

## Article

# Influence of Online Information Quality and Website Design on User Shopping Loyalty in the Context of E-Commerce Shopping Malls in Korea

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**Abstract:** An exponential growth in the usage of the internet and e-commerce has led to the creation of many e-commerce retail malls. In addition to promotional schemes and prices, these e-commerce retailers use online information quality and website design to differentiate themselves from other retail players. Therefore, the objective of this research is to investigate how e-commerce information quality (information trust and information accuracy) and website design influence customer satisfaction, and how customer satisfaction subsequently influences user shopping loyalty in South Korea. Using an online survey, data were obtained from 600 users of e-commerce shopping malls in Korea. Results from structural equation modeling showed that information trust, information accuracy and website design had a positive influence on customer satisfaction, which subsequently led to user shopping loyalty. This paper has useful implications for e-commerce retail malls. One important implication is that e-commerce retailers must endeavor to provide trustworthy information, accurate information and a comfortable website design to attract and retain customers.

**Keywords:** loyalty; information trust; information accuracy; website design; e-commerce mall



**Citation:** Yoo, S.; Lee, D.-J.; Atamja, L. Influence of Online Information Quality and Website Design on User Shopping Loyalty in the Context of E-Commerce Shopping Malls in Korea. *Sustainability* **2023**, *15*, 3560. <https://doi.org/10.3390/su15043560>

Academic Editor: Jean-Éric Pelet

Received: 21 December 2022

Revised: 7 February 2023

Accepted: 11 February 2023

Published: 15 February 2023



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## 1. Introduction

Nowadays, e-commerce has become an indispensable way of life for most consumers. This innovation in shopping has had a significant impact on consumers and businesses. E-commerce not only offers a wide range of merchandise to consumers but it has also offered a huge market with numerous business opportunities. In this regard, e-commerce shopping malls are becoming dynamic, deviating from conventional shopping centers to become creative platforms that enable consumers to search for information and to purchase products or services through direct interaction with online retailers [1,2]. As a result, the promise of consumer loyalty depends on the quality of the information provided by e-commerce shopping malls about their products. Thus, customer perception of information quality is crucial for attracting customers, and more importantly, retaining them as loyal customers [3]. Generally speaking, the trend of e-commerce has increased drastically due to the development of the internet. In the last two decades, the world has witnessed rapid development in the internet and the growth of its users. Globally, the number of internet users in 2019 was approximately 3.97 billion [4]. Easy access to computers and increased utilization of smartphones have given people the opportunity to use the internet more frequently and with convenience [4]. Rapid and continuous advancements in internet technology have provided individuals with greater accessibility, greater convenience, and cheaper methods of accessing a wider variety of products than conventional shopping [5,6]. As internet access is rapidly increasing worldwide, the number of e-commerce buyers keeps increasing every year. In 2020, over two billion people purchased goods or services

online, and in the same year, e-retail sales surpassed 4.2 trillion US dollars worldwide. Online shopping is the process of purchasing goods directly from a seller without any intermediary, or the activity of buying and selling goods over the internet [7].

South Korea (hereafter Korea) is known for having one of the fastest internet connections in the world. As a consumer society, Koreans have an internet usage rate of about 93 percent, so it is no surprise that e-commerce holds a strong position in Korean society. Due to the impact of COVID-19, it is expected that the number of e-commerce shopping outlets will continue to increase [8]. As such, this explosive growth in e-commerce in Korea presents a significant need for e-commerce platforms to adopt growth strategies that involve carrying out further innovation. The significance of effective retail websites as a marketing tool for attracting and retaining customers has been well recognized [9–11]. In order to attract and retain users, an e-commerce marketplace needs to provide a high-quality website that meets consumers' needs and wants. Hence, it is important for an e-commerce website to provide quality and effective information that will enhance a customer's ability to find satisfactory content that is related to their choice of product and service. In order to capture the effectiveness and quality of a website, [12] focused on information quality and website design. He emphasized that people are not on a website to navigate but to find content [13]. In this regard, high-quality information is needed to help customers avoid spending unnecessary time and effort in processing useless information [14]. As such, customer satisfaction can be increased through the provision of high-quality information. Therefore, navigation should enhance the ability to find content. In this regard, ref. [15] identified five key online shopping services (ease of use, perceived risk, responsiveness, personalization and aesthetics) that impact customer shopping loyalty directly and indirectly. They suggested that business organizations and web developers should actively seek ways to improve the information quality provided on e-commerce platforms. As such, the availability of information should not only be focused on product or service information but also on convenience and personalization to retain customers [2]. Thus, the ability of e-commerce malls to tailor their information to meet consumer needs will help determine their success.

Trust plays a fundamental role in online shopping. The important role of trust in the creation of loyalty has been recognized in e-commerce research [14,15]. Online trust refers to the disposition of a customer being vulnerable to the actions of a seller when realizing online transactions [16], with the assumption that the seller is acting honestly without exploiting the vulnerability of the client. As such, the lack of trust is considered the main barrier that causes customers to reduce their usage of e-commerce [16]. Because of the impersonal nature of online shopping, trust is very important in supporting consumers to overcome the perception of risk (perceived risk), given that they have to buy a product from an unknown seller [17]. In this regard, perceived risk is defined as a consumer's belief to suffer from negative and uncertain results when buying online [18]. Although consumers regard the internet as offering many benefits, online shopping platforms tend to increase uncertainties relating to online purchases [16]. Such uncertainty or perceived risk manifests itself through a loss of trust and a decline in the frequency of visits and purchases made by online customers. Online consumers will perceive a higher level of risk when shopping online compared with more traditional retail formats [19]. However, a study carried out by [14] showed that trust helps in reducing perceived risk, thus leading to customer shopping loyalty. Therefore, to encourage and promote e-commerce business, e-platforms should design their website in a manner that promotes trust and requires less cognitive effort to use, otherwise confusion could encourage visitors to close it. As such, for an online business to run smoothly, e-commerce platforms must provide customers with trustworthy information.

In order to remain competitive, e-commerce platforms need to understand effective methods which satisfy consumer needs and wants. According to [20], a high number of online consumers proved that user satisfaction in online shopping is fundamental to profitability. Therefore, it is crucial for e-commerce websites to take into account their customer's

satisfaction because it will retain customer loyalty [21]. With this, e-commerce platforms must maintain existing customers by fostering a sense of satisfaction for every customer who participates in online shopping. Ref. [20] argued that after consumers buy a product online, they can either be satisfied or dissatisfied and engage in post-purchase behavior.

The online shopping experience relies on the information provided by retailers. Website design helps customers to navigate the website with ease and fun. Ref. [22] propose that website dimension is important in creating satisfaction because it is directly related to customers' interface. This dimension includes structure, content, color and organization of the website which are visually pleasing, fascinating and pleasing to the eyes [23–25]. Ref. [25] found out that, a well-design constitutes color as an important sight stimulus that reduces the perceived system complexity. Color is considered a key figure in the website interface because it enhances customer engagement and trust in relation to their shopping loyalty [25]. Previous studies have indicated that consumers are better able to process product information if the website design has an attractive appearance [26]. In addition, the color contrast of a website design affects the consumer's retention of information and purchase intention. Website design is an important determinant that enhances consumer satisfaction. Previous studies have found that website design is one of the strongest factors that predict e-loyalty for e-consumers [27]. In relation to e-commerce, ref. [28] revealed that, a well-designed website provides active support to users in accessing the preferred information easily and appropriately. More so, it plays a significant role in achieving the desired business goals by compelling customers toward website acceptability and revisits. As such, the revisit rate of the website is associated with user satisfaction, which depends on user perception of the website design. Thus, it is important to analyze the influence of website design on customer satisfaction. Successfulness of an e-commerce platform depends on how customers are satisfied with the website design.

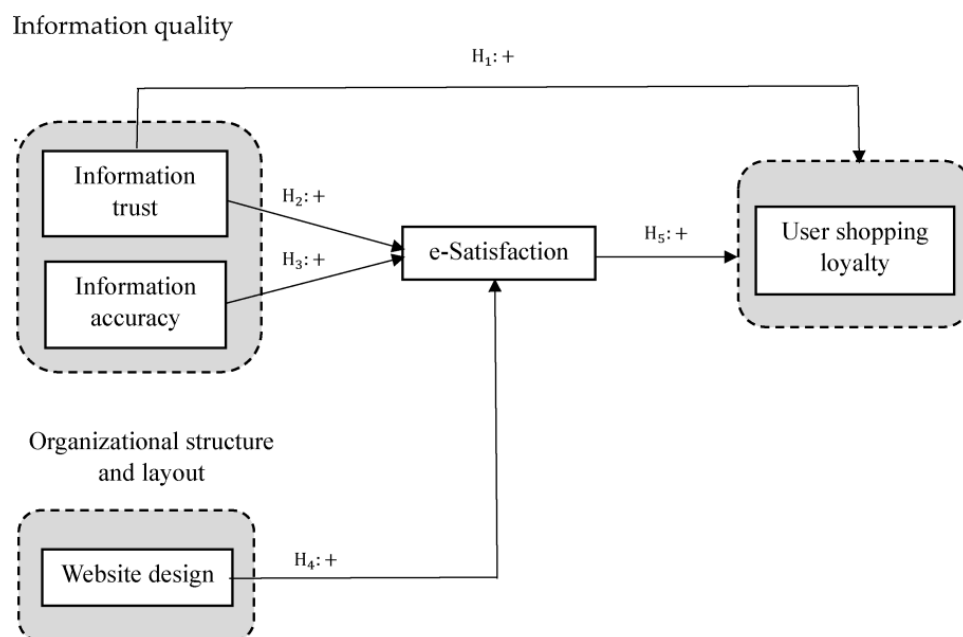
Although the Korean e-commerce industry has and will continue to witness exponential growth (Statista, 2021), there are not many studies that have endeavored to identify the predictive information factors and, website organizational structure and layout that influence e-commerce user loyalty [2,9,10,29]. Differences in research objective, research methodology and area of study seem to account for different research findings. For example, [10], used a structural equation model to examine consumers' attitudes toward Gmarket in Korea, while [29] used an Ordinary least square to investigate consumer attitudes and purchasing intentions of cross-border online shopping in Korea. In addition, ref. [9] examined the structure of dimensions of retail website quality among US and Korea Users, and the relationship between their attitude toward online shopping. In a different study carried out by [2], the authors focus on consumer behavior in an online shopping context. This gap calls for empirical research in understanding how e-commerce marketplace information quality, website design and e-satisfaction influence shoppers' loyalty toward e-commerce malls in Korea. Following this explanation, this paper explores the effect of information quality (information trust and information accuracy), and website design on e-satisfaction. In addition, it shows how e-satisfaction in turn results in customer e-loyalty. E-commerce retailers would benefit from the findings of this study in that they could potentially influence consumers' satisfaction and loyalty intention by properly manipulating their websites.

The remainder of the study is organized as follows. Section 2 will contain conceptualization and hypothesis development. Section 3 comprises material and method, while Section 4 presents results from empirical findings. Section 5 presents a discussion while Section 6 ends with the conclusions.

## 2. Conceptualization and Hypothesis Development

This study focused on online information quality, website design, customer satisfaction and user shopping loyalty. The study began by establishing a conceptual framework through a review of related literature (view Figure 1). The topics of conceptualization that are taken into consideration in this section are user shopping loyalty, information quality,

website design and customer satisfaction. The hypothesis development was founded on each reviewed literature theme.



**Figure 1.** Research model.

### 2.1. Users' Shopping Loyalty

The concept of loyalty is central to marketing research. Ref. [30] explained customer loyalty as a deeply held commitment to rebuy or patronize a preferred product/service consistently. In the same vein, ref. [31] defines loyalty as a continuing relationship established between the customer and a brand. Therefore, e-commerce loyalty incorporates the desirable tendency of the customer toward e-retailing, which leads to repetition of buying behavior [32]. Ref. [31], further identified e-commerce loyalty as a customer's favorable attitude toward an electronic business resulting in repeated buying behavior. Ref. [33] claimed that loyalty toward any e-commerce is determined by a favorable attitudinal outlook of customers toward a particular e-commerce website, which is a result of their information quality. Therefore, customer loyalty is an important instrument for the success of an e-commerce mall/platform.

### 2.2. Information Quality

Given the important role of the internet as a communication channel, it is not surprising that when buying online, customers will browse different kinds of product information and then decide which to buy. Therefore, information is a fundamental part of websites and information quality is considered a marketing tool that guarantees the smooth execution of transactions in online shopping [3]. Information quality refers to the ability to provide accurate, precise, easy-to-understand, trustworthy and honest information to online customers [3,9]. Information consists of many different features that all together determine its quality. Different researchers have tried to frame the most important information features. For example, ref. [34] mentioned accuracy, easy-to-understand, and up-to-date information. As such, these features would give satisfaction to consumers, especially impulsive buyers and those with time constraints [35]. Quality information on an e-commerce website allows consumers to assess valuable aspects and attributes regarding products/services. Providing accurate and trustworthy information online increases the likelihood of attracting and retaining consumers [3]. Ref. [34] suggests that information quality (accessing accurate, easy-to-understand, and up-to-date information) provided by an e-commerce website is significantly related to consumers' behavioral intention. In this regard, product information

is an important determinant in forming customer satisfaction and it has a significant role in influencing the e-satisfaction level of customers [36]. In this study, perceived information quality is divided into two dimensions: information trust and information accuracy.

#### 2.2.1. Information Trust

The advent of the World Wide Web has made it easy for users to obtain information in less time. As such, for e-commerce market sites to gain the loyalty of their users or customers, they must be able to provide trustworthy information. A successful e-commerce website draws consumers or users toward its services. Therefore, it is of paramount importance for users to feel that an e-commerce website is trustworthy, honest, truthful and reliable [37]. Information trust is very important in e-commerce, this is because online users cannot touch, see, or check the quality of the product they intend to buy. Consumers' trust in e-commerce websites is feasible when they believe the online information provided is reliable and credible [37,38]. When a customer trusts an online service provider, the perceived risk is low and as such, they are confident about the service and the product quality [39]. Much research has proven that there is a direct and positive relationship between trust and customer loyalty [40]. Therefore, trust is central to interpersonal and business relationships because the online shopping environment is characterized by perceived risk and uncertainty [41]. Thus, it is evident that trust is successful in reducing uncertainty and perceived risk [42]. When relating to e-commerce, trust and consumer satisfaction have a strong relationship. It is the responsibility of the online retailer to satisfy the needs of the customer. A customer is satisfied when he or she experiences desired expectations such as web system security, delivery time and a feeling of joy and happiness resulting from the purchase of a product from an online retailer [43]. This study proceeds under the belief that users' trust in online information will have a meaningful impact on customer satisfaction levels and customer shopping loyalty. Hence, the following hypothesis is proposed.

**Hypothesis 1.** *Information trust is positively related to customer shopping loyalty.*

**Hypothesis 2.** *Online information trust will have a positive influence on e-satisfaction.*

#### 2.2.2. Information Accuracy

Accuracy is concerned with the correctness of the outputted information [44]. information accuracy refers to the extent to which users perceive the information as correct, as they may be skeptical about certain claims [45]. By presenting accurate information on e-commerce websites, e-retailers not only increase consumers' shopping intentions toward their products but also increase their satisfaction [34]. Thus, appropriate and up-to-date information facilitates customers to compare the product features in order to reach a buying decision. Ref. [46] emphasized that accurate information has a greater value to consumers who wish to shop online. Additionally, accessing accurate information online helps consumers improve their decision-making abilities when they make choices and helps them overcome the feeling of being uncontrollable [46]. Therefore, more extensive and higher-quality information leads to better purchasing, which later improves customer satisfaction [47]. For this, the following hypothesis is proposed.

**Hypothesis 3.** *Information accuracy will have a positive influence on e-satisfaction.*

#### 2.3. Website Design

Website design plays a vital role in e-commerce since it affects customers directly during the purchasing process. The characteristics of the website determine the customer's perception of the online store. A well-designed website will help to reduce the time searching for information and avoid the possibility of a mismatch. According to [48], an excellent website design adds value to customer experience and helps retailers with post-purchase satisfaction, which in turn increases customer satisfaction. Ref. [26], examined



website design in three categories: information design, navigation design and visual design. In [24]'s research, the author investigated how website design factors (information design, navigation design and visual design) influenced customer satisfaction and thereby e-commerce loyalty. Regarding navigation design, ref. [27] described it as an ease of navigation to help customers to find product information. According to [49], a successful website includes the customer being able to use the website effectively while feeling satisfied. As such, the following hypothesis was developed.

**Hypothesis 4.** *Website design will have a positive influence on customer satisfaction.*

#### 2.4. E-Satisfaction

Customer satisfaction is commonly viewed as a result of a comparison between consumer expectations and experience. Customer satisfaction is achieved when the final deliverable (i.e., the experience) meets or exceeds a customer's expectation [35]. Satisfaction and loyalty are the key elements that determine the success of an e-commerce market [35]. Meanwhile, ref. [50] defined customer satisfaction as the overall feeling of happiness and satisfaction felt by consumers, which results from meeting their wants, expectations and needs due to the service given by the company (e-commerce platform or online retailer). According to [51], satisfied customers are most likely to have the intention to repurchase if the service provider reached or exceeded their expectations. With the development of e-commerce, the concept of customer satisfaction in an online context is called e-satisfaction. E-satisfaction is defined as the contentment of a customer concerning his or her prior purchasing experience with a given electronic commerce firm, which results in favorable responses, such as purchase as well as repurchase [52].

Thus, we develop the following hypothesis:

**Hypothesis 5.** *E-satisfaction will moderate the effect of information accuracy and website design on user shopping loyalty.*

### 3. Material and Method

#### 3.1. Sampling

In this study, data were collected via an online questionnaire among users of Emart SSG, Lotte, Market Kurly, and Homeplus Online Mall. These mobile e-commerce retailers are the most popular online shopping malls in Korea. Respondents were required to answer the designed questions based on their perception of online information quality and website organizational structure and layout while shopping online. Online questionnaires were used due to COVID-19 restrictions (social distancing) which were imposed by the government of Korea. The study applied a quota sampling technique to collect different samples of age, gender, education level and occupation. The questionnaires were distributed electronically using google forums to reach more people by sending a direct message with the survey link to respondents through WhatsApp, Kakaotalk and Messenger. Online coupons and gifts were provided through e-mails that include codes or printable vouchers as a reward for participating in the survey. For example, the coupons were set up for use in one of the biggest retail outlets Lotte.co.kr (accessed on 30 January 2023) in the country. Lotte was chosen because it offers a wide selection of merchandise goods, geographic coverage, and gift cards that are redeemable online. Notably, some research suggests that using incentives such as coupons and gift certificates is effective at improving response rates [53]. This is because gifts may trigger a sense of duty or obligation to complete a survey based on a norm of reciprocity.

The survey was carried out over a period of nine weeks. A total of 600 questionnaires were considered valid for the analysis.

### 3.2. Construct and Measurement Items

To ensure the validity and reliability of the information, most items used for measuring the construct were adapted from previous studies. A principal component analysis (explanatory factor analysis) was used to ensure that the items measuring the various constructs were valid. All measures used a 7-point Likert scale with anchors ranging from strongly disagree (1) to strongly agree (7). The survey questionnaire used in this study consisted of two sections. The demographic and socioeconomic questions and the items for measuring the five constructs are presented in Table 1.

**Table 1.** Measurement Item.

Construct	Measurement Items	Researcher
Information trust	The e-commerce mall provides trustworthy information about the products.	[37,53]
	The e-commerce mall provides believable information about the products.	
	The e-commerce mall platform provides honest information about the products.	
Information accuracy	The e-commerce mall provides truthful information about the products.	[33,54]
	The information about the product provided by the e-commerce mall is precise.	
	The information about the product provided by the e-commerce mall is concise.	
	The information about the product provided by the e-commerce mall is reliable.	
Website design	The information about the product provided by the e-commerce mall is accurate.	[55,56]
	The site has an attractive appearance.	
	I find the site easy to navigate.	
	My interaction with the site is clear and understandable.	
E-satisfaction	The website looks professionally designed and well presented.	[28]
	The website completely fulfills my needs and expectations.	
	This website satisfies my particular needs well.	
	My current experience with the website is satisfactory.	
User shopping loyalty	Overall, I am satisfied with the accuracy of this website relating to the buying process.	[33,57]
	After using this e-commerce mall, I want to recommend it to people around me.	
	I want to purchase a product using the relevant e-commerce mall.	
	When I purchase a product from this e-commerce mall, I will tend to use it more.	
	I tend to be interested when a product is introduced in the relevant e-commerce platform.	

Items measuring information trust were adapted and modified from [37,53]. Measurement items from [33,54] were adopted and developed to measure information accuracy. Measurement items from [55,56] were used to measure website design. Measurements of e-satisfaction were developed based on the concepts introduced by [28]. User shopping loyalty was assessed by developing four item questions according to [33,57].

## 4. Empirical Results

### 4.1. Sample Characteristics

The questionnaire in this study was conducted through online and offline surveys in Korea. A total of 600 valid questionnaires were distributed. According to the sample statistics, the difference between male and female participants was not large, with 310 males (51.6%) and 290 females (48.3%). As for the age structure, 225 participants (37.5%) were between 20 and 29 years, 146 participants (24.3%) were 30–39 years, 126 participants (21.0%) were 40–49 years, and 104 participants (17.3%) were over 50 years. For academic qualifications, 90 participants (15%) had less than a high school qualification, 413 participants (68.8%) were university students and 97 participants (16.2%) were graduate school students.

For job category, technical/clerical positions were the highest with 209 participants (34.8%), followed by sales service positions, 132 participants (22%), skilled work, 60 participants (10 %), professional, 53 participants (8.8%), self-employed, 47 participants (7.8%), those in management positions, 41 participants (6.8%), unemployed, 36 participants (6), housewife, 21 participants (3.1%) and agriculture 1 participant (0.1%). The characteristics of the participants are detailed in Table 2.

**Table 2.** Sample characteristics.

Variable	Category	Frequency	Percentage (%)
Gender	Male	310	51.6
	Female	290	48.3
	Total	600	100
Age group	20–29 years	225	37.5
	30–39 years	146	24.3
	40–49 years	126	21
	Above 50 years	104	17.3
	Total	600	100
Academic Level	Less than High School	90	15
	University	413	68.8
	Graduate School	97	16.2
	Total	600	100
Job Category	Self-employed	47	7.8
	Sales Service Position	132	22
	Skilled work	60	10
	Technical/Clerical position	209	34.8
	Management position	41	6.8
	Professional	53	8.8
	Agriculture	1	0.1
	Housewife	21	3.5
	Unemployed	36	6
	Total	600	100

#### 4.2. Means, Standard Deviations, and Correlations among Constructs

Table 3 presents the correlation matrix with mean scores and standard deviations. As for the correlations among constructs, e-satisfaction has the highest correlation with user shopping loyalty ( $r = 0.741$ ,  $p < 0.01$ ), which is followed by information trust and e-satisfaction ( $r = 0.591$ ,  $p < 0.001$ ) and information accuracy and information trust ( $r = 0.513$ ,  $p < 0.001$ ).

#### 4.3. Measurement Validation

Structural equation modeling (SEM) was applied to validate the research model and hypotheses. To guarantee the reliability of the construct, this study performed a reliability test. A reliability coefficient of 0.6 and higher were considered to be reliable. Therefore, with the help of AMOS 23.0, a confirmatory factor analysis (CFA) was used to assess the measurement model. To test for internal consistency (reliability), composite reliability (CR) and Cronbach's alpha  $\alpha$  were employed. As shown in Table 4, the Cronbach's  $\alpha$  of each construct is more than 0.7, meeting the accepted level recommended by [58], and as for the composite reliability, all constructs exceed 0.70, meeting the suggested threshold [59].



The Cronbach's  $\alpha$  in Table 4 ranges from 0.774 to 0.882. This implies good reliability and stability for the measurement items of each construct.

**Table 3.** Correlation among construct.

Construct	Information Trust	Information Accuracy	Website Design	E-Satisfaction	User Shopping Loyalty
Information trust	1				
Information accuracy	0.513 ***	1			
Website design	0.076 **	0.033	1		
e-satisfaction	0.591 ***	0.189 *	0.389 **	1	
User shopping loyalty	0.432 ***	0.296 ***	0.294 *	0.741 **	1
Mean	2.851	2.597	2.517	2.491	2.460
Std. Deviation	0.851	0.772	0.697	0.418	0.464

Note. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ .

**Table 4.** Explanatory Factory Analysis.

Constructs	Items	Reliability $\alpha$
Information accuracy	IA1 0.781	0.850
	IA2 0.736	
	IA3 0.674	
	IA4 0.691	
Information trust	IT1 0.714	0.882
	IT2 0.751	
	IT3 0.684	
	IT4 0.636	
Website design	WD1 0.693	0.813
	WD2 0.644	
	WD3 0.616	
	WD4 0.601	
e-satisfaction	ES1 0.833	0.855
	ES2 0.713	
	ES3 0.651	
	ES4 0.621	
User shopping loyalty	USL1 0.826	0.774
	USL2 0.741	
	USL3 0.715	
	USL4 0.639	

The results of the confirmatory factor analysis (CFA) are tabulated in Table 5. The value of the CR for all constructs ranges from 0.814 to 0.878. In addition, the average variance extracted (AVE) is above 0.5 [60]. The indicator factor loadings of all items of the measuring mode are greater than 0.70. Therefore, all loadings appear to be significant.

#### 4.4. Test of Research Model

The model validity was tested using structural equation modeling (SEM). By using Amos 23.0, the results are as follows:  $X^2 = 260.903$ ,  $df = 240$ ,  $NFI = 0.840$ ,  $RFI = 0.861$ ,

IFI = 0.912, CFI = 0.911 and RMSEA = 0.063. The  $R^2$  values for e-satisfaction and user shopping loyalty are 56 percent and 54 percent, respectively. Therefore, based on the results, the current research suggests that the model is statistically valid.

**Table 5.** Confirmatory factor analysis.

Construct	Items	Factor Loading	S. E	Std Loading	T-Value	AVE	CR
Information accuracy (IA)	IA1	1.000	-	0.855	-	0.776	0.869
	IA2	1.512	0.178	0.837	14.413 ***		
	IA3	1.490	0.176	0.833	13.752 ***		
	IA4	0.848	0.141	0.807	10.791 ***		
Information trust (IT)	IT1	1.000	-	0.855	-	0.621	0.835
	IT2	1.309	0.111	0.846	11.837 ***		
	IT3	0.817	0.081	0.794	11.876 ***		
	IT4	0.717	0.075	0.663	10.415 ***		
Website design	WD1	1.000		0.772	-	0.649	0.814
	WD2	1.045	0.80	0.794	13.074 ***		
	WD3	0.930	0.77	0.741	12.334 ***		
	WD4	0.896	0.73	0.774	12.040 ***		
e-satisfaction	ES1	1.000		0.761	-	0.627	0.819
	ES2	1.056	0.98	0.728	12.756 ***		
	ES3	0.959	0.67	0.699	12.513 ***		
	ES4	0.823	0.60	0.650	12.534 ***		
User shopping loyalty	USL1	1.000	-	0.768	-	0.602	0.878
	USL2	1.128	0.105	0.711	11.064 ***		
	USL3	0.949	0.72	0.661	11.392 ***		
	USL4	0.923	0.60	0.632	10.797 ***		

Note. \*\*\*  $p < 0.001$ .

The data analysis below (Figure 2) shows that information trust has a positive direct and indirect impact on customer shopping loyalty ( $\beta = 0.38$ ,  $p < 0.001$ ;  $\beta = 0.30$ ,  $p < 0.001$ ). Thus, Hypotheses 1 and 2 are supported. Meanwhile, the result shows that information accuracy and website design had a positive effect on e-satisfaction ( $\beta = 0.25$ ,  $p < 0.001$ ;  $\beta = 0.43$ ,  $p < 0.05$ ). Thus Hypotheses 3 and 4 were supported. At the same time, e-satisfaction has a positive impact on user shopping loyalty ( $\beta = 0.70$ ,  $p < 0.001$ ). Therefore, Hypothesis 4 is supported. (See Table 6).

The result of the indirect effect of information trust on shopping loyalty through the mediating effect of e-satisfaction is presented in Table 7. From the analysis, the indirect effect of information trust on shopping loyalty is found to be significant through the mediating effect of e-satisfaction ( $\beta = 0.62$ ,  $p < 0.01$ ). The coefficient of the indirect effects appears to be stronger than the direct effect. Thus, while information trust appears to be transmitted directly to customer shopping loyalty, the bulk of the transmission is indirect, because information trust affects customer satisfaction levels, which in turn affects their shopping loyalty. Therefore, the customer satisfaction level fully mediates the path between information trust and shopping loyalty.

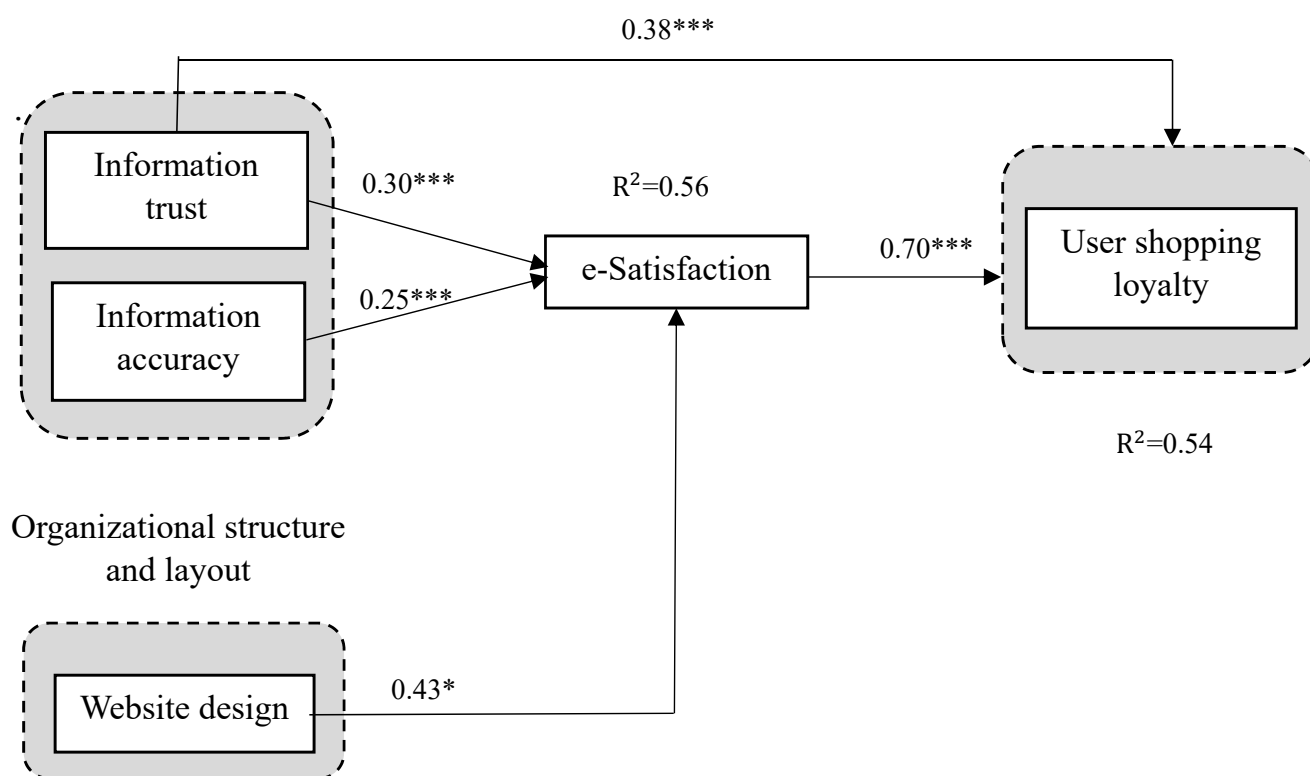


Figure 2. The model with path coefficients. Note. \*\*\*  $p < 0.001$ , \*  $p < 0.05$ .

Table 6. Path analysis.

H	Path	Coefficient	Results
H1	Information trust → shopping loyalty	0.38 ***	Supported
H2	Information trust → e-satisfaction	0.30 ***	Supported
H3	Information accuracy → e-satisfaction	0.25 ***	Supported
H4	Website design → e-satisfaction	0.43 *	Supported
H5	e-satisfaction → shopping loyalty	0.70 ***	Supported

Note. \*\*\*  $p < 0.001$ , \*  $p < 0.05$ .

Table 7. Examining the indirect path of trust on shopping loyalty through the mediating effect of e-satisfaction.

Path	Coefficient	Results
Information trust → e-satisfaction → shopping loyalty	0.62 **	Supported

Note. \*\*  $p < 0.01$ .

## 5. Discussion

This study has made efforts to explain online user loyalty toward using e-commerce shopping malls in the context of online information quality (information trust and information accuracy) and website design. The findings show that shopping loyalty is, directly and indirectly, attributable to information trust. The confirmation of Hypotheses 1 and 2 is consistent with previous research identified in the literature [40,43]. The direct effect of information trust on shopping loyalty is significantly positive. This is to be expected because trust reduces customer perceived risk, which increases confidence about the service and product quality [39]. Customer satisfaction is proven to be a significant mediator through which information trust affects customer shopping loyalty. High-level trust and commitment toward an online retailer could be earned if the customers are satisfied with

the website. Consequently, improving customer satisfaction will enhance customer trust as well. This implies that online retailers can increase customer loyalty by focusing their strategies on the satisfaction and trust of online customers because the satisfaction and trust of online customers will lead to an increase in customer loyalty.

Furthermore, the results reveal that information accuracy strongly affects customer e-satisfaction. This finding is consistent with the studies of [46,61]. In the context of information quality, [62] explained that online retailers should provide valuable information because it can reduce searching time. In addition, in order to increase its effectiveness, the information provided must match the customer's needs. According to [63], the information provided on a website influences customer purchasing decisions. As such, e-commerce platforms should provide accurate information on their websites to ensure customers' needs are fulfilled. Such an assessment might lead to a long-lasting implication in terms of customer satisfaction and consequently customer loyalty to an e-commerce platform.

The result shows that website design was found to be a strong factor positively affecting e-satisfaction. The relationship between website design and e-satisfaction is in line with [49,64]. Good website design, such as a well-organized e-commerce platform, which is easy and comfortable to use, has a colorful appearance and is enjoyable to browse will enhance customer satisfaction [49]. In order for customers to be satisfied, online retailers should design their websites in such a way that customers should be able to use the website effectively while feeling satisfied during use [24].

The findings regarding customer e-satisfaction and shopping loyalty are in agreement with previous studies that found a positive and significant relationship between customer satisfaction and shopping loyalty [65,66]. When an e-commerce platform fulfills customer needs, it leads to satisfaction, which creates a tendency for customers to become loyal to the online retailer. Furthermore, satisfied customers will spread positive word of mouth to others once they are happy and satisfied with the services of the online retailer.

## 6. Conclusions and Implication

The goal of this study was to examine how information trust, information accuracy and website design influence customer e-satisfaction, and how customer e-satisfaction subsequently affects shopping loyalty. The proposed research model supports all five hypotheses, including the analysis of the indirect effect of information trust on shopping loyalty. The analytical results demonstrated that information trust, information accuracy and website design positively and significantly influence e-satisfaction, which subsequently affects consumer shopping loyalty. Regarding the direct and indirect effects of information trust on shopping loyalty, the analysis shows a significant result. The results showed that the model accounts for a significant portion of the variance in e-satisfaction (56%) and user shopping loyalty (54%).

This research provides a new perspective for e-commerce shopping platforms to consider how to retain their users. As indicated in this paper, when users search for products or goods on an e-commerce mall, information accuracy and trust can provide a sense of assurance to the users, especially when it is their first time shopping using an e-commerce mall. On the other hand, there will be a higher level of commitment by customers toward the online retailer when they are comfortable with the website design.

An e-commerce website must augment its business features because it would likely increase customer satisfaction. Based on our findings, customer satisfaction has a positive influence on shopping loyalty. When customers are satisfied and happy with online retail services, they will likely stay with the same online retailer. Therefore, e-commerce retailers should pay particular attention not only to improving the information quality but also to making sure that their website is designed in such a way that customers can easily and comfortably navigate their way through it. Given the fact that online users are unable to judge the quality and condition of the product, providing accurate and detailed information by e-commerce malls should be of paramount importance. At the same time, trustworthy and honest information provided by e-commerce malls are also important in retaining

their users. Therefore, it is advisable for e-commerce malls to avoid exaggerated product information or even fraudulent information because users are more likely to trust an e-commerce mall that provides trustful information than an e-commerce mall that provides fake and false information [34]. User perception of trustworthiness toward e-commerce malls can increase their intention to return to it, which can in turn lead to user loyalty.

### Limitations of Study

Despite the contributions and implications of this study, there are still some limitations that need to be acknowledged. Firstly, the study was limited to information trust, information accuracy and website design as a manifestation of user shopping loyalty. To extend and validate the results, future studies should consider other attributes such as word of mouth and e-commerce web entertainment. For example, web entertainment, as suggested by [33], can also serve as a construct to depict user shopping loyalty. Further, the study was limited in the aspect of data collection. The current COVID-19 pandemic, which led to social distancing, made it difficult to meet respondents on a one-to-one basis.

Another limitation was that this research conducted the survey using English as the only language. This made it difficult for respondents who are not familiar with the language to understand and answer the questionnaires. Thus, further research is suggested to provide other languages such as Korean and Chinese in the questionnaire to suit multiracial respondents in the study area. The use of website design is limited in this study. This study solely looks at website design on e-satisfaction, whereas, website design can be divided into different elements such as virtual design, navigation design and information design [24]. From this perspective, other paths and possible constructs that may influence e-satisfaction and subsequently customer loyalty should be investigated. Additionally, further studies should examine user shopping loyalty with respect to product categories at different e-commerce retailers.

**Author Contributions:** Conceptualization, L.A.; Methodology, D.-J.L.; Formal analysis, S.Y.; Resources, S.Y.; Writing—original draft, L.A.; Writing—review & editing, S.Y.; Supervision, D.-J.L. All listed authors have made a substantial, direct and intellectual contribution to the work, and approved it for publication. All authors have read and agreed to the published version of the manuscript.

**Funding:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Informed consent was obtained verbally from all subjects involved in the study.

**Data Availability Statement:** Datasets are available upon request.

**Conflicts of Interest:** The authors declare no conflict of interest.

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