



Print ISSN: 1738-3110 / Online ISSN 2093-7717
 JDS website: <http://www.jds.or.kr/>
<http://doi.org/10.15722/jds.22.05.202405.93>

An Expanded Website Quality Model in Online Shopping Malls for Developing Satisfaction and Loyalty: The Moderating Effect of Gender

Sang Min KIM¹, Tian JIAQI², Yong-Ki LEE³

Received: March 26, 2024. Revised: April 11, 2024. Accepted: May 05, 2024.

Abstract

Purpose: This study used the SOR model (or cue utilization theory) to examine the impact of expanded quality factors including product quality on customer satisfaction, attitude, and behavioral loyalty. This study examined the moderating effect of gender on the customer satisfaction-attitudinal and behavioral loyalty relationship. **Research design, data, and methodology:** 364 respondents were collected through an online survey and analyzed using the SmartPLS 4.0 program. **Results:** The findings show that product quality, along with system quality and service quality, are key determinants of customer satisfaction. In addition, this study shows that the relationship between customer satisfaction and attitudinal loyalty (repurchase and word-of-mouth intention) does not differ depending on gender, but the relationship between customer satisfaction and behavioral loyalty (share-of-visit and share-of-wallet) is stronger for women than for men. **Conclusions:** This research integrates concepts from environmental psychology and marketing focusing on website quality (information, system, service, and product), as well as satisfaction, attitudinal and behavioral loyalty. Online shopping mall practitioners must systematically analyze and assess the quality of online shopping, a pivotal factor driving customer satisfaction, attitude, and behavioral loyalty. Acknowledging the influence of gender on consumers' online purchasing behavior can aid online retailers in devising tailored e-commerce marketing strategies aimed at attracting and retaining customers.

Keywords: Online Shopping Mall, Website Quality, Product Quality, SOR Theory, Behavioral Loyalty, Share-of-Wallet, Share-of-Visit

JEL Classification Code: E44, F31, F37, G15

1. Introduction

The rapid growth of online shopping in the past decade, fueled by advancements in Internet technology, notably accelerated during the coronavirus pandemic, prompting a significant shift from traditional stores to online platforms.

China's online shopping industry experienced remarkable expansion, with an average annual growth rate of 59.4% from 2017 to 2021, reaching 4.8445 trillion RMB in 2022, and a notable increase in the number of users from 473 million in 2017 to 850 million in 2021, with an annual consumption per person rising to 2979.24 RMB in 2021

- 1 First Author. Doctoral Candidate, School of Business, Major in ESG Management, Sejong University, Korea.
Email: ksm961454@naver.com
- 2 Second Author. School of Business, Sejong University, China.
Email: 447984602@qq.com
- 3 Corresponding Author. Professor, School of Business and Sejong Carbon Neutral ESG Institute, Sejong University Korea.
Email: yongki2@sejong.ac.kr

© Copyright: The Author(s)

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted noncommercial use, distribution and reproduction in any medium, provided the original work is properly cited.

(KOTRA, 2022). However, this sector faces intensifying competition, necessitating research into differentiation strategies to foster growth.

Consumers shopping online cannot physically inspect products as they would in traditional stores, placing greater importance on the quality of the online platform itself. Website quality, known as WebQual, is crucial for reliability and customer satisfaction (Aladwani & Palvia, 2002). Online shopping offers convenience, allowing purchases anytime and anywhere, without the hassle of parking or rush hours. The quality of online platforms significantly influences customer satisfaction and behavior, impacting the success of online businesses, and enabling officials to optimize store operations (Jeon & Jeong, 2017).

Research on online shopping website quality emphasizes factors like system quality (SYSQ), information quality (INFQ), and service quality (SERQ), crucial for purchase incentives and repeat purchases (Kuan et al., 2008). However, product quality is often overlooked despite its significant influence on consumer purchase intentions. Integrating product quality (PROQ) into WebQual is essential for understanding its impact on satisfaction and loyalty in online shopping (Kuan et al., 2008). Despite this, limited attention has been paid to understanding how extended WebQual factors including product quality affect satisfaction and attitudinal and behavioral loyalty in online shopping mall settings. This leads to the incorporation of PROQ into the original WebQual and allows us to propose the extended WebQual model. According to some studies (e.g., Butcher et al., 2003; Lee et al., 2008), the extended WebQual model including PROQ can account for variance in consumer behavior (Sullivan & Kim, 2018). Therefore, this study proposes the extended WebQual and its impact on customer satisfaction and loyalty.

Meanwhile, limited research has explored its impact on customer behavioral loyalty. This study broadens the empirical investigation to encompass customer satisfaction, attitudinal factors, and behavioral loyalty, aiming to address gaps in the current literature. Despite ongoing research in various fields related to online shopping quality, insufficient attention has been given to its effects on attitudinal and behavioral loyalty. This study seeks to fill this gap and enhance understanding of how online shopping quality influences customer satisfaction and loyalty.

Gender differences in online shopping behavior are also considered crucial, with distinct need structures and decision-making processes identified between men and women (Zhou et al., 2014). However, research on consumer evaluations and behaviors toward online shopping is limited and yields inconsistent findings. Understanding these differences can inform tailored marketing strategies. While previous studies have shown that the relationship between satisfaction and customer behavior may vary based on

demographics such as gender (Marinković et al., 2020), research exploring the impact of gender on the satisfaction-loyalty relationship is lacking. Thus, gender should be regarded as a critical factor in understanding how customer satisfaction can affect or moderate loyalty.

2. Literature Review

2.1. Online Shopping Mall Quality and Key Theories

The shopping mall's quality is crucial for evaluating retailers' standards and ensuring their competitiveness and success. Thus, WebQual is vital both technologically for sellers and from buyers' perspectives (Chen et al., 2017), focusing on system features and meeting consumer expectations. Numerous studies (e.g., Dominici et al., 2021) measure WebQual on three factors: information, system, and service quality, as outlined in DeLone and McLean's IS Success Model (2003). Yet, these studies often overlook product quality, crucial for evaluation and loyalty after online purchases (Sullivan & Kim, 2018). Hence, this study includes product quality to gauge its impact on satisfaction and loyalty.

The stimulus-organism-response (SOR) paradigm posits environmental stimuli influence cognitive and emotional responses, shaping behaviors (Mehrabian & Russell, 1974), widely used in researching consumer behavior in retail markets. According to the SOR model, online mall qualities influence customer satisfaction, impacting attitudinal loyalty, share-of-wallet, and share-of-visit (behavioral). The cue diagnosticity framework (Purohit & Srivastava, 2001) or cue utilization theory (Wang et al., 2016) suggests including product quality enhances frameworks explaining shopping mall success. Studies indicate product quality, alongside service, is key when evaluating service companies (e.g., Butcher et al., 2003; Lee et al., 2008). Hence, website quality is measured across four sub-dimensions: INFQ, SYSQ, SERQ and PROQ.

2.1.1. Information Quality

Information quality, ensuring efficient delivery of accurate and meaningful data to users, enhances their shopping experience and informs purchasing decisions (Ahn et al., 2004). INFQ profoundly impacts consumers' choices in online shopping, driven by heightened uncertainty compared to traditional stores (Li & Huang, 2009). To cater to online consumers' information needs, product and service data must be up-to-date, informative, consistent, and easily comprehensible. The perceived quality of information directly affects consumer interest and purchasing decisions. Recognizing high-quality online information enhances

consumer satisfaction and informed decision-making (Rita et al., 2019). Studies indicate a positive link between information quality and end-user satisfaction, as per Delone & McLean's IS success model (2003). Based on these findings, we hypothesize that online shopping platforms' information quality positively impacts customer satisfaction.

H1: Information quality positively influences customer satisfaction.

2.1.2. System Quality

System quality encompasses attributes indicating system performance, such as information storage capacity and processing speed, as well as user-centric indicators like convenience, flexibility, and integration (Gorla et al., 2010). Advancements in online technology introduce user-friendly features such as audiovisual assistance, customization options, and virtual reality, enhancing SYSQ and providing users with convenience, privacy, and swift responses (Lederer et al., 2000). In the realm of online shopping, SYSQ significantly impacts customer satisfaction. Moreover, system quality serves as a crucial interface between customers and organizations, playing a pivotal role in e-commerce success (Hsu et al., 2017). Furthermore, SYSQ fosters end-user loyalty, facilitating a seamless online shopping experience and meeting essential service quality requirements (Aladwani & Palvia, 2002). Li et al. (2021) found that system availability, temporal and spatial flexibility, and user-friendliness influence customer satisfaction with e-banking services. Based on previous studies, we believe that customer satisfaction within online shopping malls is influenced by the quality of the system provided by the shopping mall company. Hence, we propose the following hypothesis.

H2: System quality positively influences customer satisfaction.

2.1.3. Service Quality

Online service quality refers to customers' overall assessment of the excellence and quality of online or virtual market service delivery (Khan et al., 2020). Particularly, SERQ plays a pivotal role in influencing consumer decision-making and is crucial for evaluating online shopping success factors (Devaraj et al., 2002). Parasuraman et al. (2005) advocate for a broad conceptualization of e-service quality, encompassing all customer interactions with a website, aiming to facilitate efficient and effective shopping, purchasing, and delivery processes. In online shopping, SERQ stands out as one of the most significant factors driving customer satisfaction (Al-dweeri et al., 2018). A multitude of studies across various service industries consistently highlight service quality as a key determinant

of customer satisfaction (e.g., Choi, 2020). Based on previous studies, we anticipate that service quality will positively impact customer satisfaction within online shopping malls. Hence, we propose the following hypothesis.

H3: Service quality positively influences customer satisfaction.

2.1.4. Product Quality

Product quality refers to the customer's perception of the superiority and excellence of a product compared to competing products (Sethi, 2000). Quality is described as conformity to product requirements or fulfillment of specifications. Therefore, products are evaluated as high or low quality depending on whether they meet the standards (Garvin, 1984). Some scholars claim that PROQ is a core quality in evaluating products (e.g., Butcher et al., 2003; Iacobucci & Ostrom, 1993; Lee et al., 2008) and argue that it is the basic performance that a product should have compared to its value (Clemmer, 1990). Prior studies show that PROQ is a critical determinant influencing customer satisfaction and consumer (re)purchase intentions for both online and offline retailers (e.g., Tsiotsou, 2006). For example, Patterson (1993) under-scored that perceived product performance exerts the strongest influence on satisfaction. Based on previous studies, the following hypotheses were proposed.

H4: Product quality positively influences customer satisfaction.

2.2. Customer Satisfaction, Attitudinal and Behavioral Loyalty

Customer satisfaction refers to the psychological state of a customer, indicating a sense of contentment that arises once their needs have been met, and it pertains to the customer's subjective feelings (Shankar et al., 2003). Put differently, customer satisfaction entails the customer's assessment of the responsiveness and adequacy in fulfilling their desires and requirements (Oliver, 1977). Hence, various studies (e.g., Mamakou et al., 2024; Wang et al., 2023) have demonstrated that according to the Expectancy Disconfirmation Theory (EDT) advanced by Oliver (1977), customer satisfaction represents an appraisal of the variance between the anticipated quality of a website before purchase and the experienced quality, across both online and offline scenarios. It is posited to be a pivotal determinant in forecasting their behavioral intentions (e.g., repurchase intentions, word-of-mouth intentions, consumption volume, duration of visit, etc.). Therefore, customer satisfaction is continuously being conducted based on the expectation-

disconfirmation paradigm to determine what specific customer behavior it affects, and customer loyalty is being studied from attitudinal and behavioral perspectives (Ahn et al., 2011).

Attitudinal loyalty denotes the level of personal connection to a product or service (Fournier, 1998), representing customer preference or psychological commitment. Demonstrating a favorable attitude towards a specific product or service enables the identification of future purchase intentions or likelihood. Attitudinal loyalty is gauged through attitude-related data, reflecting the emotional and psychological attachment inherent in loyalty, with indicators such as favorable attitudes, word-of-mouth, and repurchase intentions for products and services (Bowen & Chen, 2001). Many researchers (e.g., Cachero-Martínez & Vázquez-Casielles, 2021; Evanschitzky et al., 2006; Mechinda et al., 2009; Zhang et al., 2014) define attitudinal loyalty as a customer's psychological disposition or expression and measure it using repurchase (or revisit) or word-of-mouth intention.

Behavioral Loyalty, on the other hand, focuses solely on loyalty outcomes, such as repeat purchases. It signifies the act of consistently purchasing from the same company, the intention to recommend it to others, and the likelihood of continuing the relationship (Jones & Sasser, 1995). It considers repeated purchase behavior for a specific product or service over a designated period. This form of loyalty can be measured by repeat purchase behavior, purchase ratio, and purchase frequency (Bowen & Chen, 2001). Initially, behavioral loyalty solely reflected customer retention (or repurchase), but it has evolved to encompass customer share in recent times (Coyles & Gokey, 2002).

Jones and Sasser (1995) particularly argued that the ultimate measure of loyalty is the category's share of purchases, commonly known as the share of wallet, a stance supported by numerous studies (Baumann et al., 2005). Share of wallet, according to these studies, directly correlates with a company's profitability. Especially, Understanding what drives customer satisfaction and why consumers choose online stores helps shopping mall operators guide improvements to their businesses. Therefore, researchers must systematically analyze and assess both customers' attitudinal and behavioral loyalty, which are key drivers of customer satisfaction. Furthermore, customer satisfaction serves as a direct influencer on a company's profitability, impacting aspects such as customer loyalty and retention (Darzi & Bhat, 2018). Based on prior studies, we propose the following hypotheses.

H5: Customer satisfaction positively influences repurchase intention.

H6: Customer satisfaction positively influences share-of-wallet.

H7: Customer satisfaction positively influences share-of-visits.

2.3. Moderating Role of Gender in the Relationship between Customer Satisfaction, Attitudinal and Behavioral Loyalty

Although there have been some studies interested in online customer satisfaction and customer share, relatively little attention has been paid to the linkages between them (satisfaction, customer share) and the role of gender. Despite the claim that customer satisfaction intuitively affects customer share, many scholars are interested in whether the relationship between customer satisfaction and customer share will be constant or different depending on consumer characteristics including gender (Mägi, 2003). For example, Lee et al. (2000b) found that customer satisfaction influences share-of-visit but does not share-of-wallet in the Chinese restaurant setting. Mägi (2003) found that satisfaction increases primary store SOP (share-of-purchase) and SOV (share-of-visits). Lee et al. (2008) identified that relationship satisfaction had a positive effect on behavioral commitment (share-of-visits and share-of-wallet) in a restaurant context. Alet Vilaginés (2023) shows that relative satisfaction influences SOP in a B2B setting. However, most studies have been conducted from the perspective of customer satisfaction-loyalty (Marinković et al., 2020), not the relationship between customer satisfaction-customer share (share of wallet, share of visit).

More importantly, some studies (Marinković et al., 2020), show that a substantial amount of the variance in customer share of wallet can be predicted using gender, allowing online shopping malls to identify and focus on customer segments where there is most growth potential. Homburg and Giering (2001) stated that gender moderates the linkages between satisfaction and loyalty. As an example, one might predict that the loyalty effect of satisfaction with the sales process is stronger for women than for men, whereas the impact of product satisfaction on loyalty might be stronger for men.

Marinković et al. (2020) claimed that gender moderates the relationship between customer satisfaction and continuous intention but did not find a significant difference between men and women. Sanchez-Franco et al. (2009) found that the effects of satisfaction on commitment and loyalty toward an Internet service provider are stronger for men than women. Ladhari and Leclerc (2013), found that the effect of e-satisfaction on e-loyalty is stronger for women than for men. Based on these studies, we predict that gender will moderate the relationship between customer satisfaction and customer share. Therefore, we propose the following hypotheses.

- H8:** Gender moderates the relationship between customer satisfaction and loyalty-share-of-wallet.
- H9:** Gender moderates the relationship between customer satisfaction and share-of-wallet.
- H10:** Gender moderates the relationship between customer satisfaction and share-of-visits.

Based on the hypotheses, the proposed model is shown in Figure 1.

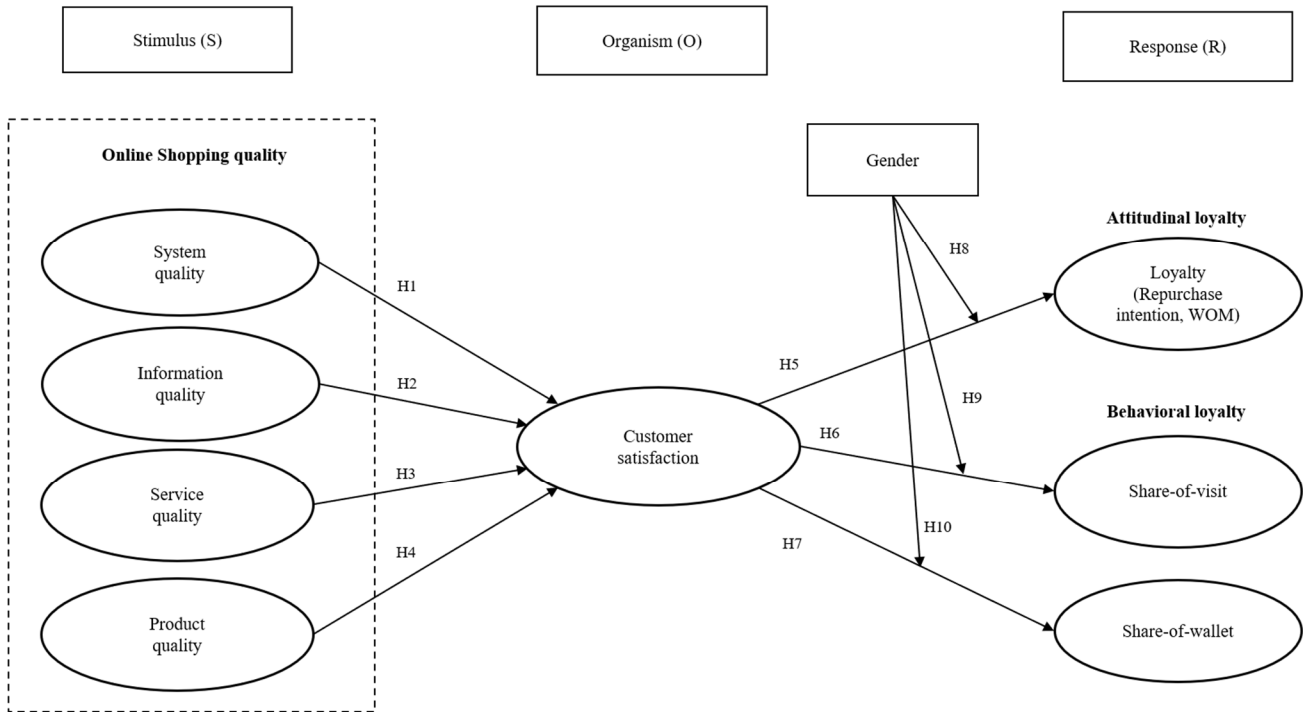


Figure 1: Proposed Model

3. Research Methods and Materials

3.1. Methodology

3.1.1. Sampling and data collection

Although items from previous studies were utilized, they have undergone modifications during a pre-test phase. A pre-test involving 10 online shopping mall users was conducted to identify any potential biases or ambiguities. Feedback obtained from the pre-test was then used to modify the questionnaire accordingly. Subsequently, three experts and two academics reviewed the items to ensure their measurement appropriateness, readability, and clarity, resulting in the correction of some wordings and sentences. Data collection was carried out from panels of online shopping mall users with the assistance of an online survey company in China. The purpose of the study was explained to the participants, and assurances about the confidentiality of their information were provided.

To enhance the response rate, incentives were offered to participants upon successful completion of the questionnaire

through the online survey company. The survey guide provided by the online survey company clarified that the survey was conducted for academic research, that the survey results would be solely used for statistical analysis, and that panelists were expected to respond anonymously. The research company employed a simple random sampling method and reached out to 3,370-panel members, of which 420 respondents completed the questionnaire. Responses omitting essential information were excluded, resulting in 364 qualified responses for final data analysis. Sample size requirements should be at least ten to one, reflecting a response to the variable ratio (Hair et al., 2010), thus 364 responses (with a 12.6:1 ratio) are sufficient to proceed.

3.2. Measures

We used multiple items to measure all constructs. The measures were anchored by 1 (“strongly disagree” or “not at all satisfied”) and 7 (“strongly agree” or “very satisfied”). The extended WebQual consists of four sub-dimensions such as system quality (7 items), information quality (7

items), service quality (6 items), and product quality (5 items) (see Table 2). Customer satisfaction was measured using four items (Lee et al., 2000a). Attitudinal loyalty was measured using 4 items based on the studies (Lee et al., 2000a; Lee et al., 2000b). Behavioral loyalty was measured using monthly share-of-visit (1 = 0, 2 = 1-5 times, 3 = 6-10 times, 4 = 11 or more times) and monthly average share-of-wallet (1 = <500 RMS, 2 = 500 – 1,000 RMB, 3 = 1,001 – 3,000 RMB, 4 = 3,001 or more) based on Lee et al. (2000b).

4. Data Analysis

4.1. Demographic Profile of the Respondents

Table 1 shows the demographic profiles of the respondents. The sample included a little bit more males (51.4%) than females (48.6%). The largest number of respondents were 18 - <25 (44.8%), followed by 25 - <30 and 30 - <35 (26.5%). The most common occupation was housewife (32.7%) followed by office worker (32.1%) and student (19.5%). About 59% of the respondents were married. Most of the respondents obtained a college degree (64.6%). In terms of the average monthly shopping frequency, 7 – 10 times (39.0%) was the most frequent, followed by >11 times (24.7%) and 3 – 6 times (22.0%). Lastly, the highest monthly average spending amount was 501 - 1000 RMB (44.0%), followed by 1,001 – 3,000 RMB (21.2%) and ≤500 (19.0%).

Table 1: Demographic Profiles (n = 364)

Category	Information	Frequency	%
Gender	Male	187	51.4
	Female	177	48.6
Age	Under 18	61	16.8
	18 - <25	163	44.8
	25 - <30	100	27.5
	30 - <50	35	9.6
	>50	5	1.4
Job	Student	71	19.5
	Housewife	119	32.7
	Office workers	117	32.1
	Others	57	15.7
Education	Less than high school	19	5.2
	High school or two-year college	65	17.9
	Four-year college	235	64.6
	Graduate school	45	12.4
Monthly frequency of shopping	<3	52	14.3
	3 - 6	80	22.0
	7 - 10	142	39.0
	>11	90	24.7

Category	Information	Frequency	%
Monthly Money to spend (RMB)	≤500	69	19.0
	501 - 1,000	160	44.0
	1,001 - 3,000	77	21.2
	>3,001	58	15.9

4.2. Measurement Model

Reliability and validity tests were conducted using a measurement model via the SmartPLS 4.0 program (Lee et al., 2023). Appendix 2 illustrates that both Cronbach's α and composite reliability values surpassed the standard threshold of 0.7, indicating strong internal consistency within the measurement model and ensuring its convergent validity. Factor loadings and Average Variance Extracted (AVE) values exceeded the .5 cut-off point, thus affirming convergent validity. Table 3 demonstrates that correlation coefficients were lower than the square root values of AVE, providing evidence of discriminant validity. Furthermore, Heterotrait-Monotrait (HTMT) values, which indicate the heterogeneity and homogeneity ratio of correlation coefficients, were below .85, thus confirming discriminant validity. Normality was established as kurtosis values ranged from -1.201 to .348 and skewness values ranged from -.539 to -.089, all falling within the absolute values of 9.0 and 2.0, respectively (Wang et al., 2024).

Table 3: Fornell-Larcker Criterion/HTMT

Constructs	1	2	3	4	5	6	7	8
1. SYSQ	.908							
2. SERQ	.758/.818	.901						
3. INFQ	.589/.635	.594/.645	.836					
4. PROQ	.726/.781	.671/.725	.571/.617	.882				
5. SAT	.587/.648	.562/.621	.365/.406	.564/.622	.852			
6. LOY	.760/.831	.752/.824	.523/.574	.737/.805	.612/.685	.881		
7. SOV	.085/.088	.139/.143	.037/.046	.112/.117	.136/.144	.122/.129	1.000	
8. SOW	.271/.281	.323/.336	.128/.033	.191/.199	.301/.317	.285/.299	.232/.232	1.000
Mean	4.13	4.13	4.36	4.09	4.16	4.11	2.74	2.34
SD	1.40	1.32	1.63	1.40	1.27	1.40	.98	.96

Diagonal elements (bold) are the square root of the variance shared between the constructs and their measures (AVE). Off-diagonal elements are the correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements. SYSQ: System quality, SERQ: Service quality, INFQ: Information quality, PROQ: Product quality, SAT: Satisfaction, LOY: Loyalty, SOV: Share-of-visit, SOW: Share-of-wallet

4.3. Common Method Bias Assessment

Following Kang et al.'s methodology (2021), we used procedural and statistical techniques to address common method bias. Three procedural methods were employed. Firstly, a pre-test adjusted words, phrases, and sentences for clarity. Secondly, respondents were briefed on the study's purpose. Thirdly, the order of variables was shuffled to avoid deducing relationships. VIF values were analyzed statistically against a 3.3 threshold (Wang et al., 2024). With VIF values ranging from 1.000 to 3.018, common method bias didn't affect our study's validity.

4.4. Structural Model Assessment

We evaluated the fit of the model using the SmartPLS 4.0 program (Hur & Lee, 2021) (see Table 4). The finding that all VIF values were lower than 3.3 indicates no problem of multicollinearity between the constructs. The predictive fit of the model was considered appropriate because the values associated with the Stone-Geisser's test (Q^2) were higher than 0. In addition, the R^2 values were greater than 0.10 (Falk & Miller, 1992), confirming the explanatory power of the model. Finally, the standardized root mean squared residual values were less than 0.1, indicating an appropriate model fit.

Table 4: Structural Estimates (PLS)

Paths	Model 1				Model 2			
	Estimate	t	p	f ²	Estimate	t	p	f ²
System quality → Satisfaction	.274	4.390	.000	.042	.274	4.390	.000	.042
Information quality → Satisfaction	-.079	1.293	.196	.006	-.079	1.293	.196	.006
Service quality → Satisfaction	.228	3.226	.001	.033	.228	3.226	.001	.033
Product quality → Satisfaction	.257	3.982	.000	.047	.257	3.982	.000	.047
Satisfaction → Loyalty	.612	13.383	.000	.598	.586	8.229	.000	.266
Satisfaction → Share-of-visit	.136	2.495	.013	.019	.004	.054	.957	.000
Satisfaction → Share-of-wallet	.301	6.104	.000	.100	.075	1.142	.254	.003
Gender → Loyalty					.230	2.706	.007	.021
Gender → Share-of-visit					-.280	2.702	.007	.020
Gender → Share-of-wallet					.599	6.668	.000	.110
Gender x Satisfaction → Loyalty					.013	.127	.899	.000
Gender x Satisfaction → Share-of-visit					.304	2.807	.005	.024
Gender x Satisfaction → Share-of-wallet					.345	3.604	.000	.036
	R ²	Q ²			R ²	Q ²		
Satisfaction	.405	.388			.405	.382		
Loyalty	.374	.492			.387	.485		
Share-of-visit	.018	.012			.060	.021		
Share-of-wallet	.091	.074			.207	.096		
Mean	.222	.242			.265	.246		
VIF	1.000 - 3.018				1.029 - 3.018			

*** p < .001, ** p < .01, * p < .05; n.s = not significant. Gender (0 = Male, 1 = Female)

4.5. Hypotheses Testing

4.5.1. Main Effect Test

As shown in Table 4 (see Model 1), system quality ($\beta = .274, p < 0.001$), product quality ($\beta = .257, p < 0.01$), and service quality ($\beta = .228, p < 0.01$) have a significant impact on satisfaction, indicating H1, H2, and H4 were supported. Meanwhile, information quality ($\beta = -.079, n.s.$) does not, indicating H3 is not supported. Satisfaction has a significant impact on loyalty ($\beta = .612, p < 0.001$), share-of-visit ($\beta = .136, p < 0.05$), and share-of-wallet ($\beta = .301, p < 0.001$), indicating H5-7 are supported.

4.5.2. Interaction Effect Analysis of Gender

The study, using the SmartPLS 4.0 program, examined the interaction effect of gender to identify the moderating role of gender in the structural relationship between satisfaction and attitudinal and behavioral loyalty. As shown in Table 5 (see Model 2), the findings show that the term Gender × Satisfaction doesn't influence loyalty ($\beta = .013, n.s.$), indicating H8 is not supported. Meanwhile, the term of Gender × Satisfaction influence positively share-of-visit ($\beta = .304, p < .01$) and share-of-wallet ($\beta = .345, p < .001$), indicating H9 and H10 are supported.

This means that there is no gender difference in the effect of satisfaction on loyalty, but the effect of satisfaction on share-of-visit and share-of-wallet is stronger for women than for men.

5. Conclusions

Our study extends the WebQual model to include product quality, aligning with prior research and highlighting its importance alongside system and service quality. Examining satisfaction's impact on behavioral loyalty and its gender-based variations, our results show gender differences in wallet and visit shares. Gender, extensively studied in consumer behavior, reveals distinct information processing and decision-making.

5.1. Theoretical Contribution

This research contributes theoretically by integrating concepts from environmental psychology and marketing encompassing website quality aspects like information, system, service, and product quality, as well as satisfaction, attitudinal loyalty, and behavioral loyalty. Through examining the extended WebQual model, we empirically assess four website qualities' direct and relative impacts on satisfaction. Our findings validate the extended WebQual model, showing product quality ranks second in influencing customer satisfaction after SYSQ. This aligns with research indicating product quality's pivotal role in customers' evaluations of service companies (Butcher et al., 2003).

Another significant contribution lies in integrating the SOR model (or CUT) (Wang et al., 2016) and the expectation-disconfirmation model (Ahn et al., 2011). Utilizing these frameworks, we identify how cognitive evaluations of WebQual elements shape affective responses (i.e., satisfaction), subsequently influencing behaviors such as loyalty, share-of-visit, and share-of-wallet. Thus, our findings support both the SOR model (or CUT) and the expectation-disconfirmation model, suggesting future studies should consider cognitive and affective responses when examining website customers' behaviors. By employing the expectancy-disconfirmation model, we explore affective responses' role in shaping attitudinal and behavioral loyalty. Notably, our findings suggest social capital theory's applicability to WebQual studies (Chen et al., 2017), indicating WebQual can foster customers' attitudinal and behavioral loyalty. Finally, our study offers a theoretical contribution by highlighting gender differences in explaining relationship satisfaction and attitudinal and behavioral loyalty. Specifically, gender-based differences underscore distinct customer behaviors or intentions between males and females, emphasizing the need to

consider these differences to understand their underlying causes.

5.2. Practical Contribution

This study offers several practical implications. First, the high relative importance of quality in the system's performance highlights the pivotal role in e-commerce success, serving as a crucial interface between customers and organizations. Therefore, when communicating with consumers, shopping mall website managers will be able to emphasize that their shopping mall website is a stable system with no errors and easy access to orders from anywhere and anytime. They should establish a consumer response system to promptly address consumer issues or complaints that may arise while using the platform.

Second, the findings show that product quality and service quality are important factors in improving sales and competitiveness of online shopping mall products. Therefore, online shopping mall companies can implement strategies to improve service quality by accurately handling consumers' requirements and easily processing orders, cancellations, returns, and refunds. This system ensures that products undergo rigorous verification processes regarding the quality of the seller's operational capabilities, manufacturing processes, and production bases responsible for supplying the products. Furthermore, these companies should view their platforms not merely as sales spaces but as hubs for communication and engagement with consumers. To enhance customer service, online shopping mall managers must actively address consumer inquiries and complaints while establishing efficient systems for product returns and refunds. Additionally, managers should assign consumer ratings based on purchase frequency or amount, offering corresponding benefits such as various events, coupons, and loyalty points to incentivize continued engagement.

Lastly, the impact of customer satisfaction on attitudinal loyalty (repurchase and word-of-mouth intention) did not differ depending on gender, but the impact on behavioral loyalty was confirmed to be stronger for women than for men. This tendency of women may be related to the fact that the higher the quality of an online shopping mall, the higher the behavioral loyalty (visit share, wallet share). Therefore, recognizing the impact of gender on consumers' online purchasing behavior can help online retailers devise tailored e-commerce marketing strategies to attract and retain customers. Especially considering the significant impact of online commerce on business operations due to the increase in face-to-face interaction in the post-corona era, it is important to redefine online shopping quality, a key aspect of e-commerce, and to study loyalty by gender. The effort has the potential to provide strategic marketing insights to

enhance and develop the quality of the country's continuously evolving online shopping platform. Ultimately, this analysis can provide useful guidance in improving the marketing strategies of domestic online retailers by identifying factors that influence continued online shopping.

5.3. Limitations and Future Research

The study delves into its limitations and provides directions for future research as follows. Firstly, given the study's focus on Beijing, China, it becomes somewhat challenging to assert its representativeness for all consumers across China. Future research endeavors should aim to gather more diverse samples from various representative cities in China, enabling broader generalization and more comprehensive interpretation.

Secondly, this study scrutinized a wide array of WebQual elements and their impact on customer satisfaction. Subsequent investigations may consider delving into psychological variables such as attitudes toward shopping malls, perceived values (including hedonic and utilitarian values), and emotions (both positive and negative). While our study uncovered differences between males and females, it fell short of pinpointing the underlying causes. Future inquiries may delve into understanding the reasons behind the differential responses of males and females toward shopping mall sites. For instance, what factors (e.g., loyalty programs) elucidate the stronger correlation between customer satisfaction and share-of-visit and share-of-wallet among women compared to men?

References

- Agarwal, R., & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research*, 9(2), 204-215.
- Ahn, S. S., Park, Y. O., & Kang, B. H. (2011). A study on the effect of service quality on attitudinal and behavioral loyalty by different types of restaurants. *Culinary Science and Hospitality Research*, 17(1), 26-43.
- Ahn, T., Ryu, S., & Han, I. (2004). The impact of the online and offline features on the user acceptance of Internet shopping malls. *Electronic Commerce Research and Applications*, 3(4), 405-420.
- Al-Dweeri, R. M., Moreno, A. R., Montes, F. J. L., Obeidat, Z. M., & Al-Dwairi, K. M. (2018). The effect of e-service quality on Jordanian student's e-loyalty: An empirical study in online retailing. *Industrial Management & Data Systems*, 119(4), 902-923.
- Aladwani, A. M., & Palvia, P. C. (2002). Developing and validating an instrument for measuring perceived web quality. *Information & Management*, 39(6), 467-476.
- Alet Vilagínés, J. (2023). Share of purchases in B2B: Relative customer satisfaction indicators and customer characteristics as main influencers. *Journal of Business & Industrial Marketing*, 38(5), 1029-1040.
- Bakewell, C., & Mitchell, V. W. (2006). Male versus female consumer decision making styles. *Journal of Business Research*, 59(12), 1297-1300.
- Baumann, C., Burton, S., & Elliott, G. (2005). Determinants of customer loyalty and share of wallet in retail banking. *Journal of Financial Services Marketing*, 9, 231-248.
- Boisvert, J., & Burton, S. (2009). The impact of perceived innovativeness, branding strategy and parent brand salience on the reciprocal transfer of core associations. *International Journal of Business Excellence*, 2(3-4), 346-359.
- Bowen, J. T., & Chen, S. L. (2001). The relationship between customer loyalty and customer satisfaction. *International Journal of Contemporary Hospitality Management*, 13(5), 213-217.
- Butcher, K., Sparks, B., & O'Callaghan, F. (2003). Beyond core service. *Psychology & Marketing*, 20(3), 187-208.
- Cachero-Martínez, S., & Vázquez-Casielles, R. (2021). Building consumer loyalty through e-shopping experiences: The mediating role of emotions. *Journal of Retailing and Consumer Services*, 60, 102481.
- Chen, X., Huang, Q., & Davison, R. M. (2017). The role of website quality and social capital in building buyers' loyalty. *International Journal of Information Management*, 37(1), 1563-1574.
- Choi, S.-J. (2020). The effects of customer quality assessment on satisfaction, self-efficacy, and loyalty in franchised coffee shops. *Korean Journal of Franchise Management*, 11(1), 19-29.
- Clemmer, J. (1990). The three rings of perceived value. *Canadian Manager*, 15, 12-15.
- Coyles, S., & Gokey, T. C. (2002). Customer retention is not enough. *The McKinsey Quarterly*, 2(2), 81-90.
- Darzi, M. A., & Bhat, S. A. (2018). Personnel capability and customer satisfaction as predictors of customer retention in the banking sector: A mediated-moderation study. *International Journal of Bank Marketing*, 36(4), 663-679.
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9-30.
- Devaraj, S., Fan, M., & Kohli, R. (2002). Antecedents of B2C channel satisfaction and preference: Validating e-commerce metrics. *Information Systems Research*, 13(3), 316-333.
- Dominici, A., Boncinelli, F., Gerini, F., & Marone, E. (2021). Determinants of online food purchasing: The impact of socio-demographic and situational factors. *Journal of Retailing and Consumer Services*, 60, 102473.
- Evanschitzky, H., Iyer, G. R., Plassmann, H., Niessing, J., & Meffert, H. (2006). The relative strength of affective commitment in securing loyalty in service relationships. *Journal of Business Research*, 59(12), 1207-1213.
- Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling*. Akron: OH: University of Akron Press.
- Fournier, S. (1998). Consumers and their brands: Developing relationship theory in consumer research. *Journal of Consumer Research*, 24(4), 343-373.
- Garvin, D. A. (1984). Product quality: An important strategic

- weapon. *Business Horizons*, 27(3), 40-43.
- Gorla, N., Somers, T. M., & Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. *Journal of Strategic Information Systems*, 19(3), 207-228.
- Hair, J. F. Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed). Pearson Prentice Hall.
- Homburg, C., & Giering, A. (2001). Personal characteristics as moderators of the relationship between customer satisfaction and loyalty—An empirical analysis. *Psychology & Marketing*, 18(1), 43-66.
- Hsu, C. L., Chen, M. C., Kikuchi, K., & Machida, I. (2017). Elucidating the determinants of purchase intention toward social shopping sites: A comparative study of Taiwan and Japan. *Telematics and Informatics*, 34(4), 326-338.
- Hur, S. B., & Lee, Y.-K. (2021). The effect of franchisors' gapjil on economic satisfaction, social satisfaction, and recontract intention. *Korean Journal of Franchise Management*, 12(2), 35-49.
- Iacobucci, D., & Ostrom, A. (1993). Gender differences in the impact of core and relational aspects of services on the evaluation of service encounters. *Journal of Consumer Psychology*, 2(3), 257-286.
- Jeon, M. M., & Jeong, M. (2017). Customers' perceived website service quality and its effects on e-loyalty. *International Journal of Contemporary Hospitality Management*, 29(1), 438-457.
- Jones, T. O., & Sasser, W. E. (1995). Why satisfied customers defect. *Harvard Business Review*, 73(6), 88-99.
- Kang, T. W., Sinha, P. N., Park, C. I., & Lee, Y.-K. (2021). Exploring the intra entrepreneurship-employee engagement-creativity linkage and the diverse effects of gender and marital status. *Frontiers in Psychology*, 12, 4481.
- Khan, A., Zubair, D. S. S., Khurram, S., & Khan, M. A. (2020). Service quality dimensions and customer satisfaction in online shopping: A customer's perspective. *Journal of Applied Economics and Business Studies*, 4(1), 53-76.
- KOTRA (2022). KOTRA Overseas Market News Retrieved from https://dream.kotra.or.kr/kotranews/cms/news/actionKotraBoardDetail.do?pageNo=2&pagePerCnt=10&SITE_NO=3&MENU_ID=180&CONTENTS_NO=1&bbsGbn=243&bbsSn=243&pNttSn=199268&recordCountPerPage=10&viewType=&pStartDt=&pEndDt=&sSearchVal=&pRegnCd=01&pNatCd=156&pKbcCd=&pIndustCd=&pHsCode=&pHsCodeNm=&pHsCdType=&sSearchVal=
- Kuan, H. H., Bock, G. W., & Vathanophas, V. (2008). Comparing the effects of website quality on customer initial purchase and continued purchase at e-commerce websites. *Behaviour & Information Technology*, 27(1), 3-16.
- Ladhari, R., & Leclerc, A. (2013). Building loyalty with online financial services customers: Is there a gender difference?. *Journal of Retailing and Consumer Services*, 20(6), 560-569.
- Lederer, A. L., Maupin, D. J., Sena, M. P., & Zhuang, Y. (2000). The technology acceptance model and the World Wide Web. *Decision Support Systems*, 29(3), 269-282.
- Lee, H., Lee, Y.-K., & Kim, J. Y. (2023). Effects of CSR motives authenticity and attitude in the food and beverage franchise sectors. *Korean Journal of Franchise Management*, 14(4), 1-16.
- Lee, H., Lee, Y., & Yoo, D. (2000a). The determinants of perceived service quality and its relationship with satisfaction. *Journal of Services Marketing*, 14(3), 217-231.
- Lee, Y.-K., Lee, J.-J., & Park, D.-H. (2000b). The impact of hotel Chinese restaurants' environment on service evaluation and purchase behavior. *Korean Journal of Hospitality and Tourism*, 9(2), 211-22.
- Lee, Y.-K., Jeon, Y., & Yoo, D. (2008). The determinants of relationship commitment: Relational benefits, core quality, and relationship satisfaction. *The Academy of Customer Satisfaction Management*, 10(1), 51-69.
- Li, F., Lu, H., Hou, M., Cui, K., & Darbandi, M. (2021). Customer satisfaction with bank services: The role of cloud services, security, e-learning and service quality. *Technology in Society*, 64, 101487.
- Li, Y. H., & Huang, J. W. (2009). Applying theory of perceived risk and technology acceptance model in the online shopping channel. *World Academy of Science, Engineering and Technology*, 53(1), 919-925.
- Mägi, A. W. (2003). Share of wallet in retailing: The effects of customer satisfaction, loyalty cards, and shopper characteristics. *Journal of Retailing*, 79(2), 97-106.
- Mamakou, X. J., Zaharias, P., & Milesi, M. (2024). Measuring customer satisfaction in electronic commerce: The impact of e-service quality and user experience. *International Journal of Quality & Reliability Management*, 41(3), 915-943.
- Marinković, V., Đorđević, A., & Kalinić, Z. (2020). The moderating effects of gender on customer satisfaction and continuance intention in mobile commerce: A UTAUT-based perspective. *Technology Analysis & Strategic Management*, 32(3), 306-318.
- Mechinda, P., Serirat, S., & Gulid, N. (2009). An examination of tourists' attitudinal and behavioral loyalty: Comparison between domestic and international tourists. *Journal of Vacation Marketing*, 15(2), 129-148.
- Mehrabian, A., & Russell, J. A. (1974). A verbal measure of information rate for studies in environmental psychology. *Environment and Behavior*, 6(2), 233-252.
- Oliver, R. L. (1977). Effect of expectation and disconfirmation on postexposure product evaluations: An alternative interpretation. *Journal of Applied Psychology*, 62(4), 480.
- Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). ES-QUAL: A multiple-item scale for assessing electronic service quality. *Journal of Service Research*, 7(3), 213-233.
- Patterson, P. G. (1993). Expectations and product performance as determinants of satisfaction for a high-involvement purchase. *Psychology & Marketing*, 10(5), 449-465.
- Pitt, L. F., Watson, R. T., & Kavan, C. B. (1995). Service quality: A measure of information systems effectiveness. *MIS Quarterly*, 19(2), 173-187.
- Purohit, D., & Srivastava, J. (2001). Effect of manufacturer reputation, retailer reputation, and product warranty on consumer judgments of product quality: A cue diagnosticity framework. *Journal of Consumer Psychology*, 10(3), 123-134.
- Ranganathan, C., & Ganapathy, S. (2002). Key dimensions of business-to-consumer websites. *Information & Management*, 39(6), 457-465.
- Rita, P., Oliveira, T., & Farisa, A. (2019). The impact of e-service quality and customer satisfaction on customer behavior in

- online shopping. *Heliyon*, 5(10), e02690.
- Sanchez-Franco, M. J., Ramos, A. F. V., & Velicia, F. A. M. (2009). The moderating effect of gender on relationship quality and loyalty toward Internet service providers. *Information & Management*, 46(3), 196-202.
- Sethi, R. (2000). New product quality and product development teams. *Journal of Marketing*, 64(2), 1-14.
- Shankar, V., Smith, A. K., & Rangaswamy, A. (2003). Customer satisfaction and loyalty in online and offline environments. *International Journal of Research in Marketing*, 20(2), 153-175.
- Sullivan, Y. W., & Kim, D. J. (2018). Assessing the effects of consumers' product evaluations and trust on repurchase intention in e-commerce environments. *International Journal of Information Management*, 39, 199-219.
- Tsiotsou, R. (2006). The role of perceived product quality and overall satisfaction on purchase intentions. *International Journal of Consumer Studies*, 30(2), 207-217.
- Wang, C., Sinha, P. N., Zhang, X., Wang, S., & Lee, Y.-K. (2024). The impact of NEV users' perceived benefits on purchase intention. *Travel Behaviour and Society*, 34, 100681.
- Wang, Q., Cui, X., Huang, L., & Dai, Y. (2016). Seller reputation or product presentation? An empirical investigation from a cue utilization perspective. *International Journal of Information Management*, 36(3), 271-283.
- Wang, Y., Yu, B., & Chen, J. (2023). Factors affecting customer intention to return in online shopping: The roles of expectation disconfirmation and post-purchase dissonance. *Electronic Commerce Research*. <https://doi.org/10.1007/s10660-023-09769-3>.
- Zhang, H., Fu, X., Cai, L. A., & Lu, L. (2014). Destination image and tourist loyalty: A meta-analysis. *Tourism Management*, 40, 213-223.
- Zhou, Z., Jin, X. L., & Fang, Y. (2014). Moderating role of gender in the relationships between perceived benefits and satisfaction in social virtual world continuance. *Decision Support Systems*, 65, 69-79.

Appendixes

Appendix 1: Measurement model

Constructs and items	Standardized factor loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Attitudinal loyalty (Source: Lee et al., 2000a; Lee et al., 2000b)		.903	.933	.776
I will use the online shopping mall again in the next time.	.902			
I will primarily use here if there are several online shopping malls to choice.	.916			
I would recommend this online shopping mall to my friends or neighbors.	.837			
I would spread positive word-of-mouth about this online shopping mall to other people.	.867			
Information quality (Source: Agarwal & Prasad, 1998)		.914	.933	.700
The online shopping mall has sufficient content which I expect to find.	–			
The online shopping mall provides complete information.	.830			
The online shopping mall provides detailed information.	.837			
The online shopping mall provides accurate information.	.835			
The online shopping mall provides timely information.	.846			
The online shopping mall provides reliable information.	.830			
The online shopping mall communicates information in an appropriate format.	.840			
Product quality (Source: Boisvert & Burton, 2009)		.929	.946	.778
The online shopping mall deals products with high quality.	.903			
The online shopping mall supports high product availability.	.922			
The online shopping mall deals with various products.	.865			
The online shopping mall deals products with first-class quality.	.858			
The online shopping mall deals products with excellent quality.	.862			
Satisfaction (Source: Lee et al., 2000a)		.874	.914	.726
I am satisfied with my decision to visit this online shopping mall.	.851			
I feel very good about this online shopping mall.	.848			
My feeling towards this online shopping mall can be best can be described as "very satisfied".	.846			
Overall, I am satisfied with this online shopping mall.	.862			
Service quality (Source: Pitt et al, 1995)		.922	.945	.811
The online shopping mall responds promptly to user requests.	–			
The online shopping mall provides follow-up services to users.	.900			
The online shopping mall can be depended on to provide whatever is promised.	.909			
The online shopping mall instills confidence in users and reduces uncertainty.	.911			
The online shopping mall understands and adapts to the user's specific needs.	.882			
The online shopping mall gives a professional and competent image.				
System quality (Source: Ranganathan & Ganapathy, 2002)		.929	.950	.825
The online shopping mall has an appropriate style of design for business type.	–			
The online shopping mall has easy navigation to information.	–			
The online shopping mall keeps transactions secure from exposure.	–			
The online shopping mall has fast response and transaction processing.	.913			
The online shopping mall has good functionality relevant to the site type.	.936			
The online shopping mall keeps error-free transactions.	.912			
The online shopping mall provides an appropriate video-audio presentation	.870			
Share-of-visit (Lee et al., 2000b)				
Monthly frequency of shopping	1.000			
Share-of-wallet (Lee et al., 2000b)				
Monthly money to spend	1.000			