, suggesting efficient shopping experience leads to overall buyer satisfaction (including both channel satisfaction and product satisfaction). This study extends the understanding of consumer decision-making satisfaction in mobile context by empirically showing that mobile eWOM searching experience as a part of the purchase process, have an influence on decision satisfaction.

4.7 Implications

4.7.1 Theoretical Implications

There are several key theoretical implications from this study. First of all, the findings of this study demonstrate how technology shapes word-of-mouth processing in a mobile context which represents a response to the repeated calls in the literature for empirical investigation (Berger, 2014; Lang & Hyde, 2013; Okazaki, 2008b; Shankar et al., 2016). This study also shows that technology factors act as the drivers for decision-making satisfaction, which provides extensive evidence for the proposition of Fitzsimons (2000) that decision-making satisfaction is a multi-dimension concept in which process satisfaction and decision satisfaction are conceptually varied in terms of their antecedents (Karimi et al., 2018). While technology factors (e.g., mobility) have been shown to be influential on consumers' intentions to use various mobile services (e.g., Chae et al., 2002; Deng, Lu, Wei, & Zhang, 2010; Gu, Lee, & Suh, 2009; Mallat et al., 2009; Wu et al., 2011), in this study, it is further confirmed as a predictor of consumer's process satisfaction resulting to decision satisfaction in mobile context.

Second, Palka et al. (2009) proposed that mobility and personalization hinder users eWOM behaviour as they increase the perceived risks. In addition, the findings of Hennig-Thurau et al. (2004) showed that platform assistance has no significant impacts on word-of-mouth behaviour. On the contrary, the results of this study highlight the roles of channel assistance on consumers' eWOM searching in mobile context. This study shows that mobility and personalization are the technical drivers for decision-making satisfaction through the mobile channel. Practitioners are encouraged to exploit mobility and personalization in mobile marketing campaigns in order to satisfy

consumers' needs and therefore give rise to users' decision-making experience and outcome satisfaction. Especially, service designers should focus on making the app an immediate platform where both frustrated and delighted shoppers could get access to eWOM information while on the go (Shankar et al., 2016). Furthermore, rather than transferring entire information from web content to mobile apps, marketers need to tap into the unique capabilities of mobile devices in order to ensure a seamless and painless interactive experience for the consumer (Shankar et al., 2016).

4.7.2 Practical Implications

Third, this study adds insights that process satisfaction derived from mobility and personalization also increases the likeability of making a better decision through mobile channel. Perceived satisfaction with the searching and choice process can be facilitated by the use of mobile services and encourages further engagement of decision making. Based on these findings, service providers are highly recommended to pay attention to ways in which mobile eWOM services can be improved in terms of their entertainment features to provide efficient user experience, so as to differentiate themselves from other counterparts.

4.8 Limitations and Future Research Directions

This study has its limitations. First, although data were collected from consumers in only one country (UK) and as such the findings may not be generalizable to other cultural contexts where the mobile broadband internet subscription rate is relatively low (e.g. African countries). As such future studies should test the effects in multi-cultural contexts.

Second, this study only examined two mobile technology characteristics (mobility and personalization), a future study could investigate other aspects of mobile services, for example, ease of use (Davis, 1989) and interpersonal interactivity (Thorson & Rodgers, 2006). Moreover, previous studies have investigated the influence of monetary benefits on consumer adoption behaviour (Deng et al., 2010; I. Lee et al., 2007). With the practice among merchants to provide coupon rewards to those consumers who provide product reviews, the impact of monetary benefits on consumer activity with mobile eWOM can be considered another direction for future research.

Third, the current study explored how mobile service characteristics lead to decision-making satisfaction which pertains to the question ‘why do people search eWOM on mobile device?’ Previous study suggests that perceived value derived from technology use is positively associated with continuous usage (S. Hong, Thong, & Tam, 2006), along with this proposition, future research could look at the linkage between mobile characteristics and eWOM production in mobile channel, as mobile devices allow users to post reviews of their experience before it fades from memory (Shankar et al., 2016).

Fourth, Kuo, Wu, & Deng (2009)’s study categorizes users’ perceived value towards technology to four perspectives: money, quality, benefit, and social psychology. The mobile characteristics investigated in this study are the function (benefit) -related, yet not content-related (taking into account the limited content authoring capabilities of handheld devices), which can be considered a future research direction.

Furthermore, the quality of the functions in mobile services was not considered in this study. Consumers may face the problem of higher media richness (compared to

looking up reviews in PC context) when scanning or browsing large amounts of word-of-mouth information on the small size screen of their mobile device. The previous study (Maity & Dass, 2014) studied the role of media richness of channels on channel choice and decision-making tasks and showed that consumers prefer undertaking complex decision-making tasks using PC channel (e-commerce) and traditional channel (in-store), and carry out simple decision-making tasks by using mobile channel. Future research could look at the aspect of media richness on consumer decision-making experience.

Chapter Five

Conclusion

5.1 Introduction

Consumers perceive word-of-mouth to be ten times more trustworthy than other types of information such as advertising (Nielsen, 2013). According to the industry report revealed by Nielsen (2013), 92% of consumers rely on word-of-mouth from friends and family over all other forms of commercials. However, word-of-mouth communication has evolved in today's technology-enabled society. The configuration of electronic word-of-mouth extends to be more diverse and reshapes consumers' purchase decision-making. Three studies (presented in chapter two, three and four) in this thesis investigate this nuanced phenomenon from the consumer perspective.

5.2 Phase One – Systematic Review

In *phase one* of the current research project, a framework has been proposed to systematically review the eWOM and consumer decision-making literature. The systematic review (presented in chapter two) synthesizes findings from 113 empirical studies concerning the impact of eWOM on consumer decision-making process. The review examines the current state of knowledge related to eWOM and decision-making linkage. Findings in this study are discussed following the stages of Engle, Kollat and Blackwell (1987)'s decision-making model. In each of these decision-making stage, relevant eWOM characteristics of King et al. (2014)'s model are discussed with regard to their dynamic influence on the cognitive (e.g. eWOM acceptance), affective (e.g. attitude towards the products) and behavioural (e.g. purchase intention) aspects of consumer decision-making behaviour. As evidenced by the findings, eWOM characteristics are studied more frequently in pre-purchase phase (e.g. Information search, product evaluation and purchase decision) than post-purchase phase (e.g. post-

purchase evaluation). Furthermore, previous research in this stream tend to primarily consider eWOM as plain verbal communication and overlook the way that eWOM is presented or delivered. In other word, the communication medium of eWOM has received limited attention.

5.3 Phase Two – Empirical Research

To this end, two studies are designed to fill the research gap by examining two newly emerged aspects of electronic word-of-mouth that reflect the diversity of communication medium. In *phase two* of this research project, two studies are conducted to empirically examine the impact of visual eWOM (in relation to the aspect of how eWOM is presented) and mobile eWOM (link to the aspect of how eWOM is delivered) on the certain dimensions of consumer decision-making journey.

5.3.1 Empirical Study One – Visual eWOM

The traditional word-of-mouth research has been focused on verbal communication, and this focus has been carried over to electronic word-of-mouth research (Ring et al., 2016). The current eWOM research has been centred on the textual features and overlooked the way eWOM information presents and its impact on eWOM consumption amongst consumers. Based on and beyond the literature that focus on how quantitative characteristics (e.g., review valence, content-based metrics) of eWOM affect the way consumers process and evaluate eWOM communication. The first empirical study (chapter three) proposes a conceptual framework in which psychological properties (affective and cognitive content) of eWOM communication (online reviews) have an impact on consumers' evaluation of eWOM information (review helpfulness), and such effects are proposed contingent on the presentation

format of the eWOM. Using 62423 real online reviews collected from tripadvisors.com, the results show that psychological properties are positively associated with how consumer evaluate eWOM information. The findings also shed light on the critical role of presentation format (operationalized by the presence of visual content) in eWOM communication by empirically showing that affective content is more influential than cognitive content when eWOM information contains visual content. The findings guide theorists and practitioners on the understanding of consumers' online review processing pattern. Practitioners should firstly establish incentive mechanisms to encourage users to generate review content with the visual element, and secondly provide instructions to guide users producing more affective content along with visual content in the reviews, and more cognitive content if users prefer to create a text-only review (when no images are provided).

5.3.2 Empirical Study Two – Mobile eWOM

The second empirical study (chapter four) of this research project investigates how eWOM channel affect consumer decision-making satisfaction. Most of the prior studies in eWOM literature consider that eWOM as a technologically homogeneous activity without a specific focus on the media or channel characteristics. On the contrary, this study focuses on consumers' eWOM activity in the mobile channel. As we are officially in the era of the 'research-obsessed' consumer, as they tend to search anytime and anywhere to get the information they need to make the right purchase decision. Nowadays *'the customers talks across all possible channels and is increasingly becoming channel-agnostic'* (Clark, 2010). However, the findings of the second empirical study (chapter 4) shows that this is not the case with regard to how consumer process eWOM information. This study examined the influence of

characteristics mobile technology artefacts (mobility and personalization) on consumer decision-making satisfaction in eWOM context. The study contributes to the marketing literature by showing that the characteristics of mobile services affect consumers' decision-making experience (process satisfaction), which in turn enhance decision-making outcome (decision satisfaction). The study also provides empirical evidence that the level of involvement in the marketplace (market maven) can affect consumer decision-making by moderating the relationship between personalization and process satisfaction. Understanding how mobile characteristics affect consumer decision-making helps marketers to better design mobile eWOM services, especially for user-generated content and crowdsourcing service providers, and therefore enhance consumer channel satisfaction and loyalty to the service. Consequently, successful mobile eWOM services providers would be able to attract more cooperative business partners and at last reap their efforts in financial returns.

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Appendix A: Questionnaire

Welcome to this Survey.



Thank you for taking part in this survey which is conducted by a group of academics for research purpose. This survey aims to gain insights of consumers' review-reading behaviour on mobile devices. Please note that you need to have experience of using the Tripadvisor mobile app to make a consumption decision and be based in the UK in order to participate in our sample (If you don't, you are not eligible to participate and the system will not provide you with a mTURK completion code).

Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time without penalty. You are free to decline to answer any particular question you do not wish to answer for any reason. If you have any questions, please contact adp13bxu@uea.ac.uk.

Let's start with your last experience of using the TripAdvisor mobile app ...

When was your last time using the TripAdvisor mobile app?

- ☐ 1 day ago
- ☐ 3 days ago
- ☐ 1 week ago
- ☐ 2 weeks ago
- ☐ 1 month ago
- ☐ 2 months ago
- ☐ More than 3 months ago
- ☐ I have never used it

Please provide the name of place/service you chose via the TripAdvisor app last time?

How much did you spend?

Now, we would like to know a bit more about how you feel about your last decision-making experience using the TripAdvisor mobile app.

<i>Please indicate your level of agreement with the following statements (based on your last experience of using the Yelp mobile app to make a consumption decision).</i>	<i>Strongly disagree</i>							<i>Strongly agree</i>
My choice made through the TripAdvisor app was a wise one.	1	2	3	4	5	6	7	
If I could do it over again, I'd choose a different place/service.	1	2	3	4	5	6	7	
I am sure it was the right thing to visit the place/use this service found in the TripAdvisor app.	1	2	3	4	5	6	7	
I was satisfied with the way the TripAdvisor app searched information for me.	1	2	3	4	5	6	7	
I was happy with the search experience using the TripAdvisor app.	1	2	3	4	5	6	7	
I was satisfied with my experience of deciding which place to visit/service to choose in the TripAdvisor app.	1	2	3	4	5	6	7	
I thought the choice selection provided in the TripAdvisor app was good.	1	2	3	4	5	6	7	
I would be happy to choose from the same set of options provided in the TripAdvisor app on my consumption occasion.	1	2	3	4	5	6	7	

In the following section, we would like to know about how you feel about the TripAdvisor mobile app.

<i>Please indicate your level of agreement with the following statements.</i>	<i>Strongly disagree</i>				<i>Strongly agree</i>		
I can use the TripAdvisor app anytime while travelling.	1	2	3	4	5	6	7
I can use the TripAdvisor app at any time.	1	2	3	4	5	6	7
I can use the TripAdvisor from anywhere.	1	2	3	4	5	6	7
The TripAdvisor app is accessible at any time and place.	1	2	3	4	5	6	7
The TripAdvisor app can provide me with personalized information tailored to my activity context.	1	2	3	4	5	6	7
The TripAdvisor app can provide me with more relevant information tailored to my preferences or personal interests.	1	2	3	4	5	6	7
The information shown in the TripAdvisor app is personalized to my preferences.	1	2	3	4	5	6	7
The information displayed in the TripAdvisor app matches my preferences.	1	2	3	4	5	6	7
The information in the TripAdvisor app is personalized to me.	1	2	3	4	5	6	7
I like introducing new brands and products to my friends.	1	2	3	4	5	6	7

You already finished more than half of the questions. Thank you for your patience. In the following set of question, could you please let us know about how much you are involved in the market place in general?

<i>Again, please indicate your level of agreement with the following statements.</i>	<i>Strongly disagree</i>				<i>Strongly agree</i>		
I like helping people by providing them with information about many kinds of products.	1	2	3	4	5	6	7
People ask me for information about products, places to shop, or sales.	1	2	3	4	5	6	7
If someone asked where to get the best buy on several types of products, I could tell him or her where to shop.	1	2	3	4	5	6	7
My friends think of me as a good source of information when it comes to new product or sales.	1	2	3	4	5	6	7
Think about a person who has information about a variety of products and likes to share this information with others. This person knows about new products, sales, stores, and so on, but	1	2	3	4	5	6	7

does not necessarily feel he or she is an expert on one particular product. How well would you say that this description fits you?							
I am satisfied with my life.	1	2	3	4	5	6	7
In most way my life is close to my ideal.	1	2	3	4	5	6	7
The condition of my life are excellent.	1	2	3	4	5	6	7
So far, I have got the important things I want in my life.	1	2	3	4	5	6	7

In this final set of question, we would like to know about your background. Please answer the following questions. Your responses are for research purpose only.

What is your gender?

- ☐ Male
☐ Female

Which year you were born?

What is your education level?

- ☐ High school or less
☐ College
☐ University graduate
☐ Postgraduate and above

What is your employment status?

- ☐ Full time employment
☐ Part time employment
☐ Unemployed
☐ Student
☐ Retired
☐ Other

What is your yearly income in US dollars?

Please indicate how many years you have been using the TripAdvisor app?

On average, how many times per month do you use the TripAdvisor app?

Please indicate the main purpose of you using the TripAdvisor mobile app.

- ☐ Look up reviews
- ☐ Find nearby restaurants, shops or other services
- ☐ Post reviews
- ☐ Check in
- ☐ Add photos
- ☐ Make reservations
- ☐ I use The TripAdvisor just for fun
- ☐ Other(Please specify)

THANK YOU VERY MUCH FOR YOUR PARTICIPATION

At the end of this survey, you will be provided with a code which you have to paste in Amazon mTurk in order to get paid for your participation.