A Review for the Influential Factors in E-WOM Research

Jing Yang

State University of New York, New York, USA

Rathindra Sarathy

Oklahoma State University, Stillwater, USA

Jie Feng

State University of New York, New York, USA

Although substantial literature is available on customer reviews or e-WOM (electronic word of mouth), the topic is still under development and offers potential opportunities for further research. Since the topic is still at the stage of development, a review of the literature on customer reviews with the objective of summarizing existing findings will initial further studies on the growth of e-WOM technologies. This paper reviews the literature on e-WOM using a suitable classification scheme to identify the gap between theory and practice. Aiming to provide useful insights into the anatomy of e-WOM literature and be a good source for anyone who is interested in e-WOM, nine categories of findings are ultimately presented based on dependent-independent-variable relationship, along with a comprehensive list of reference. The paper ends up with discussions on future directions for research.

Keywords: e-WOM (electronic word of mouth), classification of influential factors

Introduction

In an online shopping environment, given the multitude of products, how to effectively present products is an important issue for merchants, especially retailers, to consider. Meanwhile, consumers also face a similar problem of how to quickly and efficiently evaluate products and services. The temporal and spatial separation of online vendors from customers engenders uncertainty in online transactions and entails risks such as financial risks, time risks, performance risks, and social risks (Laroche, Yang, McDougall, & Bergeron, 2005). Customer reviews or e-WOM (electronic word of mouth), referring to the reviews on both products/services and sellers, are an important source of information to help potential customers assess online products/services. In contrast to product introductions on merchant web pages, customer reviews, though presented and stored in the merchant-generated platforms, are actually generated by the customers and potentially carry greater credibility. Substantial research has gone into studying the roles and influence of e-WOM in e-business.

To date, the major research questions addressed in the extant research can be understood in the following aspects. First, what motivates reviewers to leave comments online? Not all the customers who have

Jing Yang, assistant professor, School of Economics and Business, State University of New York at Oneonta, USA.

Rathindra Sarathy, Ardmore professor of Business Administration, Spears School of Business, Oklahoma State University, Stillwater Campus, Stillwater, USA.

Jie Feng, assistant professor, School of Economics and Business, State University of New York at Oneonta, USA.

Correspondence concerning this article should be addressed to Dr. Jing Yang, 330 Netzer, Oneonta, New York, USA. E-mail: jing.yang@oneonta.edu.

experienced the products/service prefer to voice their comments online. Researchers want to understand who likes to write reviews online, what motivates them to do so, and what reviews are trustworthy. A related research stream also addresses itself to the following question: What determines the credibility of reviews? Rooted in the informational and the normative cues, researchers want to figure out the determinants of the credibility of reviews. The third stream of the studies is centered on the question of what factors influence customers' judgments about the products/services. An equivalent question could also be what factors influence customers' purchase decisions. A long and steady stream of research has been conducted to answer these questions by exploring the characteristics of products, reviews, reviewers, customers, and merchants.

However, the impact of customer reviews changes over time. E-WOM is different from conventional word of mouth in terms of the medium that is used and the speed with which it spreads. Before the emergence of e-commerce, the spread of reviews relied mainly on interpersonal communication. Unlike conventional WOM, e-WOM relies more on virtual social networks and is spread through various media, such as chat rooms, review website, blogs, online forums, and so on (Dellarocas, Awad, & Zhang, 2004). Consequently, the extent of the influence of e-WOM is comparatively broader and lasts longer. With rapid diffusion, e-WOM can even change the life cycle of products. To some extent, some of the findings related to conventional WOM are outdated, for example, Cheung and Lee (2008) discovered that the normative influence of e-WOM can change private opinions, while in the traditional communication context, WOM can only lead to public compliance (Cheung, Lee, & Rabjohn, 2008). There is an urgent need to update the existing findings based on conventional WOM and explore effects in the new environment.

The purpose of this study is to comprehensively review and classify the literature on customer reviews published between 2000 and 2010, and to aggregate and summarize prior research findings in this field. The rest of the paper is organized as follows: First, the research methodology used in the study is described; second, the e-WOM articles are analyzed and the classification results are reported; and finally, the implications of the study are discussed and conclusions are presented.

Literature Review

Basically, there are 10 broadly-discussed variables or constructs: sales/sales growth, helpfulness of reviews, overall rating of products, intention to leave reviews, price premium, purchase intention, e-WOM quality, e-WOM adoption, product judgment, and purchase uncertainty. Figure 1 presents the number of papers published on each topic from 2000 to 2010. Considering that a single paper could work on more than one target variable, the accumulated number of papers could be more than 35.

Sales/Sales Growth

Product sales is the most prevalent dependent variable adopted in predictive models (shown in Figure 1). Generally, the factors impacting product sales can be grouped into review-related factors and non-review-related factors.

Review related factors. Review-related factors include average customer rating, dispersion of ratings, review valence, review quantity, review length, number of votes on reviews, and review content. Specifically, prior studies find that product sales improve, when the product is rated more highly. That is, a higher consumer rating is found to be associated with higher sales (Chen, Wu, & Yoon, 2004; Chevalier & Mayzlin, 2006; Clemons, Gao, & Hitt, 2006; Dhanasobhom, Chen, & Smith, 2007; Ghose & Ipeiritis, 2010; Jiang & Wang,

2008; Li & Hitt, 2008), and higher ratings together with a higher number of reviews are positively associated with higher sales (Chen et al., 2004). Additionally, the dispersion of star ratings is viewed as an indicator for future sales as important as the average customer rating (Clemons et al., 2006). It is claimed that high ratings associated with high-end reviews are a good predictor of rapid-growing future sales, while poor ratings associated with low-end reviews are not necessarily a good predictor of poor sales (Clemons et al., 2006).

Figure 1. Number of papers published on each topic.

Review valance, reflected by the star ratings, reflects the attitude, either positive or negative, of reviewers toward the product or service. Prior studies find that an increase in new and favorable reviews results in the increase in product sales (Chevalier & Mayzlin, 2006). Five-star reviews improve sales while one-star reviews hurt sales (Chevalier & Mayzlin, 2006); however, some studies claim that there is no significant relationship between review valance and product sales (Forman, Ghose, & Wiesenfeld, 2008). In the context of book sales, Chevalier and Mayzlin (2006) claimed that an incremental negative review is more powerful in decreasing sales than an incremental positive review in increasing sales. That is, one-star reviews have a stronger impact than five-star reviews. However, in the context of beer sales, Clemons et al. (2006) found that high-end reviews have a greater impact than low-end reviews, contradicting Chevalier and Mayzlin's claim in the context of book sales. Clemons et al. (2006) argued that it is due to the different attributes of the two products of interest.

Review quantity refers to the number of reviews on the product or service. It is claimed that an increase in the number of reviews has a significant impact on sales growth (Chen et al., 2004; Chevalier & Mayzlin, 2006; Clemons et al., 2006; Ghose & Ipeirotis, 2010; Hu, Liu, & Zhang, 2008; Li & Hitt, 2008; Zhu & Zhang, 2010). However, this effect is also found to be moderated by review valance. For instance, the effect of volume on demand depends on whether the product's valance is perceived as positive or negative by consumers. An increase in the number of ratings is associated with an increase in sales when the average rating is above the anchor point and vice versa (Etzion & Awad, 2007). Also, the effect of volume is significant if the difference in valance between the product and the other products in the same category is below a threshold value and vice versa (Etzion & Awad, 2007).

Review content is considered as another important factor, for example, with an increase in subjective expression in the reviews, sales is also driven up (Ghose & Ipeiroitis, 2010). Compared to reviews with only objective or only subjective sentences, reviews with a mixture of objective and highly subjective sentences have a negative impact on product sales (Ghose & Ipeiroitis, 2010). The readability of reviews has a positive impact on sales (Ghose & Ipeiroitis, 2010). Also, an increase in the proportion of spelling mistakes is statistically associated with a decrease in sales of experience products. However, for search products, the impact is not significant (Ghose & Ipeiroitis, 2010). One interesting finding is that negative reviews can be associated with sales growth if the reviews are informative and detailed, that is, if reviewers clearly outline the pros and cons of the product and provide sufficient information supporting their standpoint. In this case, negative reviews might result in sales growth. The conjecture is that the negative attributes of the product did not concern the consumers as much as they did the reviewers (Ghose & Ipeiroitis, 2010).

The number of votes on reviews indicates the information credibility of reviews. Reviews with a high proportion of helpful votes have a relatively higher impact on sales than reviews with a low proportion of helpful votes. To be specific, reviews with high star ratings and a high proportion of helpful votes increase sales. However, reviews with low star ratings and a high proportion of helpful votes decrease sales (Dhanasobhom et al., 2007). Helpful reviews are necessarily the factor leading to sales growth (Ghose & Ipeiroitis, 2010). The quality of writing in reviews is found to have a moderating effect. The reviews written by high quality, high exposure reviewers with low product coverage (a low number of reviews on the product) have a stronger influence than reviews written by low quality, low exposure reviewers with high product coverage (Hu et al., 2008). Likewise, Spotlight reviews have a larger positive marginal impact on sales than do other reviews (Dhanasobhom et al., 2007).

Review length is also found to have an effect. When the star rating on the product is controlled, long reviews depress sales (Chevalier & Mayzlin, 2006). One possible reason could be that five-star reviews are shorter than four-star reviews. The length of reviews is assumed to be correlated with the enthusiasm of reviewers. However, the longer reviews do not necessarily stimulate sales. The above finding can be viewed as evidence that customers indeed read the content of reviews (Chevalier & Mayzlin, 2006).

Non-review related factors. The other stream of related factors reflects the impact from products and reviewers. Specifically, regarding products, product quality, product price, product popularity, and product age have been found to have an impact, for example, product price is found to negatively impact sales (Chen et al., 2004; Dhanasobhom, et al., 2007; Ghose & Ipeiroitis, 2010; Li & Hitt, 2008; Zhu & Zhang, 2010). Promotions, such as discounts, play an important role in driving sales (Chen et al., 2004; Jiang & Wang, 2008; Li & Hitt, 2008). The relationship between price and quality is positive, but the relationship becomes weaker as the price goes up; with the increase in quality, the speed of price changes increases (Li & Hitt, 2010).

Product popularity has a moderating effect; that is, customer reviews have a greater impact on less popular products than on those with more popularity, in the online games market (Zhu & Zhang, 2010) and the book market (Dhanasobhom et al., 2007). For popular products, a higher recommendation does not necessarily lead to higher sales (Chen et al., 2004). All three aspects of reviews—the number of reviews, the average customer rating, and the variation of ratings—have a greater impact on less popular products than on more popular products in the context of games (Zhu & Zhang, 2010). Additionally, reviews with a high proportion of helpful votes have a larger impact on less popular books than on more popular books (Dhanasobhom et al., 2007).

Product quality, product age, and firm age are also influential. For sales, the factors, such as quality, opposite quality rating, megapixel, days available, and in stock, have a significant impact (Jiang & Wang, 2008). Customer reviews have been found to influence sales more after the early, introductory months (Zhu & Zhang, 2010); however, the influence of reviews is posited to be a decreasing function of product age (Hu et al., 2008). Similarly, young firms are found to have faster-growing sales rates than old firms (Clemons et al., 2006).

Helpfulness of Reviews and E-WOM Quality

Perceived helpfulness of reviews has a direct effect on perceived credibility of reviews (Dhanasobhom et al., 2007; Mudambi & Schuff, 2010), and e-WOM quality is logically related to the helpfulness of reviews, that is, high quality e-WOM leads to a high perception of helpfulness. Therefore these two variables are discussed together. Prior studies show that the helpfulness of reviews is impacted by factors such as review valence, review length, review content, product types, and reviewers, for example, review rating has an impact on the helpfulness of the review; however, it is moderated by product type. Regarding experience products, reviews with an extreme rating are less helpful than reviews with a moderate rating; for search products, ratings have no significant impact on helpfulness (Mudambi & Schuff, 2010). In the context of book selling, reviews with a moderate rating are less helpful than those with an extreme rating (Forman et al., 2008).

The effect of review content is conditional. Specifically, if there is a single review from a single reviewer, the effect of review content as reflected by the vote on helpfulness is greater than the other factors, such as reviewers' identity disclosure. However, when there are multiple reviews from multiple reviewers, review content becomes less important (Forman et al., 2008). Specifically, the extent of subjectivity in the reviews has a significant impact on the extent to which customers perceive the helpfulness of reviews (Ghose & Ipeiritis, 2010). Reviews with a mixture of sentences with objective content and sentences with extreme and subjective content are found to be more helpful (Ghose & Ipeiritis, 2010). Also, an increase in the readability of reviews leads to an increase in the helpfulness of reviews (Ghose & Ipeiritis, 2010). An increase in spelling mistakes leads to a decrease in the helpfulness of reviews (Ghose & Ipeiritis, 2010). In addition, review depth has a positive effect on the helpfulness of the review, that is, longer reviews are assumed to be more helpful (Mudambi & Schuff, 2010).

As mentioned earlier, product type moderates the effect of review valence on the helpfulness of reviews. That is, for experience products, reviews with an extreme rating are less helpful than reviews with a moderate rating; regarding search products, ratings have no significant impact on helpfulness (Mudambi & Schuff, 2010). Product type also moderates the effect of review depth on the helpfulness of the review. Specifically, review depth has a greater positive effect on the helpfulness of the review for search products than for experience products (Mudambi & Schuff, 2010).

Last, but not least, the identity of reviewers is claimed to be an important factor. The disclosure of identity, such as the reviewer's real name and location, can improve the helpfulness of reviews (Forman et al., 2008; Ghose & Ipeiritis, 2010). Also reviewers' historical performance has a significant impact on the helpfulness of reviews; however, the direction of this impact is product restricted (Ghose & Ipeiritis, 2010).

Regarding e-WOM quality, both online participation in shaping opinions and the responses of others have a positive effect on e-WOM quality, but the effect is moderated by gender (Awad & Ragowsky, 2008). Award and Ragowsky (2008) claimed that men consider the ability to post information to be a positive influence on

WOM quality, while women discount the value of posting information, but place greater emphasis on the responsiveness of other consumers to their contributions. The effect of responsive participation of others in an online WOM forum is stronger for women than for men. Women place a greater emphasis on the relationship between perceived ease of use and trust than men do. Both females and males agree that the perceived usefulness of a website positively impacts users' trust in the website (Awad & Ragowsky, 2008). Sometimes gender has also been used as a control variable in the study (Li & Hitt, 2010).

Overall Rating

The overall rating of a product is found to be impacted by review content, product age, and several other factors. Specifically, ratings are claimed to change over time, especially between initial adopters and followers. On average, reviews tend to be positive (Chen et al., 2004; Chevalier & Mayzlin, 2006). Reviews from early adopters are assumed to be different from those by the broader reviewer population. In the context of book selling, early adopters are more likely to be fans of the authors. This bias is called self-selection bias. Self-selection bias impacts consumer purchase behavior and changes over time. Consequently, product ratings change over time (Li & Hitt, 2008, 2010). Marketing strategies, such as pricing, advertising, and promoting, can be used to alter consumers' self-selection bias. If self-selection bias is not corrected, it decreases consumer surplus (Li & Hitt, 2008).

Review format is also claimed to be influential. Different formats of reviews can lead to different influences from the standpoint of multi-dimensional and uni-dimensional reviews (Li & Hitt, 2010). The overall rating in multi-dimensional reviews is negatively affected by price, while the quality rating in multi-dimensional reviews is not affected by price. Rating in uni-dimensional reviews is also negatively affected by the price. The relationship between price and quality is positive, but gets weaker as price goes up. With an increase in quality, the speed of price change increases (Li & Hitt, 2010).

Several other factors influence overall ratings. With the substantial information online, one of the concerns is how merchants build trust. Overall ratings on products to some extent reflect customers' evaluation of merchants (Qu, Zhang, & Li, 2008). According to content analysis, 14 factors influence overall ratings: quality of order processing, online delivery, product price, effectiveness of service representative, quality of delivered product, ease of purchase, order tracking service, customer service accessibility, product delivery accuracy, shipping cost, product availability as promised, post-transaction spam, ease of returning product, and shipping options (Qu et al., 2008). Among these factors, product price, ease of purchase, shipping cost, and shipping options are related to online transactions. The other 10 factors are post-transaction (Qu et al., 2008).

Intention-to-leave Reviews

Intention-to-leave reviews are mainly discussed in connection with the characteristics of reviewers. The characteristics of reviewers have been discussed from three perspectives: personality, past performance, and perceptions, for example, Picazo-Vela, Chou, Melcher, and Pearson (2010) proposed that personality is an important factor impacting an individual's intention to provide an online review. They adopted the broadly used Big Five personality framework, consisting of extraversion, neuroticism, agreeableness, conscientiousness, and openness. Based on a cross-sectional survey study, only neuroticism and conscientiousness are significant predictors. Attitude-toward-leaving reviews and perceived pressure are also found to have a positive impact (Picazo-Vela et al., 2010).

With the purpose of understanding the motivation for e-WOM referral, Hennig-Thurau, Gwinner, Walsh, and Gremler (2004) tested the effect of the following items: platform assistance, venting of negative feelings, concern for other consumers, extraversion/positive self-enhancement, social benefits, economic incentives, helping the company, and advice-seeking. Relative to platform-visit-frequency, helping the company is not a significant factor. Both platform assistance and venting negative feelings have a negative influence, decreasing the number of visits of consumers (Hennig-Thurau et al., 2004). Compared to comment writing, platform assistance, venting negative feelings, and helping the company are not significant (Hennig-Thurau et al., 2004). Specifically, among all the factors, social benefit is especially significant (Hennig-Thurau et al., 2004). Also regarding motive relevance, providers of e-opinions can be grouped into self-interested helpers, multiple-motive consumers, consumer advocates, and true altruists (Hennig-Thurau et al., 2004).

Additionally, Wangenheim and Bayon (2007) investigated the function of satisfaction. Customer satisfaction exhibits a positive effect on both the likelihood and the number of WOM referrals (Wangenheim & Bayon, 2007), that is, both of them increase as customer satisfaction increases. The positive effect of customer satisfaction on the likelihood of a WOM referral is positively moderated by product involvement. Specifically, the link between satisfaction and the likelihood of WOM referrals is stronger for high product-involvement customers than for low product-involvement customers. Other factors, such as attitude toward leaving reviews, subjective norm, perceived behavioral control, and perceived pressure, can impact people's intention to leave reviews (Picazo-Vela et al., 2010).

Ratings of similar product are also shown to be influential, for example, products with higher similar product ratings are more likely to have additional reviews posted; however, products with low similar product ratings are more likely to have no reviews posted (Amblee & Tung, 2008). In addition, products with higher brand reputation and higher similar product ratings are more likely to have additional reviews posted (Amblee & Tung, 2008). Contrarily, products with low brand reputation and low similar product ratings are more likely to have no reviews posted (Amblee & Tung, 2008).

Product involvement also exhibits a positive effect on the conditional number of WOM referrals given by a customer (Wangenheim & Bayon, 2007), for example, the positive effect of customer satisfaction on the likelihood of a WOM referral is positively moderated by situational involvement. Specifically, the link between satisfaction and the likelihood of WOM referrals is stronger for high-situational-involvement customers than for low-situational-involvement customers (Wangenheim & Bayon, 2007). Situational involvement exhibits a positive effect on the conditional number of WOM referrals given by a customer (Wangenheim & Bayon, 2007). Also, the positive effect of customer satisfaction on the likelihood of a WOM referral is positively moderated by market place involvement. Specifically, the link between satisfaction and the likelihood of WOM referrals is stronger for high marketplace-involvement customers than for low marketplace-involvement customers (Wangenheim & Bayon, 2007). Marketplace involvement exhibits a positive effect on the conditional number of WOM referrals given by a customer (Wangenheim & Bayon, 2007).

Price Premium

“Price premium” means the higher price at which a product is sold to give it snob appeal over competing brands through an aura of exclusivity. Prior studies show that price premium is affected by review content, trust, reviewers, average rating, review valence, and product quality. For instance, the average rating has a positive effect on price and negative reviews have a negative effect (Jiang & Wang, 2008). Reviewers' past

performance, such as lifetime positive or negative ratings, reviewers' past experience, and auction bids, also influences price premium (Pavlou & Dimoka, 2006).

To analyze the effect of customer reviews on building trust, Pavlou and Dimoka (2006) classified the reviews in e-bay into four groups: outstanding benevolence comments, abysmal benevolence comments, outstanding credibility comments, and abysmal credibility comments. They hypothesized that the emotion and comments in the reviews are capable of shaping potential buyers' trust in the merchants (Pavlou & Dimoka, 2006). It turns out that outstanding benevolence comments positively influence consumers' perception of sellers' benevolence, while abysmal benevolence comments negatively influence their perception of sellers' benevolence; outstanding credibility comments positively influence consumers' perception of sellers' credibility, while abysmal credibility comments negatively influence their perception of sellers' credibility (Pavlou & Dimoka, 2006). In addition, the positive perception of merchants' benevolence and credibility derived from the outstanding benevolence comments and the outstanding credibility comments drive up the price premium, and trust propensity positively influences both benevolence and credibility (Pavlou & Dimoka, 2006).

Product quality is also influential. Factors, such as rating, megapixels, optical zoom, and days available, have a significant impact (Jiang & Wang, 2008). Specifically, product quality has been found to have a moderating effect (Jiang & Wang, 2008). That is, if a high-quality firm's product rating improves, its equilibrium prices will increase and its equilibrium sales volume will decrease (Jiang & Wang, 2008). However, if a low-quality firm's product rating improves, its equilibrium price increases, if its perceived quality is relatively low, and decreases otherwise; its competitor's price will always decrease (Jiang & Wang, 2008). Also if a low-quality firm's product rating improves, the equilibrium sales volumes will increase (Jiang & Wang, 2008).

Purchase Intention

"Purchase intention" measures customers' intention to purchase in the future given any opportunity and is commonly adopted as an endogenous construct in causal models. Researchers are interested in exploring the determinants of customers' motivation to purchase. Customers' perceptions, such as perceived informativeness of reviews and perceived popularity of the product, are important factors, for example, the perceived informativeness of positive reviews (Park & Lee, 2008) and the perceived popularity of products (Park & Lee, 2008; E. Yao, Fang, Dineen, & X. Yao, 2009) are found to positively affect purchase intention. Trust, constituted by perceived competence, perceived benevolence, and perceived integrity, has a positive effect on purchase intention (Cheung & Lee, 2008).

The effects of review format, prior knowledge, and purchase involvement on purchase intention are also found to be significant and hard to isolate for discussion. With respect to review format, attribute-value reviews are perceived as more informative than simple-recommendation reviews (Park & Lee, 2008). The impact of the number of reviews on perceived informativeness of the review information set is stronger for attribute-value reviews than for simple-recommendation reviews (Park & Lee, 2008). Likewise, on the basis of a comparison of attribute-centric and benefit-centric reviews, review format has a stronger effect on the purchase intention of consumers with high expertise than on consumers with low expertise (Park & Kim, 2008).

As mentioned above, prior knowledge is discussed as a moderator in the studies. For consumers with high

expertise (expert), attribute-centric reviews have a stronger influence on information cognition than benefit-centric reviews. However, for consumers with low expertise (novice), benefit-centric reviews have a stronger influence on information cognition than attribute-centric reviews (Park & Kim, 2008). Likewise, for consumers with high expertise (expert), attribute-centric reviews have a stronger influence on consumers' purchasing intention than benefit-centric reviews; and for consumers with low expertise (novice), benefit-centric reviews have a stronger influence on consumers' purchasing intention than attribute-centric reviews (Park & Kim, 2008).

Purchase involvement is also assumed to have a moderating effect. For low-involvement consumers, the impact of the perceived product popularity on purchasing intention is greater than the impact of the perceived informativeness of the review information set (Park & Lee, 2008). For high involvement consumers, the impact of the perceived informativeness of the review information on purchasing intention is greater than the impact of the perceived product popularity (Park & Lee, 2008). Also, the purchasing intention of high-involvement consumers initially increases then decreases, gradually, with the number of attribute-value reviews, drawing an inverted U shape, while the purchasing intention of low-involvement consumers improves with the number of attribute-value reviews and simple-recommendation reviews (Park & Lee, 2008).

The quality of online reviews has a stronger positive effect on the purchasing intention for high-involvement consumers than for low-involvement consumers (Park, Lee, & Han, 2007). For instance, the informant and recommender roles are both positively related to the consumer purchasing intention. However, low-involvement consumers focus on the peripheral cues of showing popularity (recommendation role) regardless of review quality (information role). High-involvement consumers focus not only on the product information obtained from reviews (informant role), but also on the product popularity shown by the reviews (recommender role) (Park et al., 2007).

E-WOM Adoption

E-WOM adoption refers to a process in which people purposely engage in using the information in the reviews (Cheung et al., 2008). Perceived credibility (Cheung, Luo, Sia, & Chen, 2009) and information usefulness (Cheung et al., 2008) of reviews have been examined as the antecedents of e-WOM adoption. In particular, e-WOM credibility refers to the extent to which one perceives a recommendation/review as believable, true, or factual (Cheung et al., 2009). Information usefulness refers to the individual's perception that using the information will enhance or improve his/her performance (Cheung et al., 2008). Researchers examine the factors determining the usefulness and credibility of reviews and the effect of information usefulness and review credibility on recipients' intention to adopt, for example, Cheung et al. (2009) examined the factors that influence the perceived credibility of e-WOM. They proposed that according to the dual process theory, the perceived credibility of e-WOM could be affected by informational and normative cues in the reviews. Information cues incorporate aspects such as argument strength, recommendation framing, recommendation sidedness, source credibility, and confirmation with prior knowledge. Normative cues include recommendation consistency and recommendation rating. It turns out that other than recommendation framing and sidedness, both informational and normative cues significantly affect how people determine the credibility of online recommendations (Cheung et al., 2009).

Also resorting to dual process theory, Cheung et al. (2008) measured the influence of argument quality and source credibility on information usefulness. Argument quality in the study is measured by four

commonly-used dimensions: accuracy, timeliness, relevance, and comprehensiveness. Source credibility is measured by source expertise and source trustworthiness. The results of the study show that only the relevance and the comprehensiveness of the argument quality have a statistical effect on information usefulness. They argued that due to the characteristics of food and restaurants, some of the proposed factors did not take effect (Cheung et al., 2008).

Product Judgment

“Product judgment” primarily measures customers’ attitude towards products and is also a commonly adopted endogenous construct in causal models. It has been found to be affected by information vividness, review content, review valence, brand reputation, purchase involvement, and readers’ personality. Specifically, information vividness is related to the presentation of the information in the reviews (Herr, Kardes, & Kim, 1991; Weathers, Sharma, & Wood, 2007). Herr et al. (1991) comparing the WOMs without pictures and WOMs with pictures, found that with high control over information WOM communication has a greater impact on product judgment than less-vivid printed information (Herr et al., 1991). Vivid WOM communication has a reduced effect on product judgments, when a prior impression of the product or extremely negative attribute information is available from memory. Subjects may focus more on vivid WOM information than on attribute information, because vivid information is more attention drawing or because the attributes may be perceived as irrelevant. The effects of anecdote vividness on judgment were robust even though highly relevant attribute information was available (Herr et al., 1991).

Review content is influential as well, for example, expert reviews are seen as more persuasive than non-expert reviews (Vermeulen & Seegers, 2009). High quality negative reviews of high quality impact customer attitude more strongly than low quality negative reviews (Lee, Park, & Han, 2008). As the number of higher quality negative reviews increases, the attitude toward the product becomes less favorable (Lee et al., 2008). If firms’ manipulation strategy on reviews is a monotonically increasing or decreasing function of the product’s true quality, this manipulation still can increase or decrease the informative value of the reviews. That is, despite the fact that reviews can be intentionally manipulated, they can still be informative regarding product quality judgment (Dellarocas, 2006).

The findings on review valence are consistent with those related to product sales and purchase intention, for example, positive reviews yield positive attitude changes, whereas negative reviews yield negative attitude changes (Vermeulen & Seegers, 2009). Negative information is more informative than positive information in the sense that it helps consumers discriminate between low- and high- quality products (Herr et al., 1991; Lee et al., 2008). As the proportion of negative reviews increases, product attitude becomes less favorable (Lee et al., 2008).

Other findings on the factors are related to brand reputation, purchase involvement, and personality. With respect to brand reputation, studies show that in the context of hotel evaluation, exposure to online reviews increases hotel awareness and affects attitude toward the hotel more for lesser-known hotels than for well-known hotels (Vermeulen & Seegers, 2009). Regarding purchase involvement, it still has a moderating effect as before. Specifically, under high involvement, the effect of negative reviews is greater for high-quality negative reviews than for low-quality negative reviews. Under low involvement, the effect of proportion of high-quality negative reviews is the same as that of low-quality negative reviews (Lee et al., 2008). Finally, as for personality, online shoppers with high skepticism were not influenced by the argument quality of online

reviews, and those with low skepticism were influenced more by argument quantity than by the quality of online reviews (Sher & Sheng-Hsien, 2009).

Purchase Uncertainty

“Uncertainty” refers to the state related to unpredictability, indeterminacy, or indefiniteness. In the context of e-commerce, uncertainty is assumed to be rooted in the risks of online transactions, such as financial risk, time risk, performance risk, and social risk (Laroche et al., 2005). Researchers are interested in looking for ways to mitigate the uncertainty in e-commerce, for example, based on Luhmann’s theory of trust and power, Gefen claimed that both familiarity and trust can help reduce the complexity and simplify the buyer-seller relationship in online transactions (Gefen, Karahanna, & Straub, 2003). In the context of customer reviews, Weathers et al. (2007) examined the effect of product type and information vividness on the performance uncertainty of products. Testing the effect of information vividness on the basis of no picture, picture present, third party evaluation (consumer report), and high control over information (hyperlink) reveals a moderating effect of product type (Weathers et al., 2007). They found that the reviews provided by a third-party source are the key to reducing uncertainty and enhancing information credibility for search products. In contrast, for experience products, pictures, and retailer-supplied product reviews are the key to lower uncertainty.

Research Methodology

This research is couched in the field of management information systems (MIS). Therefore, the majority of the papers discussed in this review were published in MIS journals, with some from marketing journals. In this context, online customer reviews and e-WOM are equivalent terms. In total, 35 relevant papers were found to be closely related to the study of the performance of customer review systems.

As illustrated in Table 1, of the 35 papers, which includes conference proceedings from the *International Conference on Information Systems* (ICIS) and the *American Conference on Information Systems* (AMCIS), 64% were published on information systems (IS) journals and conferences including the top journals, such as *MIS Quarterly*, *Information Systems Research*, *Journal of Management Information Systems*, and *Decision Support Systems*, 24% were in marketing journals, and 12% were in other journals. Figure 2 illustrates the number of publications per year from 2000 to 2010. It shows that most of the papers were published after 2005 and the peak time of publication appeared in 2008. After 2008, the trend went down, but recovered a little in 2010.

The goal of this section is to understand the state of current customer review research by examining the published literature and to provide insights on the major trends and future directions. However, the research on customer reviews includes a wide variety of target variables and research methods, for example, resorting to a Tobit regression model, Mudambi and Schuff (2010) concluded that perceived helpfulness reviews are mathematically associated with review extremity and review depth and is moderated by product type. Using behavioral models, Awad and Ragowsky (2008) found that customer reviews could affect customers’ perception of trust by shifting their attitude to sharing opinions and responding to others. Relying on content analysis, Pavlou and Dimoka (2006) classified reviews into five categories based on the trust belief embedded in the reviews and found that high trust can lead to a high price premium. This variety increases the difficulty of understanding the current state of customer review studies. To organize the prior findings and clearly understand the work that is being done and that remains to be done, the literature is discussed based on dependent variables/endogenous constructs.

Table 1

Key Journals Discussed in the Literature

Journal	No. of articles
Information System Research	3
International Journal of Electronic Commerce	3
Electronic Commerce Research and Applications	3
MIS Quarterly	2
Journal of Management Information Systems	2
Decision Support Systems	1
Internet Research	1
Information Technology and Management	1
IEEE Transactions on Knowledge and Data Engineering	1
Computers in Human Behavior	1
Journal of Consumer Psychology	1
Journal of Marketing Research	1
Journal of Marketing	1
Journal of the Academy of Marketing Science	1
Journal of Interactive Marketing	1
Journal of Consumer Research	1
Journal of Retailing	1
Journal of Consumer Marketing	1
Management Science	1
Journal of Business Research	1
Tourism Management	1
Society for Personality Research	1

Figure 2. Number of publications per year from 2000 to 2010.

Discussion and Future Research Direction

Online customer reviews have long been recognized as a good source of information on both product quality and customer needs, benefiting both manufacturers and customers. For instance, by reading the reviews, manufacturers can gather information about customer needs for the product and customers can learn about other people's real feeling about product quality. Customer reviews are believed to be more credible than

merchant-claimed information. To date, much effort has been dedicated to explore the influence of customer reviews especially from the predictive perspective. Most of the studies focus mainly on the following three questions: Why people bother to take time to write reviews online, what factors shape customers' attitudes toward the products/services or their concerns about online transactions, and what factors determine future sales or price premiums? As discussed earlier, findings show generally that the characteristics of reviews, reviewers, products, services, customers, and merchants have an impact on the target variables, such as future sales, motivation, price premium, and overall ratings (as illustrated in Figure 3). Specifically, overall ratings and the helpfulness of ratings have been the topic of both predictive and behavioral studies. With current studies, the characteristics of reviews and products have a stronger influence in the predictive models than in the causal models. Generally, the endogenous constructs are impacted by the characteristics of customers, such as perceptions, personality, and expertise. Not much work has been done on examining the effects of review characteristics from the behavioral perspective.

Figure 3. Roadmap of the relationship between target variables/constructs and related factors.

(1) Some findings in prior studies are contradictory.

Research on reviews systems is still at an early stage, and the discussion on the influence of customer reviews is, to some extent, contradictory, for example, there is still no conclusion on the effect of review valence on sales. Essentially, it is assumed that five-star reviews improve sales while one-star reviews hurt

sales, but Chevalier and Mayzlin (2006) discovered further that, with respect to book sales, the incremental negative review is more powerful in decreasing sales than an incremental positive review in increasing sales, that is, one-star reviews have a stronger impact than five-star reviews. However, Clemons et al. (2006) found that high-end reviews have a greater impact than low-end reviews in the context of beer sales, contradicting Chevalier and Mayzlin's claim in the context of book sales. Clemons et al. (2006) argued that the difference is a result of the different attributes of the two products.

Another interesting finding is that negative reviews can be associated with sales growth, if the reviews are informative and detailed. This happens when reviewers clearly outline the pros and cons of the product and provide sufficient information supporting their viewpoint. In this case, the negative reviews might result in sales growth. The conjecture is that the negative attributes of the product did not concern the consumers as much as they did the reviewers (Ghose & Ipeiritis, 2010).

The effect of review valence on the perceived helpfulness of reviews is also unclear, for example, Mudambi and Schuff (2010) asserted that review rating has an impact on the helpfulness of the review; however, it is moderated by product type. Specifically, regarding experience products, reviews with extreme ratings are less helpful than reviews with moderate ratings; regarding search products, ratings have no significant impact on helpfulness (Mudambi & Schuff, 2010). However, Forman et al. (2008) discovered that the reviews with moderate ratings are less helpful than those with extreme ratings in the context of book sales.

There are also some other contradictory findings, for example, Clemons et al. (2006) claimed that the dispersion of ratings is positively correlated with sales growth and the mean of high end of the collection of reviews is also positively associated with sales growth. But Zhu and Zhang (2010) found that a variation in ratings has a negative effect on sales and also claimed that customer reviews become more influential on sales after the early, introductory months, but Hu et al. (2008) found that the influence of reviews is a decreasing function of product age.

(2) There is insufficient consideration of consumer behavior in current studies.

Current studies have several limitations. Most of the studies are limited by their methodologies, which provide a kind of static and post hoc view. IS research on online customer reviews can be grouped into three streams with respect to their research methodologies. The first stream consists of content analysis of customer reviews using techniques such as text mining of linguistic cues, for example, Pavlou and Dimoka (2006) classified reviews into five categories based on the trust belief embedded in the reviews and concluded that high trust can lead to a high price premium. The second stream consists of predictive modeling or so-called exploratory econometric analysis (Ghose & Ipeiritis, 2010). For instance, resorting to a Tobit regression model, Mudambi and Schuff (2010) concluded that the perceived helpfulness of reviews is mathematically associated with review extremity and review depth and is moderated by product type. Ghose and Iperiotis (2010) proposed exploratory econometric models to predict the helpfulness of reviews with a customer-oriented ranking mechanism to estimate the social impact, and the importance of reviews with a manufacturer-oriented ranking mechanism to estimate the economic impact. The third stream of studies uses behavioral research techniques to explore the impact of customer reviews on customers' behavior in online transactions. For instance, Awad and Ragowsky (2008) measured the moderating effect of gender in online shopping and found that customer reviews could affect customers' perception of trust by shifting their attitude to sharing opinions and responding to others.

Among these three research streams, the first two, especially the second stream, are more prevalent in IS research. However, these two types of studies are a kind of post hoc analysis, based on pre-existing data. They are excellent for predicting outcomes, but fail to explain in a logical way why these customer reviews work the way they do, for example, product sale is a common dependent variable in predictive models. Prior studies found that product sales are impacted by review-related factors such as average customer rating, dispersion of ratings, review valence, review quantity, review length, number of votes on reviews, and review content, and non-review related factors such as product type, product quality, product price, product popularity, and product age. On the other hand, purchase intention is a commonly adopted endogenous construct in causal models, reflecting customers' intention to purchase in the future. Logically, product sales and purchase intention should be highly correlated to each other. However, other than review format and review quantity, purchase intention is found to be more influenced by human related factors, such as prior knowledge, purchase involvement, and trust. Therefore, with predictive models, the effect of humans cannot be well explained.

Insufficient attention has been paid to the behavior of consumers in current studies. Most of the studies still involve exploratory research on the factors that influential in predicting sales, price, or ratings of products. As mentioned earlier, this process is similar to a transformation process. Both the inputs and the outputs are known, but how the inputs are processed into the outputs is still a black box, for example, the outcomes of some predictive models reveal that the future sales of products are positively impacted by the number of positive reviews (Chevalier & Mayzlin, 2006). However, according to the outcomes of some behavior studies, negative information is more informative than positive information in the sense that it helps consumers discriminate low- and high- quality products (Herr et al., 1991; Lee et al., 2008). Currently, there are only a limited number of behavioral studies in the field of customer reviews. Many questions associated with customer reviews remain unanswered, such as how customer reviews influence customers' perception of risks and uncertainty. There is a need for further studies on customers' perceptions related to customer reviews.

Conclusions

Customer reviews, as an active research field, attract substantial researchers' attention. It has unignorable implications to both researchers and practitioners. Authors have summarized the majority of findings published in the relevant journals in the past decade (from 2000 to 2010) in the hope to lessen successors' time and effort on reviewing predecessors' work and stimulate new ideas on advancing existing studies. It is certain that some of the papers have not been included in this study. However, as long as it can help successive researchers achieve basic understanding of what has been done and what has not been done in the field, the initial goal has been met.

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