


THE CAPABILITY OF E-REVIEWS IN ONLINE SHOPPING. INTEGRATION OF THE PLS-SEM AND ANN METHOD

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 07 April 2023</p> <p>Accepted 04 July 2023</p>	<p>Purpose: The aim of this study is to investigate the impact of e-review on iGen's propensity to purchase online. Especially, it can be better understood by dissecting the relationship among 3 variables of e-review (review valence, quantity of e-review and quality of e-review), e-satisfaction, and intention to buy.</p>
<p>Keywords:</p> <p>E-review; Review Valence; Quantity of E-review; Quality of E-review; E-Satisfaction; Online Shopping Intention; ANN; PLS-SEM.</p>	<p>Theoretical framework: This study classifies e-reviews according to their valence, quantity, and quality based on the study of Khammash (2008).</p> <p>Design/methodology/approach: The PLS-SEM method was used to analyze data collected from online surveys administered to a sample of 222 iGen in Ho Chi Minh City to assess the hypotheses behind the study. Additionally, the Artificial Neural Network technique was used to separate SEM predictors that were relatively important.</p> <p>Findings: There are three results from the investigation: It has been found that (1) e-satisfaction is positively affected by valence, (2) e-satisfaction is generally increased with the high quality of e-review, but the quantity of e-review does not necessarily affect customers' e-satisfaction, and (3) e-satisfaction given in the context of an e-commerce platform has a strong effect on customers' online shopping intention. This study sheds new light on iGen's online buying habits and offers valuable management implications for iGen, online merchants, and e-commerce sites.</p>
	<p>Research, Practical & Social implications: E-reviews have become a significant factor in determining consumers' online purchase decisions. They also assist iGen in understanding how a qualified e-review—one that is clear, understandable, helpful, and has enough justification to support the opinions—will be advantageous for other consumers who wish to shop online.</p> <p>Originality/value: Provides the theory of e-review and its role in the online business environment. In addition, understand more about the behavior of igen, an age with a huge amount of spending on an online shopping platform.</p> <p>Doi: https://doi.org/10.26668/businessreview/2023.v8i7.2638</p>

A CAPACIDADE DE E-REVIEWS NAS COMPRAS ONLINE. INTEGRAÇÃO DO MÉTODO PLS-SEM E ANN

RESUMO

Objetivo: O objetivo deste estudo é investigar o impacto do e-review na propensão de compra online do iGen. Especialmente, pode ser melhor compreendido dissecando a relação entre 3 variáveis de e-review (valência da avaliação, quantidade de e-review e qualidade da e-review), e-satisfação e intenção de compra.

Referencial teórico: Este estudo classifica as e-reviews de acordo com sua valência, quantidade e qualidade com base no estudo de Khammash (2008).

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Desenho/metodologia/abordagem: O método PLS-SEM foi usado para analisar dados coletados de pesquisas online administradas a uma amostra de 222 iGen na cidade de Ho Chi Minh para avaliar as hipóteses por trás do estudo. Além disso, a técnica de Rede Neural Artificial foi usada para separar os preditores SEM que eram relativamente importantes.

Descobertas: Existem três resultados da investigação: foi descoberto que (1) a e-satisfação é positivamente afetada pela valência, (2) a e-satisfação geralmente aumenta com a alta qualidade da revisão eletrônica, mas a quantidade de e -avaliação não afeta necessariamente a e-satisfação dos clientes, e (3) a e-satisfação dada no contexto de uma plataforma de e-commerce tem um forte efeito na intenção de compra online dos clientes. Este estudo lança uma nova luz sobre os hábitos de compra online da iGen e oferece valiosas implicações de gerenciamento para a iGen, comerciantes online e sites de comércio eletrônico.

Implicações de pesquisa, práticas e sociais: As avaliações eletrônicas se tornaram um fator significativo na determinação das decisões de compra on-line dos consumidores. Eles também auxiliam a iGen a entender como uma avaliação eletrônica qualificada – clara, compreensível, útil e com justificativa suficiente para sustentar as opiniões – será vantajosa para outros consumidores que desejam fazer compras online.

Originalidade/valor: Fornece a teoria da revisão eletrônica e seu papel no ambiente de negócios online. Além disso, entenda mais sobre o comportamento da igen, uma idade com muitos gastos em uma plataforma de compras online.

Palavras-chave: Revisão Eletrônica, Valência de Revisão, Quantidade de E-revisão, Qualidade da Revisão Eletrônica, E-satisfação, Intenção de Compra Online, ANN, PLS-SEM.

LA CAPACIDAD DE LAS RESEÑAS ELECTRÓNICAS EN LAS COMPRAS ONLINE. INTEGRACIÓN DEL MÉTODO PLS-SEM Y ANN

RESUMEN

Propósito: El propósito de este estudio es investigar el impacto de la revisión electrónica en la propensión de compra en línea de iGen. Especialmente, se puede entender mejor analizando la relación entre 3 variables de reseñas electrónicas (valencia de calificación, cantidad de reseñas electrónicas y calidad de reseñas electrónicas), satisfacción electrónica e intención de compra.

Marco teórico: Este estudio clasifica las reseñas electrónicas según su valencia, cantidad y calidad con base en el estudio de Khammash (2008).

Diseño/metodología/enfoque: Se utilizó el método PLS-SEM para analizar los datos recopilados de encuestas en línea administradas a una muestra de 222 iGen en la ciudad de Ho Chi Minh para evaluar las hipótesis detrás del estudio. Además, se utilizó la técnica de Redes Neuronales Artificiales para separar los predictores SEM que eran relativamente importantes.

Hallazgos: Hay tres resultados de la investigación: se encontró que (1) la satisfacción electrónica se ve afectada positivamente por la valencia, (2) la satisfacción electrónica generalmente aumenta con la alta calidad de la revisión electrónica, pero la cantidad de calificación electrónica no aumenta. afectan necesariamente la satisfacción electrónica del cliente, y (3) la satisfacción electrónica dada en el contexto de una plataforma de comercio electrónico tiene un fuerte efecto en la intención de compra en línea de los clientes. Este estudio arroja nueva luz sobre los hábitos de compra en línea de iGen y ofrece valiosas implicaciones de gestión para iGen, los comerciantes en línea y los sitios de comercio electrónico.

Investigación, práctica e implicaciones sociales: Las revisiones electrónicas se han convertido en un factor importante para determinar las decisiones de compra en línea de los consumidores. También ayudan a iGen a comprender cómo una revisión electrónica calificada (clara, comprensible, útil y con suficiente justificación para respaldar las opiniones) beneficiará a otros consumidores que desean comprar en línea.

Originalidad/Valor: Proporciona la teoría de la revisión electrónica y su papel en el entorno comercial en línea. Además, comprenda más sobre el comportamiento de igen, una edad de alto gasto en una plataforma de compras en línea.

Palabras clave: Revisión Electrónica, Valencia de Revisión, Cantidad de Revisión Electrónica, Calidad de Revisión Electrónica, Satisfacción Electrónica, Intención de Compra en Línea, ANN, PLS-SEM.

INTRODUCTION

Online shopping has experienced significant growth and benefitted from exciting technological interventions in recent year (Tolstoy et al., 2021). In order to be more successful, large online shopping companies have embraced innovative technologies and built stronger review system or using worth of mouth communication to enhance the customer satisfaction and then make customer make decision to purchase the products and services they want to buy.

WOM (Word of Mouth) was once a highly trusted marketing channel, as many customers would hear about a product or service through a friend or colleague. The development of the Internet has facilitated the spread of WOM by providing instantaneous access to the opinions, insights, and evaluations of others (Sen & Lerman, 2007a). As a result, it opened more possibilities for gathering and sharing product data. Online communities, chat rooms, blogs, online reviews, and newsgroups have all replaced more traditional forms of face-to-face interaction as the preferred means of sharing information amongst the general public (Fei, 2011). But more data than ever before exists to potentially influence and aid consumer choice. Further, in today's online environment, customers can employ a form of WOM known as e-Word of Mouth (e-WOM) or e-review before making a purchase. E-review is a technological advancement whereby feedback is communicated online (Belarmino & Koh, 2018). E-review has emerged in response to the rapid growth and widespread adoption of online communities. Recent studies have shown that e-reviews are a significant and widely used kind of electronic word of mouth. This has been supported by previous research (Purnawirawan et al., 2012; Sen & Lerman, 2007a). Nielsen found that 61 percent of consumers look at online reviews before making a purchase (Nielsen, 2012).

In addition, some interesting statistics about iGen (iGeneration, often known as Generation Z) and their online shopping habits can be listed with 77% have taken some form of action for a cause they believe in, 23% have even boycotted a brand, 65% have purchased something based on an influencer's recommendations (Apptus, 2019). Moreover, iGen has a different view of shopping and consumption than previous generations (Apptus, 2019). More notably, according to an earlier study, 41% of iGen customers are impulse shoppers, followed by 34% of Millennials and 32% of Generation X (Brewis, 2020). IGen accounts for a large proportion of online purchases. Therefore, it is very necessary to study this age in the online shopping environment currently (Wolf, 2020). However, iGen has a greater need for high-quality products and is more careful with their spending, so marketers will have to work more to win their business (Gurunathan & Lakshmi, 2023).

Furthermore, E-review has been the subject of research in several international studies (Casaló et al., 2015; Y. Chen et al., 2011; Zhu & Zhang, 2010). However, those studies merely employed e-review in general as an independent variable, suggesting that there is a lack of subdivision of e-review into sub-variables. Due to the industry-specific nature of the research on e-reviews that already exists (e.g., restaurants (Smith et al., 2005); automobilizes (Y. Chen et al., 2011)), the role of e-reviews and their influence as such should be better appreciated within a broader context. As a result, this article centers on online buying, and it is essential to analyze the function of e-reviews within that broader framework. Additionally, most of the e-reviews on this subject were done in industrialized nations like the United States (Zhu & Zhang, 2010) or Spain (Casaló et al., 2015). There is a severe lack of studies like these in Vietnam and other developing nations. Following from what has been said so far, the main purpose of this study is to determine and offer a comprehensive understanding of how e-reviews effect consumers' decision-making, specifically, investigating whether e-reviews influence consumers' propensity to make purchases based on the concept of "e-satisfaction", achieving the iGen perspective's objective of conducting online product evaluations and purchases in Vietnam, and getting a greater knowledge of the valence, quantity, and quality of e-review sub-variables.

Moreover, due to the multifaceted character of the consumer choice process, it may be too simplistic to examine the aims of this study using only linear models. To handle non-compensatory and non-linear interactions, we used a SEM-ANN (Structural Equation Modeling - Artificial Neural Network) technique. There are several scientific publications that show how SEM-ANN is being used to help consumers through the thorny decision-making process and show the the vital role of each variable (Dang et al., 2023; Ng et al., 2022) .

LITERATURE REVIEW

E-review

E-reviews are customer comments and suggestions left on online shopping and e-commerce sites by previous buyers of a product or service (Khammash, 2008). Previous studies have shown that customers with weak interests are more receptive to e-reviews than to marketing content (Do-Hyung et al., 2007; Reimer & Benkenstein, 2016). Consumers also utilize this information to research and weigh their options in the marketplace (Floh et al., 2013).

There are two functions served by the electronic review. From the perspective of the customer, it details the product and then suggests alternatives (Lee et al., 2008). As a source of information, it offers detailed product details, such as pros and cons, from the perspective of actual users. In the role of a recommender, it relays user feedback to other consumers so that they can make more informed purchasing decisions (Lee et al., 2008; D. H. Park et al., 2007). E-review saves time, can be saved, and has anonymity advantages over conventional reviews. It is instantaneous, out of the blue, and not limited by geography or time (Hennig-Thurau et al., 2004). It has been hypothesized that positive feedback from experienced customers can build up confident expectations and trust for products or services, affecting purchasing intention, in the era of shopping on the online platform, where customers do not have chances to approach products or services directly (D. J. Kim et al., 2009). Existing literature extensively documents the value of e-review (Zhu & Zhang, 2006).

Several sectors have been studied to demonstrate the impact of e-review on particular consumer behaviors. Many industries, including the media and entertainment sector (Godes & Mayzlin, 2004), movies (Hennig-Thurau et al., 2015), online book sales (Chevalier & Mayzlin, 2006a), bath, fragrance, and beauty products (Moe et al., 2011), video gaming (Frick & Kaimann, 2017; Zhu & Zhang, 2010) and in the hospitality industry (e.g. (Bigné et al., 2016; Fong et al., 2017; Tan et al., 2018)). This study centers on online buying, but it is vital to analyze the significance of e-review in the bigger picture. In addition, academics have investigated a number of e-sub-variables, review's but core e-review characteristics have received very less attention. This missing piece leads to the study's e-review elements: valence, quantity, and quality. It's widely agreed that these facets of electronic reviews are fundamental. Previous study also emphasized valence as one of the important characteristics driving reaction (Mastana, 2023). The number of online reviews for a product or service is known as the e-review quantity (Davis & Khazanchi, 2008). An electronic review's worth is measured by how much it aids the consumer in making a well-informed purchasing decision (Connors et al., 2011; Y. Li et al., 2013). Unfortunately, none of these elements were considered in tandem with others. Knowing the customer's mindset and motivation for making a purchase online is crucial. As such, this study will investigate at the impacts of e-review in terms of valence, quantity, and quality on online purchase intention.

Valance

Customer sentiment is summarized by the term "valence" (Cui et al., 2012), which can be positive, negative, or neutral depending on the context (H. N. Chen & Huang, 2013). Evaluation in online reviews is quantified using star ratings (Hu et al., 2014; Zhang et al., 2010). According to research conducted by Cheung et al. (2009), e-reviews with a positive valence draw attention to the benefits of a product, whereas those with a negative valence draw attention to the drawbacks (M. Cheung et al., 2009). To illustrate, positive online reviews (such as those with five stars) can boost product sales, whilst negative evaluations (such as those with one star) can have the opposite effect (Chevalier & Mayzlin, 2006).

Studies have shown that favorable online evaluations are linked to greater credibility, whereas bad reviews have the opposite effect by lowering the perceived trustworthiness of a business or individual (Ketelaar et al., 2015; Utz et al., 2012). Positive e-reviews were found to have a greater impact on attitude and purchase intent than negative ones in the study by (Tata et al., 2020). One's disposition and desire to make a purchase are unaffected by reviews that are largely positive or negative (Tata et al., 2020). Negative online reviews, according to the principle of negativity bias, are more influential than their positive counterparts (Lee et al., 2008; Sen & Lerman, 2007). This conclusion is based on the observation that unfavorable e-reviews have the potential to increase sales provided the reviewers take the time to carefully weigh the product's advantages and disadvantages and give sufficient data to support their claims (Ghose & Ipeiritis, 2011). Indeed, the valence of online reviews has a substantial impact on consumers' propensity to make a purchase (Floh et al., 2013).

The Quantity Of E-review

In online settings, the quantity of e-review is the number of comments from reviewers about a specific product or service (Davis & Khazanchi, 2008). Since the e-review quantity possibly is a sign of how much the product is valuable and popular, customers tend to look at the e-review quantity of a product to determine whether it is worthy or not (Bataneh, 2015). Several studies demonstrate that quantity significantly correlates with customer buying intention (D. H. Park et al., 2007b; Sutanto & Aprianingsih, 2016).

A certain level of awareness must be developed before consumers choose to purchase a product about which they know little (Mahajan et al., 1984). A bigger volume of online reviews, whether favorable or unfavorable, is more likely to draw information searchers and therefore raise product awareness (Davis & Khazanchi, 2008). In fact, the more e-review there are, the

more likely it is that customers will be informed, which will make them more likely to shop (Liu, 2006). Since the quantity of e-review shows how many customers have bought and used the product (Chatterjee, 2001), it makes sense that the quantity of e-review gives them more confidence and makes them less worried about making mistakes or taking risks when buying products online (Buttle, 1998). Even if the quality of an e-review is low, it was found that the quantity of e-review still makes customers more likely to purchase (D. H. Park et al., 2007).

The Quality Of E-review

The quality of an e- review can be summed up as the persuading force of remarks based on an educational message (Bhattacharjee & Sanford, 2006). When customers are looking for information, the quality of information possibly will impact customers' acceptance of it regarding e-review channels (C. M. K. Cheung et al., 2009)

An empirical examination of panel data reveals that customers do not simply blindly follow e-review; rather, they read and evaluate the e-review (Duan et al., 2008). This might imply that the quality of e-review is significant. A review's quality or helpfulness is measured by its utility and relevancy in influencing the buyer's decision (Connors et al., 2011; Y. Li et al., 2013). It has been demonstrated that information adoption is positively correlated with the quality of e-review (C. M. K. Cheung et al., 2008). Additionally, numerous studies have revealed a connection between e-review quality and sales of products (P.-Y. Chen et al., 2008; Sen & Lerman, 2007). According to (Awad & Ragowsky, 2008), the quality of e-WOM has a significant and favorable impact on trust in e-commerce. Regarding e-review, (Hsu et al., 2013) investigated the impact of bloggers' recommendations on consumers' intents and found that customers' attitudes and intentions to shop online are positively influenced by the quality of recommendations. The laboratory study by (M. Li et al., 2013) demonstrates that the quality of e-review is influenced by source credibility, review content, and the use of indirect expressions. Additionally, their data show that the substance of an e-review, regardless of its source, significantly influences how useful it is. According to (Mudambi & Schuff, 2010) analysis of e-review quality from the viewpoint of product type, the depth and severity of the e-review have varying effects on the quality of e-review depending on the type of product. For experience products as opposed to search products, a moderate rating is more useful. The influence of e-review depth on the quality of e-review, however, is greater for search goods than for experience products (Mudambi & Schuff, 2010). Because of this, asking about how helpful, clear, and understandable the information is could be a crucial step in figuring out how the iGen

generation perceives the quality of the information that is supplied and how likely it is that they will engage in online buying.

E-satisfaction

In the virtual environment, (Anderson & Srinivasan, 2003) defined e-satisfaction as “the contentment of the customer with respect to his or her prior purchasing experience with a given electronic commerce firm”. In this study, however, e-satisfaction refers to the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with a customer’s prior feelings about the online customer experience (Oliver, 1997). The expectation-disconfirmation theory also explains the formation of customer satisfaction and dissatisfaction in the online environment, and it is understood as e-satisfaction (I. Park et al., 2015). In addition, customer satisfaction and dissatisfaction also have an affective nature, which shows the psychological state, expressed as mood or emotion, derived from consumption (Bowen & Clarke, 2002). Both the cognitive and affective affect e-satisfaction, as shown in the cognitive-affective model of customer satisfaction (del Bosque & San Martín, 2008). Consumers also utilize this information to research a found that e-satisfaction would be positively affected by website design, while (Kebli & Chen, 2006) pointed out that the high e-satisfaction in Amazon.com results from its high-quality services relating to the customers, payment system and security, communication, comprehensive and relevant information, and website design. Furthermore, according to the expectation-disconfirmation theory, consumers should evaluate their expectations for goods and services before making purchases with their actual impressions of how well those goods and services worked (Oliver, 1980). In other words, the e-satisfaction is vital role in making decision to purchase in the online shopping.

Online Purchasing Intention

(Ajzen, 1991) stated that people's intentions are thought to show how close they are willing to get to certain behavior and how many times they are trying to do that behavior. (He et al., 2008) found that the biggest problem with the growth of electronic commerce is that people do not want to buy things online. To establish and sustain a positive relationship with customers, an e-commerce website needs to comprehend the customers' purchase behavior (E. Kim & Hong, 2010). (Jamil & Mat, 2011) suggested that the intention to shop online can have a favorable impact on the actual online purchases. Thus, (Limayem et al., 2000) notified

researchers to investigate the intention, assuming that behavior will automatically follow the intention. Therefore, the intention to use is a key outcome of this study.

HYPOTHESIS AND RESEARCH FRAMEWORK

E-review And E-satisfaction

Most of the current studies only study the relationship of e-review with customer satisfaction. In the hotel industry, fifteen factors from the e-review, which were classified into six categories, influence customer satisfaction (H. Li et al., 2013). Also, e-review reflects the determinants of customer overall satisfaction with hotels (Xu, 2020). There is an asymmetric effect between e-reviews and determinants of customer satisfaction, in which not all positive or negative textual factors mined from e-review significantly influence their overall satisfaction (Xu, 2020). E-review is proven to have an impact on customer satisfaction with the hotel (Ban et al., 2019). However, it is still limited in the number of studies on e-reviews and e-satisfaction in the context of online shopping. For that reason, this study will delve into the problem by subdividing the e-review into valence, the quantity of e-review, and quality of e-review and discovering the relationship of each variable with the e-satisfaction in the online shopping context. Thus, the hypotheses are as follows:

H1: Valence has a positive effect on e-satisfaction.

H2: Quantity of e-review has a positive effect on e-satisfaction.

H3: Quality of e-review has a positive effect on e-satisfaction.

E-satisfaction and Online Shopping Intention

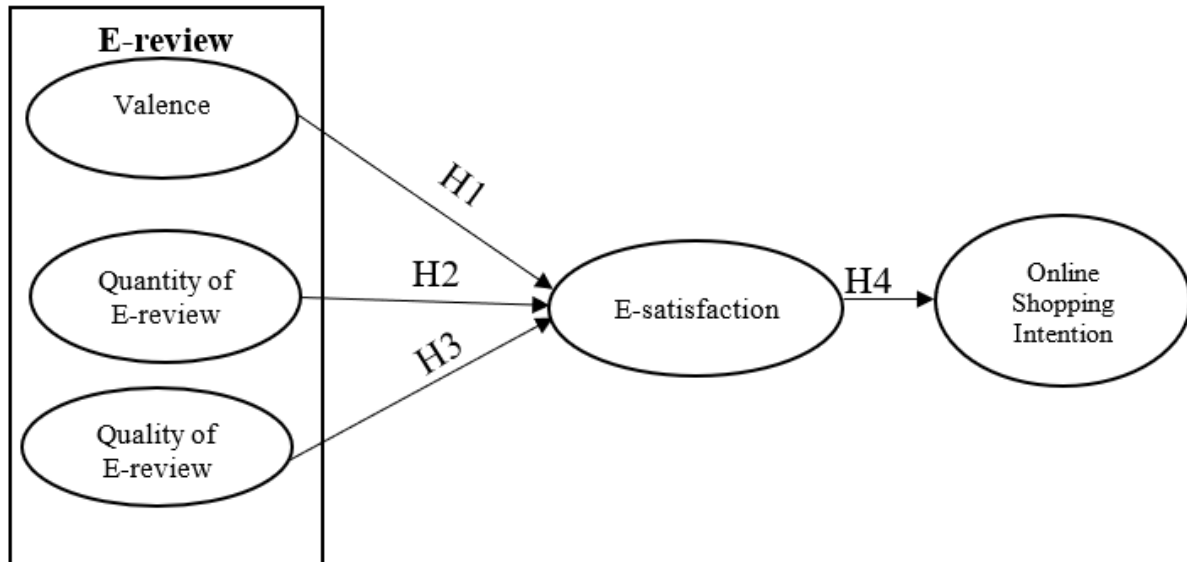
According to the (Zeithaml et al., 1996) model, e-satisfaction can be gauged through actions including purchase intent, word-of-mouth recommendations, brand loyalty, customer complaints, sensitivity behavior, and perceived price level. Positive e-satisfaction is frequently the result of high service quality as perceived by the consumer.

In contrast, the low quality of the service tends to result in negative e-satisfaction. An experienced customer of online shopping will have a significant influence on customers who intend to buy in the future for online shopping (Jayawardhena et al., 2007). Therefore, research indicates that the more positive a customer experience is, the more likely it is that customers are reusing services. Similarly, (Zeithaml et al., 1996) emphasize that satisfaction is related to a customer who decides to stay or leave a brand or company. From the comments discussed, it

can be understood that the quality of online products influences e-satisfaction, and therefore e-satisfaction influences online shopping intention. Consequently, the hypothesis is as follows:

H4: E-satisfaction has a positive effect on online shopping intention.

Fig.1 Research model



Source: by authors

METHODOLOGY

Sampling Method

Non-probability judgmental sampling was utilized in the research. Researchers use their expertise to choose samples to maintain homogeneity (Taherdoost, 2016). It's employed while researching customers' opinions on a service or a product (Alchemer, 2018). Respondents must be the iGeneration (those born between 1995 and 2010) and own Internet-enabled mobile devices. Judgmental non-probability sampling was used for this analysis.

Next, G-Power 3 was used to determine the appropriate sample size (Erdfelder et al., 1996), it estimates a sample size of 108 is necessary for the current investigation. With 222 responses, we have more than enough information to draw conclusions.

Questions on respondents' demographics, as well as their experiences with and attitudes toward online reviews and purchases, were included in the survey's accompanying questionnaire. Having 30 online shoppers participate in a pilot test helped ensure the questionnaire's reliability and validity. Before being sent out, the initial survey had several tweaks made to it. To facilitate responses from Vietnamese speakers, the survey has been translated into that language. The questionnaire was designed because of prior studies. Measurement scales used in the questionnaire were tried and true. The seven-point Likert scale

was used to assign points ranging from (1) strongly disagree to (7) strongly agree to each topic. The scales from which the survey's items were derived were deemed reliable and valid in earlier studies. Minor adjustments were made to the scale's phrasing to make it more applicable to an online buying setting. Scale measurement of valence (VA), quantity of e-review (QN), quality of e-review (QL), e-satisfaction (ES), online shopping intention (OS) were adopted and adapted from (Stefanov, 2014), (Chevalier & Mayzlin, 2006b), (Lin et al., 2013), (Anderson & Srinivasan, 2003), and (D. H. Park & Lee, 2008), respectively.

Respondents Profile

222 respondents that identify as iGen are included in the data gathered for this study. According to Table 1, there are 76.58 percent female participants and 23.42 percent male participants. There is 10.81 percent of people who have less than 1 year of online shopping experience, while 26.13 percent of participant's shop online 1-4 years, and 26.13 percent of respondent's shop for over 4 years. The majority of respondents spend less than USD 50 on average monthly on online shopping with 73.4234 percent, followed by USD 50 - USD 150 with 22.07 percent. While 3.60 percent of respondents spent USD 150 – USD 300 only 0.90 percent of respondents spent more than > USD 300 per month on average.

Table 1: Respondents' profile

Demographic characteristic		Frequency	Percentage
Gender	Female	170	76.58%
	Male	52	23.42%
Experience in online shopping	<1 year	24	10.81%
	1- 4 years	140	63.06%
	Over 4 years	58	26.13%
Average monthly spending	< USD 50	163	73.42%
	USD 50 - USD 150	49	22.07%
	USD 150 – USD 300	8	3.60%
	> USD 300	2	0.90%

Source: by authors

Common Method Bias (CMB)

Due to the data for the exogenous and endogenous variables being gathered from a single source, common method bias has a possibility to emerge. To address this issue, both procedural and statistical procedures were used in this research data analysis (Leong et al., 2018; Teck Soon & Sharifah, 2017). Firstly, for procedural-wise, there was insurance that respondents' identities remained anonymous, and the responses would not be judged as true or false, thus they only needed to answer candidly to all the questions. Secondly, on the statistical aspect, the correlation coefficients in Table 2 are less than 0.90 indicating there is no CMB

problem (Lai & Hitchcock, 2017). Therefore, the insignificant effect of CMB on the results has been indeed verified.

Assessing the Outer Measurement Model

It is important to validate the evaluation of the outside model before evaluating the hypotheses in the inner model. As part of this procedure, the validity (convergent and discriminant validity) and reliability (Cronbach's Alpha and composite reliability) of the measuring model are examined. Table 2 shows that the Cronbach's Alpha and composite reliability values for the internal consistency reliability are all greater above the advised threshold value of 0.70 (Dang Quan & Tran Thien, 2021; Dang et al., 2023). As a result, all constructs exhibit a significant level of internal consistency dependability as measured by Cronbach's Alpha and composite reliability. In addition, according to Hair Jr et al. (2016), the average variance extracted (AVE) is advised to evaluate the convergent validity, and its value must be larger than 0.50 before it can be said to be validated. In fact, Table 2 demonstrates that all AVEs are significant and greater than 0.50. On the other hand, it is also claimed by (Hair Jr et al., 2016) that the importance of outside loadings could serve as evidence for convergent validity. Accordingly, the convergent validity would be confirmed if the value of the outer loadings is larger than 0.70. The results in Table 2 make it very evident that every number is higher than 0.70. The study's convergent validity has been confirmed consequently.

The relevant items must load heavily on the construct under examination while loading poorly on other constructs, according to discriminant validity. These objects can therefore be clearly differentiated from those of other buildings. To begin, according to the results in Table 3, the conventional Fornell-Larcker's (Fornell & Larcker, 1981) criterion was deployed and found that the square root of AVE is greater than the correlation coefficients. Additionally, the cross-loadings are also examined and the results in *Table 4* demonstrate that all loadings have a strong load to the respective constructs, whereas having a weak load to irrelevant ones. Ultimately, the recently introduced HTMT criterion is also checked, in which the HTMT ratio is suggested to be less than the threshold of 0.90 (Henseler et al., 2014). In fact, Table 5 shows that all of the values met the criteria for being lower than 0.90. Given these results, the discriminant validity is ascertained.

Table 2: Assessment results of measurement model

Constructs	Items	Loadings	Cronbach's Alpha	CR	AVE
VA	VA1	0.714	0.833	0.878	0.545
	VA2	0.745			
	VA3	0.718			
	VA4	0.729			
	VA5	0.754			
	VA6	0.770			
QN	QN1	0.762	0.659	0.801	0.512
	QN2	0.824			
	QN3	0.756			
	QN4	0.465			
QL	OS1	0.836	0.868	0.905	0.656
	OS2	0.760			
	OS3	0.827			
	OS4	0.870			
ES	ES1	0.900	0.875	0.923	0.800
	ES2	0.902			
	ES3	0.881			
OS	OS1	0.836	0.843	0.894	0.679
	OS2	0.760			
	OS3	0.827			
	OS4	0.870			

Source: By authors

Table 3: Fornell-Lacker's criterion

	ES	OS	QL	QN	VA
ES	0.894				
OS	0.546	0.824			
QL	0.562	0.569	0.810		
QN	0.406	0.397	0.526	0.812	
VA	0.486	0.566	0.519	0.388	0.739

Source: By authors

Table 4: Cross-loadings

	ES	OS	QL	QN	VA
ES1	0.900	0.523	0.587	0.358	0.436
ES2	0.902	0.442	0.491	0.385	0.408
ES3	0.881	0.494	0.41	0.348	0.459
OS1	0.473	0.836	0.520	0.359	0.519
OS2	0.492	0.760	0.370	0.256	0.364
OS3	0.364	0.827	0.447	0.318	0.464
OS4	0.442	0.870	0.536	0.376	0.520
QL1	0.443	0.467	0.804	0.425	0.416
QL2	0.466	0.470	0.856	0.427	0.444
QL3	0.487	0.464	0.760	0.459	0.417
QL4	0.461	0.474	0.854	0.395	0.427
QL5	0.413	0.424	0.770	0.423	0.393
QN1	0.311	0.268	0.468	0.800	0.327
QN2	0.383	0.296	0.430	0.871	0.280
QN3	0.298	0.429	0.404	0.791	0.363
VA1	0.384	0.432	0.402	0.240	0.714
VA2	0.303	0.363	0.310	0.258	0.745
VA3	0.351	0.357	0.286	0.176	0.718
VA4	0.382	0.457	0.404	0.287	0.729
VA5	0.342	0.448	0.415	0.378	0.754
VA6	0.376	0.436	0.461	0.373	0.770

Source: By authors

Table 5: HTMT ratio

	ES	INT	QL	QN	VA
ES					
INT	0.623				
QL	0.639	0.664			
QN	0.494	0.504	0.650		
VA	0.564	0.672	0.604	0.493	

Source: By authors

Assessment of Structural Equation Modelling

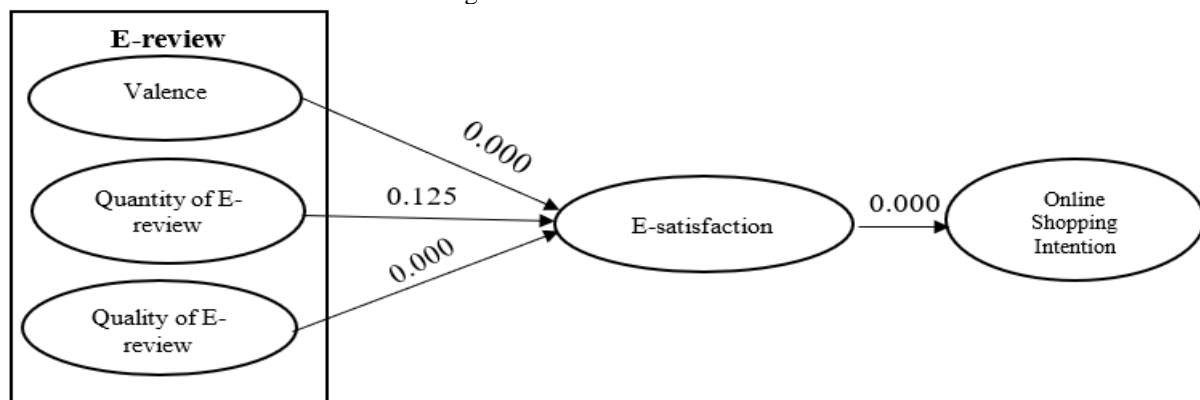
The next step after the confirmation of the measurement model is the structural model.. As set out in Table 6 and Fig 2, the evaluation of the structural model gives an indication of the testing of hypotheses. The results showed that e-review valence has a positive effect on e-satisfaction. Thus, H1 is supported ($\beta = 0.070$, $p_value < 0.05$). Furthermore, the results pointed out that the quantity of e-review has an insignificant negative effect on e-satisfaction. Hence, H2 is unsupported ($\beta = 0.074$, $p_value > 0.05$). In contrast, e-satisfaction is significantly influenced by the quality of e-reviews ($\beta = 0.083$, $p_value < 0.05$). Thus, H3 is supported. Moreover, the results revealed that e-satisfaction has a significant positive effect on online shopping intention. Therefore, H4 is supported ($\beta = 0.057$, $p_value < 0.05$).

Table 6: Hypothesis testing results

	Relationship	Path Coefficients	Standard Deviation	P Values	Decision
H1	Valence (VA) → E-satisfaction (ES)	0.248	0.070	0.000	Supported
H2	Quantity of e-review (QN) → E-satisfaction (ES)	0.113	0.074	0.125	Not supported
H3	Quality of e-review (QL) → E-satisfaction (ES)	0.374	0.083	0.000	Supported
H4	E-satisfaction (ES) → Online shopping intention (OS)	0.546	0.057	0.000	Supported

Source: By authors

Fig. 2 Structural model results



Source: by authors

Artificial Neural Network Analysis (ANN)

(HAYKIN, 1994) defined ANN as "a massively parallel distributed processor made up of basic processing units that store and apply experimental knowledge." Neurons or nodes are ANN's processing units. Synaptic weights retain environmental knowledge in interconnected neurons (L. T. Nguyen et al., 2022; L.-T. Nguyen et al., 2023). This study used feed-forward-back-propagation (FFBP) with multi-layer perception for training and assessment. FFBP has three layers (input, hidden, and output). All layers' neurons have synaptic weights in Fig. 3 and Fig. 4. Under the FFBP approach, data is conceived by the neurons of the input layer, which feed the neurons of the output layer through the neurons of the hidden layer in a forward fashion (Hew et al., 2019). To confirm the model's forecast accuracy, training can minimize created errors.

Outputs Of Neural Network Analysis

The ANN model was analyzed using SPSS version 24. PLS-SEM predictors were model input neurons. As the analyzed model had two endogenous variables (output neurons), two ANN models were created. E-satisfaction has two important impacting elements (Valance and quality review) while Online shopping intention has one (e-satisfaction). Software automatically generates hidden neurons. Determining the exact number of neurons in the buried layer is difficult (Hew et al., 2019).

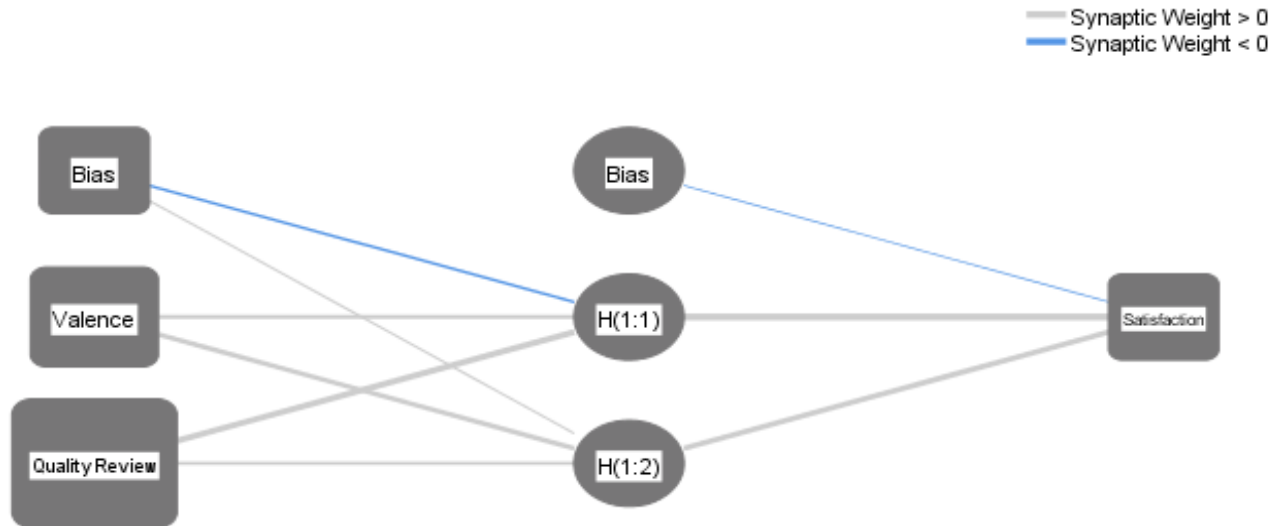
Tenfold cross-validation was used to prevent ANN model over-fitting 90% of replies were for learning, 10% for prediction (Hew et al., 2019). Table 7 and table 8 provides RMSE values for training (learning) and testing (predicting). RMSE can be zero or limitless. Closer to zero (0), the RMSE value suggests superior ANN model prediction (Qaderi et al., 2021). The results show that the RMSE mean values for training and testing in model A are 0.7480 and 0.7190, while for model B, the values are 0.7830 and 0.7330, demonstrating that ANN models are trustworthy in sensing linear-nonlinear relationships (Qaderi et al., 2021). Since the mean RMSE values are minimal with negligible standard deviations in both learning and prediction stages, ANN models may accurately predict relationships.

The Sensitivity Analysis

The sensitivity analysis ranked predictors by their normalized relative significance (NRI) to the dependent variable. The NRI of each predictor for a given output neuron was calculated by dividing each predictor's mean importance by the most important predictor's

mean. Table 9 shows that quality of review is most important in predicting e-satisfaction, followed by valance. In Fig. 2, the thickness of the connecting line from quality review (input neuron) to e-satisfaction (output neuron) through hidden neuron is largest in Model A demonstrating their influencing strength.

Fig. 3 Model A

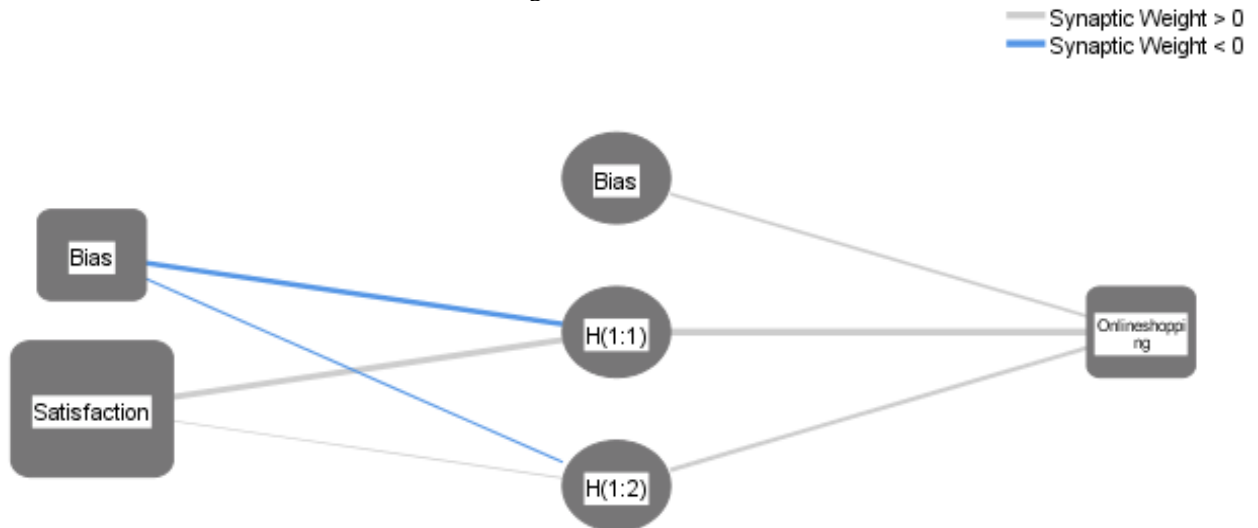


Hidden layer activation function: Hyperbolic tangent

Output layer activation function: Identity

Source: by authors

Fig. 4 Model B



Hidden layer activation function: Hyperbolic tangent

Output layer activation function: Identity

Source: by authors

Table 7: RMSE values for independent variables

Neural network	Training			Testing			Total
	N	SSE	RMSE	N	SSE	RMSE	
ANN1	206	417.013	0.7770	16	62.254	0.7590	222
ANN2	194	398.616	0.7160	28	58.979	0.6790	222
ANN3	196	416.564	0.7600	26	57.179	0.8460	222
ANN4	197	404.846	0.7360	25	48.810	0.6400	222
ANN5	202	401.561	0.7030	20	40.520	0.8000	222
ANN6	198	419.270	0.8180	24	46.726	0.5830	222
ANN7	199	427.791	0.7940	23	39.537	0.5220	222
ANN8	200	403.415	0.7150	22	41.555	0.5910	222
ANN9	205	405.450	0.7120	17	33.108	0.8240	222
ANN10	209	478.135	0.7990	13	29.925	0.7690	222
Mean		411.007	0.7480		44.141	0.7190	
SD		22.218	0.040		10.415	0.1079	

Input neurons: Valance, Quality Review

Output nodes: Satisfaction

Source: By authors

Table 8: RMSE values for independent variables

Neural network	Training			Testing			Total
	N	SSE	RMSE	N	SSE	RMSE	
ANN1	206	497.847	0.8400	16	33.335	0.7500	222
ANN2	200	476.073	0.8150	22	48.588	0.6360	222
ANN3	211	495.124	0.7580	11	21.562	0.8000	222
ANN4	199	470.531	0.7590	23	54.446	0.7390	222
ANN5	196	459.828	0.7760	26	54.074	0.8080	222
ANN6	197	472.730	0.7720	25	54.927	0.7080	222
ANN7	201	482.452	0.8060	21	49.202	0.7620	222
ANN8	198	465.601	0.7880	24	48.846	0.7270	222
ANN9	207	471.640	0.7770	15	51.650	0.5830	222
ANN10	204	495.162	0.7940	18	35.223	0.6110	222
Mean		474.402	0.7830		49.024	0.7330	
SD		12.748	0.025		10.741	0.0741	

Input neurons: Satisfaction

Output nodes: OnlineShopping

Source: By authors

Table 9: Sensitivity analysis with normalized importance for independent variables

Neural network	Relative importance	
	Valance	Quality Review
ANN1	0.405	0.595
ANN2	0.396	0.604
ANN3	0.182	0.818
ANN4	0.364	0.636
ANN5	0.391	0.609
ANN6	0.414	0.586
ANN7	0.460	0.540
ANN8	0.392	0.608
ANN9	0.381	0.619
ANN10	0.554	0.446
Mean relative importance	0.397	0.603
Normalized importance (%)	68.90%	100.00%

Source: By authors

DISCUSSION

According to the findings of this research, the valence of an online review significantly affects the degree to which the review affects a customer's pleasure with an online purchase. The findings corroborated those of earlier research. Positive reviews are associated with higher levels of credibility than negative ones, and a bad review has a negative impact on lowering perceived trustworthiness, according to researchers. (Ketelaar et al., 2015; Utz et al., 2012). Valence affects iGen since it does not take them long to determine if an online review is good or negative. Potential iGen customers may quickly acquire an opinion of a product's quality only by looking at the star icon left by other buyers on online shopping sites. Although good e-reviews had a greater impact on customers' attitudes and purchases than negative ones, the results of the study by Tata et al. (2020) showed that the impact of a neutral or bad e-review was negligible.

Many buyers rely their purchases on the selections made by others. The rationale for this is that if many individuals make the same decision, it may reduce the feeling of regret afterwards. Substantial online feedback suggests that many buyers have chosen and used the product in question. Previous research has shown a correlation between the number of online reviews and consumer propensity to buy (Sutanto & Aprianingsih, 2016). In general, iGen consumers' e-satisfaction rises in tandem with the overall number of available online reviews. However, given that the P-value for this study is 0.125 (>0.05), the researcher concludes that the number of e-reviews has no effect on e-satisfaction. Perhaps this is because iGeneration consumers place a higher value on in-depth and thoughtful reviews than on sheer quantity of reviews posted online. E-review quantity does not guarantee quality. And even if there are many internet reviews, it doesn't always mean the product is of high quality. Some recently released items may not have received many buyers or e-reviews despite the quality of the product because of this reason. The members of iGen are noted for their desire to show their individuality via their clothing choices. Many members of the iGeneration, while shopping for certain categories of goods like clothing, seek out items that are rare and exclusive. The greater the quantity of a product that is purchased, the more probable it is that a prospective iGen buyer will run into someone else who already owns that thing. Because of this, there is a negative correlation between the number of online reviews and online customer happiness.

A statistically significant relationship between e-satisfaction and e-review quality is demonstrated by the model. Interestingly, the outcomes of Artificial Neural Analysis reveal that quality of e-review is the most important driver of e-satisfaction. The study examined the

quality of e-reviews in terms of being clear, understandable, helpful, and having sufficient reasons supporting the opinions, in contrast to the standard evaluation criteria of relevance, reliability, understandability, and sufficiency (McKinney et al., 2002; Petty & Cacioppo, 1984). According to research conducted by Zhou et al. (2013), the quality of an e-review influences the actions of prospective customers in a favorable way. E-reviews written to a high standard are more persuasive than those written to a poor standard (Lee et al., 2008). Clients should be wary of anonymous online evaluations that offer just generalizations and nothing in the way of detail since they are not reliable sources. It was found (D. H. Park & Lee, 2008). Since iGen members were born into a technologically advanced period, they have a distinct edge when it comes to finding and processing information. Therefore, iGen consumers always seek recommendations before making an online purchase, which may lessen the inherent dangers of doing so. Besides the product information offered by vendors, which is one-way information, e-reviews are usually one of the most common sources of information when seeking for references. This strengthens the credibility of the data shown in the online review. Therefore, iGen consumers' levels of happiness with an online purchase correlate directly with the quality of the e-review they read about it.

E-satisfaction was found to have a favorable and substantial effect on future online purchase intent. In other words, if e-retailers could guarantee the value and quality of e-review, buyers would have a far more positive attitude toward making purchases online. Customers are more likely to make a purchase after having a positive experience with an online product, as measured by the path coefficient of 0.546 between e-satisfaction and online buying intent. Quality information should be offered to customers, especially iGen, to make them aware of the online product and lessen their disappointment if it turns out to be different than they had hoped. According to the results of this research, e-satisfaction plays a crucial role in influencing consumers' propensity to make purchases online. The demands, perspectives, and tastes of your clients will vary, thus it's important to provide a selection of items in a wide range of sizes, features, colors, etc. Furthermore, developments in e-commerce alleviate these worries by providing transparent product displays, product reviews, pricing, shipping choices, etc. (Ribadu and Wan, 2019).

IMPLICATIONS

Theoretical Implications

First, this study introduces three characteristics of e-review, namely valence, the quantity of e-review, and quality of e-review into the research field of e-review, which have never been combined. This provides a new perspective for the debate about the effect of e-review on e-satisfaction and online shopping intention. Also, this study adds new insights to the e-review literature. It is found that the quantity of e-review favorably increases customer intent even if the quality of e-review is low (D. H. Park et al., 2007). By contrast, through a controlled experiment, this study shows that the quantity of e-review had no impact on e-satisfaction and online shopping intention while the other two factors did.

Also, this study identifies e-satisfaction as one of the factors affecting customers' online shopping intention. There have been many previous studies on customers' online shopping intention and many factors have been found to affect one. This study result further reinforces that e-satisfaction is one of them. Thereby, the current study enriches the knowledge about factors that increase customers' online shopping intention.

Managerial Implications

This study provides more knowledge for iGen to understand how a qualified e-review in terms of clear, understandable, helpful, and having sufficient reasons supporting the opinions will be beneficial for other shoppers to shop online. Instead of posting e-review with superficial, non-product-related content solely for the purpose of getting coins, iGen shoppers should have a better sense of contentment in writing those reviews. Because only quality reviews are valuable for reference and useful to other shoppers. Likewise, in return, as a shopper, iGen is also beneficial when searching for other online products. Besides, e-review offers iGen customers a different information source, boosts their buying power, and reduces the sellers' ability to manipulate their target market through traditional promotional activities. It also can be drawn through the questionnaire that iGen are frequent online shoppers even though their spending per purchase is quite limited. Therefore, in line with the positive and qualified e-review, promotions with good prices should be deployed more to attract the interest of iGen shoppers.

From the online store owners' perspective, online store owners should emphasize the value of e-review. E-review has a substantial impact on customers' e-satisfaction and online shopping intention. The e-reviews can also help online store owners by letting them know the

product's advantages and disadvantages. Thus, online store owners can confidently optimize their goods based on customer e-reviews. As a result, online store owners can use the e-review as a tactical instrument to acquire a competitive advantage over their competitors.

Additionally, online store owners should pay more attention to the e-review valence. Since this study's results show that valence affects e-satisfaction and online shopping intention, in which positive e-reviews can bring positive effects and vice versa. As a result, online store owners should encourage customers to leave more detailed and specific feedback, since casual comments have much less of an effect on potential customers. People who quickly share their purchasing and using experiences should receive the incentive. Additionally, these incentive policies must be well publicized so that customers are aware they will be paid for posting thorough reviews of the things they have purchased. In that way, encouraging positive reviews will increase the likelihood that customers have more e-satisfaction, thereby increasing customers' online shopping intention.

Besides, e-commerce platforms need to prevent harmful comments from undermining the online store owner's credibility and reputation by performing effective management over the online feedback forum. For instance, Shopee established participation guidelines on its support page and stated that it maintained the right, in its sole discretion, to limit or remove any content if it believed it to be harmful to its online commenting systems, other Shopee users, or any third party. Details on what to include and what not to include are described in the guidelines. "Profanity, vulgarity, or nasty statements", for instance, are forbidden.

Finally, it can be drawn from the results of this study that the quality of e-review is the factor that affects iGen, not the quantity of e-review. Therefore, the factors that make up the quality of e-review should be taken into consideration, including information about the quality of online products. Currently, e-commerce platforms usually divide products into 5 main categories: FMCG, lifestyle, fashion, electronics, and cross-border. As each category will have different customers, the shopping behavior of these target groups will also vary depending on the characteristics of the industry. Therefore, e-commerce platforms can apply different e-review formats based on each industry's nature, because the products' quality will be different by industry. By doing that, e-commerce platforms and online store owners can take advantage of the power of e-reviews to increase sales.

CONCLUSION

This study examines how e-review in terms of valence, the quantity of e-review, and quality of e-review affect customers' online shopping intention through e-satisfaction. The investigation produces three findings: (1) the valence has a positive effect on e-satisfaction, (2) e-satisfaction generally increases with the high quality of e-review whereas the quantity of e-review does not always correlate with e-satisfaction, and (3) customers' online shopping intention is strongly affected by e-satisfaction given in e-commerce platforms context.

As with the majority of academic research, this study has limitations. Firstly, e-reviews are only one sort of e-WOM, although being a very essential type. This study only focuses on genetic research in Vietnam, so it may not be true in other generation or in other countries. Therefore, it will be interesting if future studies will compare between different ages or between different cultures.

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