Factors Influencing Purchase Behavior and Loyalty Among Showrooming and Webrooming Online Shoppers

Wanlee Putsom[1] and Sorawit Ngamsutti[2,*]

Received : 12 June 2025 Revised : 2 September 2025 Accepted : 6 October 2025

Abstract

The objective of this research is to study the two shopping behaviors that influence the purchase of products, which are showrooming and webrooming, on the purchasing behavior and loyalty of showrooming and webrooming online shoppers. This is cross-sectional research collecting data via online channels from 549 people who have experience in online shopping. Data were analyzed using frequency, percentage, mean, standard deviation, correlation analysis, confirmatory factor analysis (CFA), and structural equation analysis (SEM). The results of hypothesis testing show that showrooming purchases are positively influenced by product quality perception, excitement of price comparison, product complexity perception, and geographic accessibility. Consequently, showrooming purchasing behavior has a positive influence on showrooming purchasing loyalty. Although, online security concerns were found to have no significant effect on showrooming purchasing behavior.

For webrooming purchase, it shows a significant positive influence between the factors that influence the purchase of webrooming products in terms of product quality perception, product complexity perception, and online security concerns. Geographic access has a positive influence on webrooming purchasing behavior, and webrooming purchasing behavior has a positive influence on showrooming purchasing loyalty. However, it was found that the factor that influences webrooming purchasing behavior, the excitement of price comparison, has no influence on webrooming purchasing behavior. The results show that understanding of showrooming and webrooming purchasing behaviors provide insights for businesses to enhance consumer loyalty in the online retail context.

Keywords: Showrooming, Webrooming, Purchase Behavior, Purchase Loyalty, Purchase Intention, Online Shopper

[1]Associate Professor, Faculty of Business Administration, Asia-Pacific International University

[2]Lecturer, Faculty of Management Sciences and Information Technology, Nakhonphanom University

* Corresponding author: sorawit_oat@hotmail.com

1. Introduction

In the digital age where information technology plays an important role in daily life, consumer shopping behavior has changed significantly, especially in the context of omni-channel retailing, where consumers can conveniently access product and service information via both online and offline channels (Sharma et al., 2024). Showrooming and webrooming are behaviors that reflect the structural changes in consumer shopping behavior in the digital age. Consumers want a "Seamless Shopping Experience" both online and offline (Jiao & Hu, 2022). Stores must adjust their strategies to meet the needs for convenience, price, and experience to maintain a competitive advantage. Showrooming is a behavior in which consumers go to see or try products in a physical store to touch or evaluate the product first, and then go back to buy the same product online because it is cheaper or more convenient. Digital consumer behavior shows that shoppers value price comparisons and real-time reviews through smartphones, even while visiting offline stores. This behavior influences retailers' strategies by urging them to adapt through approaches such as price matching or enhancing the in-store experience to connect the gap between offline and online channels (Offline to Online: O2O). This change encourages retailers to create a seamless shopping journey (Seamless Experience) that connects physical and online sales (Wong & Lee, 2022), while simultaneously creating price pressure that intensifies competition for traditional retailers against online platforms. As for the importance of webrooming, it is the behavior of consumers studying product information through online channels, such as websites, reviews, or social media, and then going to buy the actual product at an offline store (Flavián et al., 2020). Currently, this type of purchasing behavior will increase consumer confidence because consumers will take the time to study information in advance, making it easier to make a purchase decision and reducing risk. It helps create opportunities for traditional retailers. Even though consumers start their shopping online, they still value the in-store experience, such as touching, trying, and receiving advice from staff, as well as helping to stimulate the creation of omni-channel experience (Ewim et al., 2024) because stores must adjust their marketing strategies to connect all channels together, such as displaying product information at the store that matches the online advertisement or providing Click & Collect services and helping to stimulate personalization. Stores can use consumer search data to offer promotions or special deals when consumers walk into their stores.

The study of showrooming and webrooming purchasing behavior is important because it directly affects both customer loyalty and purchase intention, particularly in the context of omni-channel retailing where consumers enjoy greater flexibility in selecting shopping channels. De Carvalho (2024) emphasized that the perceived risks and benefits of omnichannel strategies influence consumer behavior, noting that when perceived risks are more than perceived benefits, consumers may become unwilling to engage with such strategies. Similarly, Theocharis et al. (2025) examined Gen Z's online shopping behavior and found that perceived risk and product complexity were key factors affecting their purchasing decisions. Moreover, prior research has noted that perceived product quality (PPQ) (Wang et al., 2023), price comparison excitement (PCE) (Lin et al., 2022), perceived product complexity (PPC) (Ali et al., 2021), online security concerns (OSC) (Sharma et al., 2021), and geographic accessibility (GA) (Wang et al., 2023) all play crucial factors in shaping consumer purchasing behavior.

Building on these findings, previous research investigating the factors of showrooming and webrooming behavior identified several influencing factors, including performance expectancy, price value, social influence, and

hedonic motivation, all of which significantly impact consumers' intentions to participate in both behaviors (Kang, 2018; Aw et al., 2021). Moreover, the perception of personal control in the purchasing process (Personal Attribution) has been shown to enhance a sense of being a smart shopper (Smart Shopping Feelings), a factor particularly significant in webrooming behavior (Flavián et al., 2020). Nevertheless, the investigation into the relationship between showrooming and webrooming behaviors and customer loyalty remains limited, particularly regarding purchase intention, which may function as a critical mediating variable connecting purchasing behavior with customer loyalty (Wang et al., 2023; Liu & Liu, 2024).

A review of the existing literature shows that research comparing the effects of showrooming and webrooming on consumer loyalty in the context of Thailand or Southeast Asia remains scarce, particularly among online consumers who are inclined to undertake both behaviors. This emphasizes the importance of the present study, which seeks to address this knowledge gap and provide practical implications for entrepreneurs in developing marketing strategies that align with the purchasing patterns of digital consumers (Kang, 2018; Flavián et al., 2020). Much of the previous research has focused on Western markets such as the United States and Europe, which differ from the Thai context where consumers frequently use diverse e-commerce platforms and rely heavily on social media for product information prior to making purchases, thus creating more complex patterns of channel selection. Accordingly, the purpose of this research is to examine the causal relationships among showrooming and webrooming purchasing behaviors, purchase intention, and both brand and store loyalty. The findings are expected to contribute to the development of e-commerce and online retail platforms that can effortlessly integrate consumer experiences across offline and online channels (Omni-channel experience). Beyond practical contributions, the study also carries academic value and may inform the conception of policies or initiatives designed to strengthen the competitiveness of Thai entrepreneurs, enabling them to achieve sustainable growth in the digital economy.

2. Research Objectives

1. To determine the direct influence of perceived product quality (PPQ), price comparison excitement (PCE), perceived product complexity (PPC), online security concerns (OSC), and geographic accessibility (GA) on showrooming purchasing behavior.

2. To investigate the direct influence of showrooming purchasing behavior on showrooming purchase loyalty.

3. To assess the direct influence of perceived product quality (PPQ), price comparison excitement (PCE), perceived product complexity (PPC), online security concerns (OSC), and geographic accessibility (GA) on webrooming purchasing behavior.

4. To explore the direct influence of webrooming purchasing behavior on showrooming purchase loyalty.

2. Literature Review

2.1 Purchasing Product Loyalty

Product loyalty refers to the intention and behavior of customers who continuously choose to buy products or services from the same brand, even though there are other similar options in the market. This loyalty is often caused by satisfaction with the user experience, confidence in the quality of the product, or a sense of attachment to the brand. This definition shows that loyalty arises from the relationship between positive attitudes toward the brand and repeat

purchasing behavior, which must occur together (Damaschi et al., 2025). Prior studies indicate that promoting a good experience from multiple channels (e.g., online and offline) through both showrooming and webrooming behaviors increases brand satisfaction and trust, which in turn affects loyalty. For example, Ewim et al., (2024) stated that the concept of om-nichannel customer experience leads to the creation of an experience that combines online and offline channels. As a consequence, in customer satisfaction and leads to long-term loyalty. In addition, Flavián et al., (2020) found that webrooming helps strengthen customer relationships because searching for information online before purchasing makes consumers feel confident in their decision. Moreover, when retailers can deliver consistent purchasing experiences both online and offline, it helps stimulate brand loyalty.

1) Showrooming loyalty (SL)

Carvalho de Mesquita et al., (2024) refers that showrooming is the extent to which consumers who engage in showrooming remain loyal to a brand or retailer, despite using both offline and online channels (and sometimes different retailers) in their purchase journey. In addition, showrooming loyalty refers to the degree to which consumers who examine or experience products in offline stores continue to purchase from the same retailer or brand online, demonstrating repeat purchase behavior and sustained commitment despite the cross-channel shopping behavior (Sharma et al., 2025). As Carvalho de Mesquita et al., (2024) found that intention behavior is the crucial factor that keeps showrooming from reducing loyalty: if customers intend to buy from the same retailer after showrooming, they remain loyal to the brand or retailer, making loyalty more sustainable.

2) Webrooming loyalty (WL)

Webrooming loyalty refers to the tendency of consumers who take part in webrooming (searching for product information online but completing the purchase in an offline store) to remain committed to a specific brand or retailer (Yaqub et al., 2022). Moreover, Kleinlercher et al., (2020) stated that webrooming loyalty refers to the extent to which consumers who engage in webrooming remain committed to a specific retailer or brand across online and offline touchpoints within an omni-channel environment. From Yaqub et al., (2022) found that intention behavior is the key factor that links online searching and offline purchasing. When consumers plan to buy from a brand after researching online, their intention leads them to remain loyal to that brand, especially when supported by online marketing and consumer engagement.

Thus, showrooming loyalty refers to consumers who inspect products in physical stores but continue purchasing from the same brand or retailer online, maintaining loyalty despite using multiple channels; this loyalty is sustained when consumers intend to buy from the same retailer after showrooming. Similarly, webrooming loyalty describes consumers who research products online but complete purchases in physical stores, remaining committed to a brand across online and offline touchpoints; this loyalty is also driven by purchase intention, especially when supported by effective online marketing and engagement. Therefore, this research used loyalty in purchasing products from both showrooming and webrooming as dependent variables to study the influencing factors and purchase behavior in showrooming and webrooming.

2.2 Product Intention Behavior

Factors intention product purchase refers to events or characteristics that influence consumer decisions to purchase products and services, whether in terms of satisfaction, purchase intention, or purchasing behavior that

changes according to the context. It can be divided into internal and external factors, which help understand which channels consumers decide to purchase products through and why they choose that type of product. Important factors affecting purchase decisions in the digital age include PPQ, PCE, PPC, OSC, and GA (Ali et al., 2021; Sharma et al., 2021; Lin et al., 2022; Wang et al., 2023). These ideas are consistent with the Prospect Theory by Kahneman & Amos (1979), which explains that consumers tend to make decisions under uncertainty and use psychological shortcuts (heuristics) and biases towards various information, especially in the context of online and offline shopping. From the literature review, it was found that each sub-factor plays a specific role in consumer decision-making, including perceived product quality, which affects purchase intention because products that consumers perceive as having high quality are more likely to be selected (Rosillo-Díaz et al., 2020). In terms of price comparison excitement, it helps consumers feel value for money and influences their purchase decision (Krasonikolakis et al., 2018). In terms of perceived product complexity, such as multiple uses or complex descriptions, it can make consumers hesitate (Fürst et al., 2024). In terms of online security concerns, consumers who are afraid of personal data leakage or insecure payments tend to avoid online shopping (Nguyen et al., 2024). Meanwhile, geographic accessibility, such as convenience of delivery or access to stores, affects purchase decisions in channels that meet time and distance requirements (Shao et al., 2022). Therefore, product intention behavior refers to the internal and external factors that impact a consumer's decision to buy a product or service. These factors help explain why consumers choose certain products and shopping channels. Key influences include five factors: PPQ, PCE, PPC, OSC, and GA, which all affect showrooming and webrooming purchasing behavior, as well as consumer loyalty.

2.3 Showrooming Behavior

Showrooming behavior is the behavior of consumers who visit or try products in physical stores (offline) before deciding to buy products through online channels. They are often motivated by price comparison, convenience of purchase, or the need for more information about the product. This behavior reflects the change of consumers in the digital age who prefer to use multiple channels to buy products (Rodríguez-Torrico et al., 2024). The concept of showrooming is consistent with the Consumer Decision-Making Theory of Howard & Sheth (1969, p. 81–105), which explains that consumers use information from multiple sources to make decisions, especially using experiences from stores to consider before buying online. According to research by Carvalho de Mesquita et al., (2024) found that showrooming behavior positively influences customer loyalty, particularly when mediated by satisfaction with the showrooming experience, and the results from Frasquet and Miquel-Romero (2021) shown that strong customer-retailer relationships, trust, and satisfaction reduce competitive showrooming and promote loyalty. At the same time, Kang (2018) found that showrooming and webrooming behaviors affect consumers' intention to create user-generated content on social media. Which is influenced by the SoLoMo (Social-Local-Mobile) experience, such experience plays a role in strengthening the connection between purchasing channels. Figure 1 shows the conceptual framework of the research for showrooming purchasing behavior. Therefore, the following assumptions are made:

H1a-1e: Influencing factors; Perceived Product Quality (PPQ), Price Comparison Excitement (PCE), Perceived Product Complexity (PPC), Online Security Concerns (OSC), and Geographic Accessibility (GA) have a direct influence on showrooming purchasing behavior.

H2: Showrooming purchasing behavior has a direct influence on showrooming purchase loyalty.

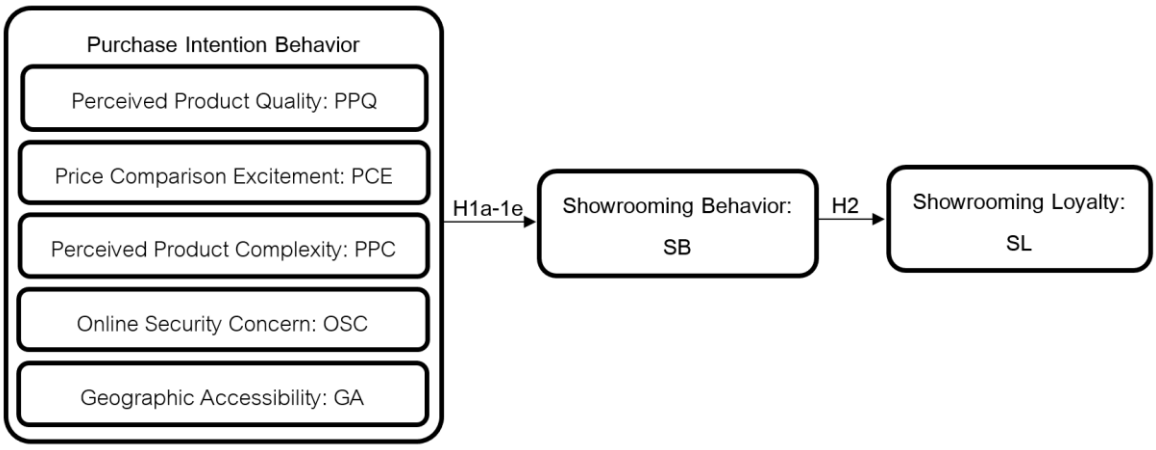

Figure 1 Research framework of showrooming purchasing behavior

2.4 Webrooming Behavior

Webrooming behavior refers to consumer behavior that searches for product information online, such as reading reviews, comparing prices, or studying product features, before actually purchasing the product in a physical store. As Kang (2018) explains, webrooming is part of Omni-channel shopping behavior in which consumers take advantage of the advantages of both online and offline channels. The theory that explains this behavior is Ajzen's (1991) Theory of Planned Behavior, which states that a person's behavior can be predicted from intention, which is influenced by attitude, subjective norms, and perceived behavioral control. A review of research related to webrooming found that factors that influence webrooming intentions, focusing on purchase motivations, such as saving time and effort, bargain hunting, and the desire to possess the product immediately (Aw, 2019), and interest curiosity influence webrooming through market mavenism (Kim & Huh, 2019). Factors such as product type and purchase context influence search and purchase channel decisions, which in turn influence both webrooming and showrooming behaviors (Mukherjee & Chatterjee, 2021), and the perception of a good channel mix can increase webrooming intention and loyalty to the original store (Schiessl et al., 2023). Zafar et al., (2023) found that positive attitudes toward webrooming—driven by satisfying and practical values—lead to stronger webrooming intentions, which in turn support customer retention and loyalty in omnichannel settings. Webrooming enhances consumer satisfaction more than showrooming, especially when consumers feel confident and perceive themselves as smart shoppers, this satisfaction significantly contributes to customer loyalty, making webrooming a valuable strategy for long-term brand relationships (Flavián et al., 2019). Figure 2 shows the conceptual framework of the research for webrooming purchasing behavior. Therefore, the research hypotheses are as follows:

H3a-3e: The influencing factors (Perceived Product Quality (PPQ), Price Comparison Excitement (PCE), Perceived Product Complexity (PPC), Online Security Concerns (OSC), and Geographic Accessibility (GA) have a direct influence on webrooming purchasing behavior.

H4: Webrooming purchasing behavior has a direct influence on loyalty for showrooming purchasing.

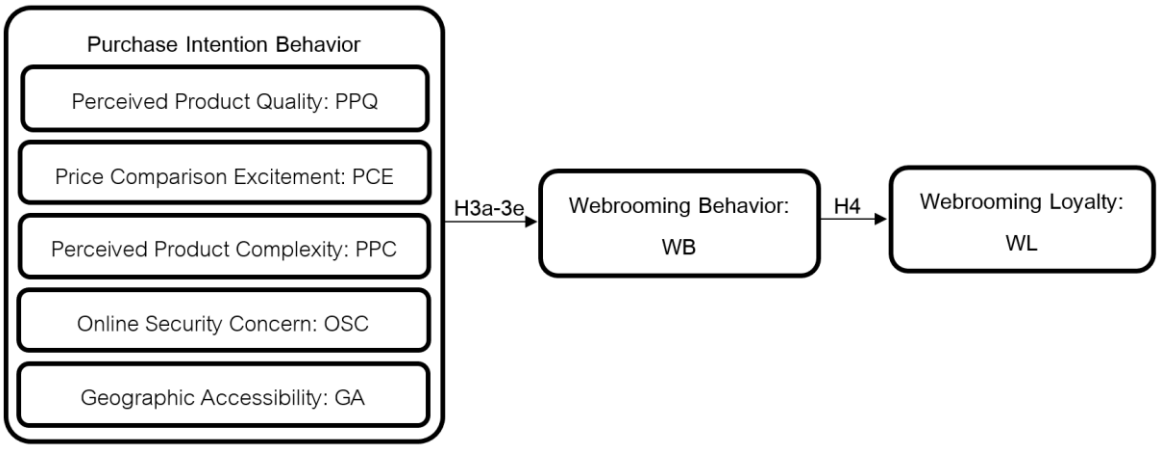

Figure 2 Research framework of webrooming purchasing behavior

3. Research Methodology

3.1 Population and Sample

The population is consumers who have showrooming and webrooming shopping behavior, which has an unknown population. Therefore, Cochran's (1953) sample size determination method was used at a confidence level of 0.05. The possible sample size was 385 people. The researcher intended to use Structural Equation Modeling (SEM). As a result, the number of samples was used according to the concept of Hair et al. (2014), which stated that the sample size should be 5-20 times the sample size of the question. This research has 50 questions. The sample size should be between 250-1,000 samples. Then, the sample size or the number of samples to collect data for this research is 549 samples. The data collection method used in this research is Purposive Sampling, selected for its effectiveness in targeting participants who are directly relevant to the study. This technique improves efficiency by excluding individuals who do not exhibit the behavior of interest, provides deeper insights from respondents with actual experience, and is particularly practical when the population is unknown or difficult to define. Participants were chosen based on specific criteria aligned with the research objectives. However, while purposive sampling is suitable for identifying specific participants, it has limitations, such as reduced generalizability and potential researcher bias. To mitigate these issues, the researchers clearly defined the selection criteria, provided detailed descriptions of the sample characteristics, and ensured transparency throughout the sampling process.

3.2 Research Instrument

This research is a survey research. Thus, the instrument used is a questionnaire, which is developed and created from past research. The questionnaire consists of 4 parts: Part 1 is a closed-ended and multiple-choice question (checklist), measuring nominal scale data and ordinal scale data. Part 2 is about factors influencing online shopper purchases, consists of 4 sub-parts: product quality perception, 5 items, developed and improved from past research by Wang et al., (2023), price comparison excitement, 5 items, developed and improved from past questions by Lin et al., (2022), product complexity perception, developed and improved from past research by Ali et al., (2021), online safety concerns, developed and improved from past research by Sharma et al., (2021), and geographic access, developed and improved from past research by Wang et al., (2023). There are a total of 25 items. Part 3 is about showrooming and webrooming purchasing behavior, developed and improved from past research by Tang-am (2021), 10 items; and Part 4 is about showrooming and webrooming purchasing loyalty, developed and improved from past

research by Chinomona and Dubihlela (2021), 10 items. Parts 2 to 4 of the questionnaires are 5-point Likert Scale estimation questions, namely, 5 means the most, 4 means a lot, 3 means moderate, 2 means little, and 1 means the least.

3.3 Validity and Reliability Testing

The research team of 3 experts examined the content validity of the questionnaire to measure the index of consistency (IOC) between the questionnaire and the objective. After calculating the index of consistency, it was found to be between .67 and 1.00. Rovinelli and Hambleton (1977) stated that the IOC value should be equal to or greater than .50, which is considered an acceptable criterion. The questionnaire was tested to collect data on 30 sets with the specified sample group of 549 people. The results of the analysis of the reliability of the questionnaire found the reliability of each variable as shown in Table 1.

Table 1 Results of reliability testing from sample sizes of 30 and 549 samples

Variable	α (n = 30)	α (n = 549)
Perceived Product Quality (PPQ)	.93	.88
Price Comparison Excitement (PCE)	.91	.89
Perceived Product Complexity (PPC)	.86	.79
Online Security Concern (OSC)	.87	.83
Geographic Accessibility (GA)	.78	.78
Showrooming Behavior (SB)	.86	.85
Webrooming Behavior (WB)	.90	.86
Showrooming Loyalty (SL)	.87	.89
Webrooming Loyalty (WL)	.92	.89
All variables	.97	.96

From Table 1, the reliability value of each variable from the experimental data collection of 30 sets is between .78 and .93 and all variables have a reliability value of .97. For the data collection from the sample group of 549 sets, each variable has a reliability value between .78 and .89 and all variables have a reliability value of .96. Cho and Kim (2015) stated that the acceptable Cronbach Alpha Coefficient (α) should be more than .70. Therefore, each variable has a sufficient reliability value for data analysis in the next step.

3.4 Data Analysis

Data analysis for this research used a statistical software package, consisting of descriptive statistics to describe the characteristics of the sample, including Frequency, Percentage, Mean, Standard Deviation, Correlation Coefficient Analysis, Confirmatory Factor Analysis (CFA), and analysis of the influence between variables using Path Analysis of the Structural Equation Model (SEM) using the testing criteria.

4. Results

4.1 General Data Analysis of Respondents

General information of the 549 respondents found that most were female, 359 people, or 65.4 percent; under 20 years old, 325 people, or 59.2 percent; graduated below a bachelor's degree, 202 people, or 36.8 percent; and

had a monthly income of less than or equal to 15,000 baht, 478 people, or 87.1 percent. The major online platform used to search for information or order products was TikTok, 281 people, or 51.2 percent; and the number of times products were ordered online was less than once a week, 337 people, or 61.4 percent.

4.2 Factor Loading Analysis

Table 2 shows the factor loading analysis to find the relationship between the indicators (Item) with the components (Factor) by assessing the acceptable factor loading value of .40 or higher (Hair et al., 2014). However, no questions were cut off because the factor loading value of all questions was at an acceptable level, which was between .62 and .86, and the composite reliability (CR) of the latent variable was greater than .70 (Hair et al., 2006). It was found that the value met the conditions (CR > .70) and the Average Variance Extracted (AVE) should be greater than .50 (Hair et al., 2014). Therefore, the component values of all variables met the specified criteria.

Table 2 Analysis of Loading weights, Mean, AVE and CR values.

Variable	Loading Weight	AVE	CR
Perceived Product Quality (PPQ)	.81, .85, .78, .84, .82	.67	.91
Price Comparison Excitement (PCE)	.83, .80, .82, .86, .85	.69	.92
Perceived Product Complexity (PPC)	.81, .77, .56, .79, .75	.55	.86
Online Security Concern (OSC)	.83, .82, .62, .84, .72	.60	.88
Geographic Accessibility (GA)	.76, .63, .71, .80, .75	.54	.85
Showrooming Behavior (SB)	.80, .80, .84, .79, .74	.63	.90
Webrooming Behavior (WB)	.76, .83, .84, .79, .77	.64	.90
Showrooming Loyalty (SL)	.84, .85, .84, .82, .82	.65	.93
Webrooming Loyalty (WL)	.82, .84, .85, .82, .83	.69	.92

4.3 Correlation Analysis and Discriminant Validity

The analysis of the correlation coefficient found that all variables had a positive relationship with statistical significance at the .01 level. Table 3 shows that the correlation coefficient between the variables was between .37 and .68, with no correlation higher than .80, indicating that there would be no problem of self-correlation between independent variables (Multicollinearity). In addition, the mean was found to be between 3.28 and 3.79, and all variables had a mean value of more than 3.00, indicating that the respondents had an opinion on each variable question at the level of “agree”. The square root of the AVE (Average Variance Extracted) was used to assess discriminant validity, as it provides a simple and widely accepted method for confirming that each construct is distinct. This is done by comparing the square root of AVE values with inter-construct correlations. Table 3 presents the discriminant validity values in bold and italic, showing that all values meet the required conditions: each square root of AVE is greater than the corresponding correlation coefficients (Fornell & Larcker, 1981) and all values are less than 1.00 (Henseler et al., 2016).

Table 3 Analysis of correlation values and discriminant validity values between variables

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9
1. PPQ	3.51	.72	***.82***								
2. PCE	3.79	.80	.64**	***.83***							
3. PPC	3.58	.70	.68**	.65**	***.74***						
4. OSC	3.67	.76	.53**	.58**	.58**	***.77***					
5. GA	3.45	.72	.56**	.56**	.61**	.60**	***.73***				
6. SB	3.42	.90	.52**	.51**	.50**	.39**	.48**	***.79***			
7. WB	3.28	.85	.51**	.41**	.48**	.42**	.49**	.44**	***.80***		
8. SL	3.46	.80	.57**	.54**	.58**	.50**	.54**	.57**	.37**	***.81***	
9. WL	3.49	.78	.51**	.47**	.57**	.50**	.60**	.44**	.59**	.55**	***.83***

** $p \leq .01$

4.4 Confirmatory Factor Analysis of Variables

The results of the confirmatory factor analysis showed that the observed variables were consistent with the theoretical data and the empirical data. It consisted of the main variables: 1) factors influencing the purchase, consisting of 5 sub-variables: perceived product quality (PPQ), price comparison excitement (PCE), perceived product complexity (PPC), online security concerns (OSC), geographic accessibility (GA), 2) showrooming purchase behavior, 3) webrooming purchase behavior, 4) loyalty to showrooming purchases, and 5) loyalty to webrooming purchases. It was found that all values of the index of consistency were in accordance with the conditions. Details are shown in Table 4.

Table 4 Results of Confirmatory Factor Analysis (CFA) of the variables

Variable	χ^2/df	p-value	GFI	AGFI	CFI	RMR	TLI	RMSEA
Threshold	<4.00	>.05	>.90	>.90	>.97	<.05	>.95	<.05
PPQ	.10	.90	1.00	1.00	1.00	.00	1.01	.00
PCE	2.25	.06	.99	.98	1.00	.01	.99	.04
PPC	.45	.72	1.00	1.00	1.00	.01	1.01	.00
OSC	.37	.78	1.00	1.00	1.00	.01	1.01	.00
GA	1.51	.21	1.00	.98	1.00	.01	.99	.03
SB	.61	.55	1.00	.99	1.00	.01	1.00	.03
WB	1.31	.27	1.00	.99	1.00	.01	1.00	.02
SL	.26	.61	1.00	1.00	1.00	.00	1.01	.00
WL	1.36	.24	1.00	.99	1.00	.00	1.00	.03

4.5 Structural Equation Model Analysis of Variables

1. Showrooming Behavior and Loyalty

The test of the goodness of fit of the variables in the model, consisting of factors influencing the purchase of products, showrooming purchasing behavior and showrooming purchasing loyalty of online shoppers, found that the

empirical data showed the goodness of fit index values as follows: chi-square value (χ^2) equals 2.32, Degrees of Freedom value (df) equals 3, χ^2/df value equals .77, *p*-value equals .51, GFI value equals 1.00, AGFI value equals .99, NFI value equals 1.00, IFI value equals 1.00, CFI value equals 1.00, and RMSEA value equals .00. Therefore, all values are appropriate according to the conditions of the fit index analysis of the variables with the research model. Figure 3 shows the results from the data analysis using Structural Equation Modeling (SEM).

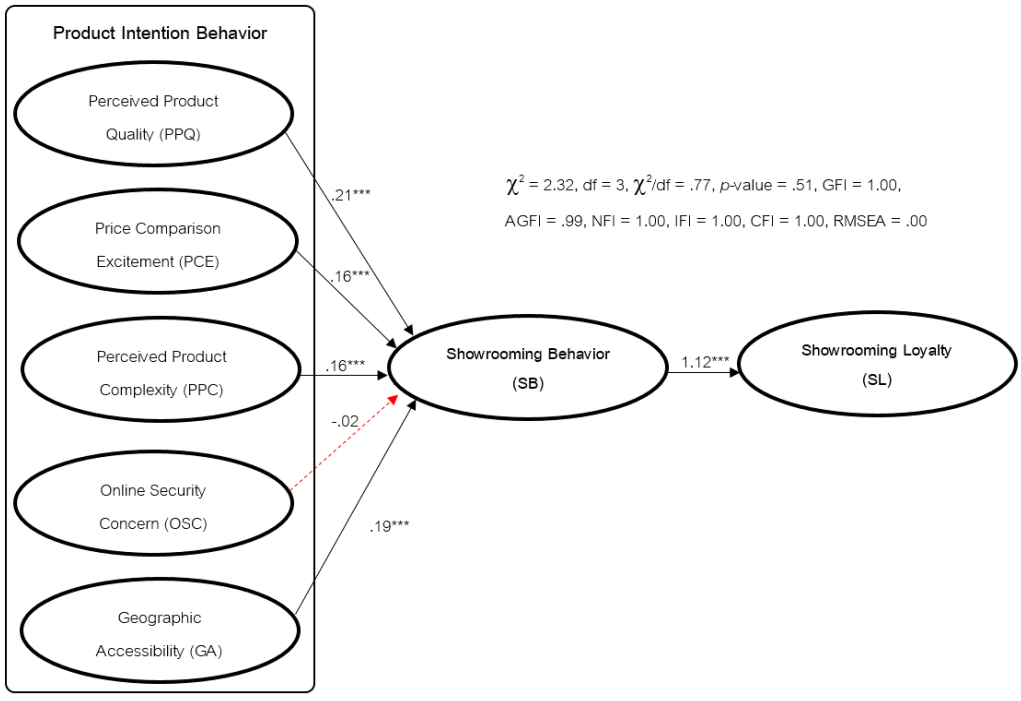

Figure 3 Structural Equation Modeling of the empirical data of showrooming

Results of the test and empirical data of the study of the factors influencing purchase loyalty in showrooming purchases through the showrooming purchase behavior of online shoppers: The findings from the hypothesis testing are as follows; Hypothesis 1 (H1) consists of H1a – 1e: H1a is that perceived product quality (PPQ) influences showrooming purchase behavior. It was found that perceived product quality has a positive influence on showrooming purchase behavior (γ = .21, p < .01). Therefore, hypothesis **H1a is accepted**. The next one is H1b. It states that price comparison excitement (PCE) influences showrooming purchase behavior. It was found that price comparison excitement has a positive influence on showrooming purchase behavior (γ = .16, p < .01). Therefore, hypothesis **H1b is accepted**. The next one is H1c, which states that perceived product complexity (PPC) influences showrooming purchase behavior. It was found that perceived product complexity has a positive influence on showrooming purchase behavior (γ = .16, p < .01). Therefore, hypothesis **H1c is accepted**. The H1e hypothesis states that geographic access (GA) influences showrooming purchasing behavior. It was found that geographic access has a positive influence on showrooming purchasing behavior (γ = .19, p < .01). Therefore, the hypothesis **H1e is accepted**. Hypothesis 2 (H2) is that showrooming purchasing behavior (SB) influences showrooming purchasing loyalty. It was found that showrooming purchasing behavior has a positive influence on showrooming purchasing loyalty (β = 1.12, p < .01) Therefore, the hypothesis **H2 is accepted**. However, H1d states that online safety concerns (OSC) influence

showrooming purchase behavior. It was found that online safety concerns have no influence on showrooming purchase behavior. Therefore, the hypothesis **H1d is rejected** (γ = .-.02, p > .05). See details in Table 5.

Table 5 Hypothesis, Path Analysis, Path Coefficient, and Result

Hypothesis	Path Analysis	Path Coefficient	Result
H1a	PPQ → SB	.21***	Accepted
H1b	PCE → SB	.16***	Accepted
H1c	PPC → SB	.16***	Accepted
H1d	OSC → SB	-.02	Rejected
H1e	GA → SB	.19***	Accepted
H2	SB → SL	1.12***	Accepted

2. Webrooming Behavior and Loyalty

The test of the goodness of fit of the variables in the model, consisting of factors influencing the purchase of products, webrooming purchasing behavior and webrooming purchasing loyalty of online shoppers, found that the empirical data showed the goodness of fit index values as follows: chi-square value (χ^2) equals 1.09, Degrees of Freedom value (df) equals 1, χ^2/df value equals .11, p-value equals 0.74, GFI value equals 1.00, AGFI value equals .99, NFI value equals 1.00, IFI value equals 1.00, CFI value equals 1.00, and RMSEA value equals .00. Therefore, all values are appropriate according to the conditions of the analysis of the Index of the Consistency of the variables with the research model. Figure 4 shows the results from the analysis of the effect values between the variables studied by analyzing the Structural Equation Modeling (SEM) to test the consistency between the research model and the empirical data.

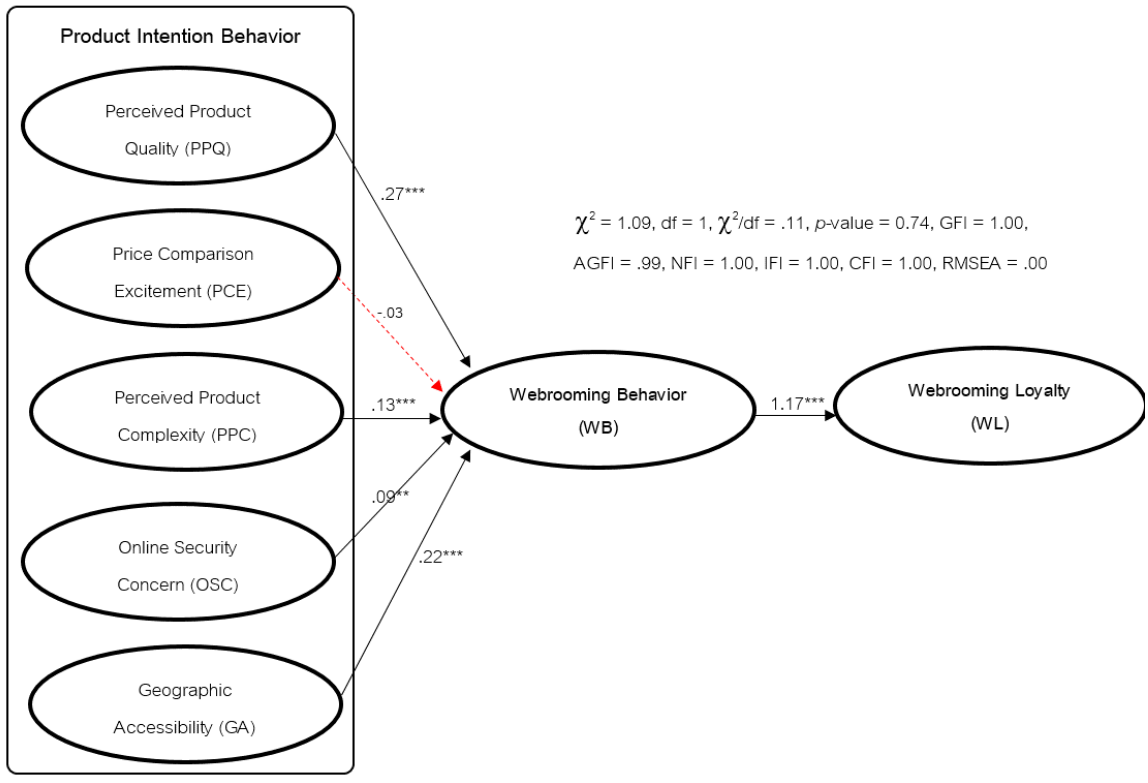

Figure 4 Structural Equation Modeling of the empirical data of Webrooming

Results of the test and empirical data of the study of the factors influencing purchase loyalty in webrooming through the webrooming purchase behavior of online shoppers: The findings from the hypothesis testing are as follows. Hypothesis 3 (H3) consists of H3a – 3e: H3a is that perceived product quality (PPQ) influences webrooming purchase behavior. It was found that perceived product quality has a positive influence on webrooming purchase behavior (γ = .27, p < .01). Therefore, hypothesis **H3a is accepted**. Then, hypothesis H3c states that perceived product complexity (PPC) influences webrooming purchase behavior. It was found that perceived product complexity has a positive influence on webrooming purchase behavior (γ = .13, p < .01). Therefore, hypothesis **H3c is accepted**. Then, H3d states that online safety concerns (OSC) influence webrooming purchase behavior. It was found that online safety concerns influence webrooming purchase behavior (γ = .09, p < .05). Therefore, hypothesis **H3d is accepted**. As for hypothesis H3e, it states that geographic access (GA) influences webrooming purchasing behavior. It was found that Geographic Access has a positive influence on showrooming purchasing behavior (γ= .22, p < .01). Thus, hypothesis **H3e is accepted**. As for hypothesis 4 (H4), that is, webrooming purchasing behavior (WB) influences webrooming purchasing loyalty. It was found that webrooming purchasing behavior has a positive influence on webrooming purchasing loyalty (β = 1.17, p < .01). Thus, hypothesis **H4 is accepted**. Furthermore, the H3b states that price comparison excitement (PCE) influences webrooming purchase behavior. It was found that price comparison excitement has no influence on webrooming purchase behavior (γ = -.03, p > .05). Therefore, hypothesis **H3b is rejected**. See details in Table 6.

Table 6 Hypothesis, Path Analysis, Path Coefficient, and Result

Hypothesis	Path Analysis	Path Coefficient	Result
H3a	PPQ → WB	0.27***	Accepted
H3b	PCE → WB	-.03	Rejected
H3c	PPC → WB	0.13***	Accepted
H3d	OSC → WB	0.09**	Accepted
H3e	GA → WB	0.22***	Accepted
H4	SB → WL	1.17***	Accepted

5. Results Discussion

The findings from this research, based on the hypothesis testing of factors affecting purchasing behaviors in showrooming and webrooming that affect loyalty, are as follows:

5.1 Purchase Intention Behavior, Showrooming and Webrooming Behavior

1) Showrooming

The results of the data analysis, based on the research objectives and the specified hypotheses regarding showrooming purchases, indicate that the findings support the following hypotheses:

First, perceived product quality (PPQ) affects showrooming purchase behavior. This shows that when consumers perceive that the product is of high quality, reliable and meets their needs, they tend to visit or try the product in a physical store before buying it online, which may be cheaper or have better conditions. This action helps

consumers have sufficient information and understand the product deeply before deciding to buy it. Especially for high-quality products, consumers want to touch or try them before buying online (Flavián et al., 2020). In addition, the perception of product quality in e-commerce also influences purchase intention and encourages consumers to search for information in multiple channels, such as trying the product offline first (Rosillo-Díaz et al., 2020), which is consistent with Aw et al., (2021) who pointed out that showrooming is not only due to cheaper prices but also confidence in the quality of the product after actually touching it.

Second, price comparison excitement (PCE) affects showrooming purchase behavior, indicating that consumers enjoy searching and comparing prices online before deciding to buy in a physical store. This behavior reflects digital consumers who like to seek information to increase their confidence in buying the product, especially in an omnichannel context (Lin et al., 2022). The study found that the enjoyment of price comparisons led consumers to participate in more information search activities, leading to showrooming decisions, where consumers visit stores to experience products before returning to purchase through the channel with the best deals. Aw et al. (2021) also emphasized that showrooming is not driven by "price" alone, but also includes psychological motivations, such as the satisfaction of finding the best deal.

Third, perceived perception of product complexity affects showrooming purchase behavior, showing that when products are highly complex, such as having many technical features or requiring trial, consumers tend to inspect or try products in stores before deciding to buy online to reduce uncertainty and risk, especially when online information is insufficient (Tang-am, 2021). Therefore, consumers want advice from staff or to touch the products themselves. This is often found in electronic or technology products. Fernández et al. (2024) stated that product complexity encourages consumers to evaluate the product in more detail, and showrooming is one way to help consumers feel more confident before purchasing.

Finally, geographic accessibility affects showrooming purchase behavior, indicating that consumers are more likely to showroom when stores are located near their home, workplace, or in areas they frequently travel through, such as shopping malls, making it easy to stop by and try on the products before going back to purchase the product online (Wang et al., 2015), especially for products that require physical contact. Geographic conditions, such as parking availability or store opening hours, make showrooming more frequent, even if consumers are already planning to buy online (Li et al., 2021).

2) Webrooming

The results of the data analysis, based on the research objectives and the specified hypotheses regarding webrooming purchases, revealed that the findings support the following hypotheses:

First, perceived product quality (PPQ) affects webrooming purchase behavior, indicating that consumers who perceive the products to be of good quality tend to start searching for information from online channels first, such as comparing product features, prices, brands, and user reviews, and then go to physical stores to view or purchase the products, reflecting decisions based on quality. Flavián et al. (2020) stated that people who use webrooming tend to use online information to build confidence before deciding to buy the product in a physical store. Rosillo-Díaz et al. (2020) pointed out that when consumers believe that the products are of good quality, they will hesitate less and are

more likely to go to the store for a final inspection before purchasing them, showing that PPQ directly influences brand confidence and purchase decisions.

Second, perceived product complexity affects webrooming purchase behavior. The results of this research show that when products are complex, such as electrical appliances, technology or luxury products, consumers tend to choose webrooming by starting to research online and then visiting the actual product to touch or ask for advice before purchasing, because they want to reduce the risk. Flavián et al., (2020) stated that consumers want to reduce uncertainty when making complicated purchases by choosing to inspect the actual product first, and Ewim et al., (2024) added that consumers often take advantage of the benefits of each channel, such as checking online information first and then seeing the actual product to build confidence. This is especially true for “complex” products.

Third, online security concerns influence webrooming behavior, showing that online security concerns, such as the risk of payment, fraud or identity breach, lead consumers to search for information online but go to a physical store (showrooming) to avoid the risks. Flavián et al. (2020) stated that security concerns reduce trust in online channels, causing consumers to avoid buying products online. Aw et al., (2021) added that some consumers use webrooming as a way to reduce uncertainty, especially when the product is expensive or complex, and they want to inspect the actual item before buying it.

Fourth, geographic accessibility has a positive influence on webrooming behavior, showing that easy access to a store, such as being close to home or convenient to travel, stimulates showrooming behavior. Consumers will view or try on the product in the store first, and then come back to buy it online, which may be cheaper. Aw et al., (2021) found that many consumers use stores as a touchpoint to gain information and experience before buying the product online. This is especially true for electronic products, clothing or furniture. Li et al., (2015) added that stores in good locations, such as shopping malls or community areas, stimulate more showrooming. Heitz-Spahn et al. (2024) also stated that consumers who are good at technology and compare prices quickly tend to do showrooming when stores are easily accessible.

However, the results of the data analysis indicate that one hypothesis was not supported in the online security concerns that do not significantly influence showrooming purchase behavior. This suggests that consumers are usually confident in online shopping systems, likely due to advancements in e-commerce platforms, including secure payment systems, reliable shipping services, and robust data protection measures (Alzahrani et al., 2017). The findings indicate that showrooming behavior is primarily driven by positive motivations—such as the enjoyment of comparing prices and thoroughly evaluating products—rather than by concerns over online security. Holkkola et al. (2024) also noted that security concerns tend to affect only the initial stages of online shopping. As consumers gain more experience, their trust in the system increases, and their anxiety about security decreases. In addition, the price comparison excitement (PCE) does not affect webrooming purchase behavior. This suggests that the excitement of price comparison does not significantly affect webrooming behavior. Consumers who like to compare prices are more likely to turn to showrooming because they are looking for the “best deal” or price. Aw et al., (2017) found that price-focused consumers tend to choose showrooming, and Verhoef et al., (2015) indicated that trust in the store and offline experience affect purchase decisions even when starting online. This reflects that price-conscious consumers may still choose to buy in-store if

they feel confident in the brand or service, but not because of the fun of finding promotions. Therefore, excitement is not the main motivation for webrooming.

5.2 Showrooming and Webrooming Behavior and Loyalty

The research results indicate that showrooming behavior positively influences showrooming purchase loyalty. This suggests that when consumers repeatedly engage in showrooming, the behavior evolves into a deliberate purchasing strategy. Consumers perceive this approach as beneficial because it allows them to experience the advantages of both offline and online channels—physically interacting with products in-store and securing better prices online. This shows that showrooming is not a temporary behavior from promotions or technology, but a permanent trend that reflects the behavior of digital consumers (Li et al., 2021), especially millennials and smartphone users who search for information while in the store. Heitz-Spahn et al. (2024) stated that showrooming involves learning complex buying behaviors and when consumers see that using multiple channels helps them get good quality products at a reasonable price, they will be more loyal to showrooming behavior than to any single brand.

The research results show that webrooming shopping behavior has a positive impact on webrooming purchase loyalty. Consumers who engage in webrooming tend to be more satisfied and loyal to this purchasing channel. Flavián et al. (2020) highlighted that webrooming enhances the shopping experience by providing confidence through viewing real products and saving time in the information search process. Similarly, Heitz-Spahn et al. (2024) emphasized that webrooming increases trust in physical stores and empowers consumers in their decision-making, thereby reducing perceived risk. Fernández et al. (2024) also noted that webrooming has become a core behavior among certain consumer groups, as it combines the strengths of both online and offline channels. This integration encourages repeat purchases and fosters long-term loyalty.

The research findings demonstrate that both showrooming and webrooming behaviors significantly influenced purchase loyalty. Showrooming has evolved into a strategic behavior among digital consumers, particularly millennials and smartphone users, who value the ability to physically evaluate products in-store while securing better deals online. This behavior reflects a long-term trend driven by informed decision-making rather than temporary influences like promotions or technology. Similarly, webrooming fosters consumer satisfaction and loyalty by combining the convenience of online research with the confidence gained from in-store purchases. It enhances trust, reduces perceived risk, and strengthens consumers, making it a core behavior for many. Together, these insights highlight the importance of integrating online and offline channels to support consumer preferences and build lasting loyalty.

6. Conclusion

Showrooming behavior is when consumers visit or try products in a physical store before deciding to buy them online, usually from a cheaper store. Factors affecting the showrooming behavior include belief in product quality, as consumers who believe that products are of good quality tend to want to inspect or try them in a physical store first, and then excitement in comparing prices, which makes consumers enjoy finding the best deals from multiple channels. In addition, the complexity of products with specific functions also influences this behavior, as consumers tend to try products first to understand them better before deciding to buy them online to reduce costs or the risk of making the wrong choice. Concerns about online security were not found to have a significant impact on this behavior, as

consumers who engage in showrooming behavior are usually familiar with online shopping and prioritize price and quality over security concerns. In addition, the geographic accessibility of stores also has an effect. If a store is far away or inconvenient, consumers may choose to buy online instead. However, if a store is nearby and convenient to travel to, the buying things online may reduce the chances of showrooming behavior. Behavioral brand loyalty also influences showrooming behavior, as some brand-loyal consumers may choose to buy directly from the store, while others may choose to buy online if they get a better price.

Webrooming behavior is when consumers search for information or compare products online before deciding to buy at a physical store. The study found that factors that affect this behavior include perceived product quality, which has a positive influence. Consumers who perceive that products are of good quality tend to want to touch the actual product before buying it for confidence's sake. The excitement of comparing prices, although influential, in the context of webrooming, consumers use online price comparisons to confirm that a physical store offers a reasonable price before deciding to buy it. Product complexity is another factor that drives consumers to understand products through online information before going to touch and buy the real thing at the store. Concerns about online security influence webrooming because some consumers are not confident in the payment system or are afraid of being cheated, so they choose to buy products at the store for safety concern. While geographic accessibility is influenced by the convenience of travel, if the store is easy to access, consumers are more likely to buy the product at the store. Finally, behavioral brand loyalty influences webrooming. Consumers who are loyal to a brand are more willing to go to the brand's physical store to buy products, even if they have searched for information from online channels before.

7. Recommendations

7.1 Recommendations for the Implementation of Research Results

The research on showrooming and webrooming behaviors provides valuable insights that entrepreneurs and retailers can apply to improve customer experience and purchasing decisions. The following are practical steps for implementing these findings:

1) To address showrooming behavior and enhance product quality perception, stores should design physical spaces that allow customers to interact directly with products. For example, technology retailers can create demo zones where customers can test devices such as smartphones, tablets, or smart home gadgets. Staff should be trained to provide informative and engaging product demonstrations. At the same time, the store's online platform must offer detailed product specifications, high-resolution images, and customer reviews to reinforce confidence in product quality. This dual-channel approach encourages customers to purchase online after experiencing the product in-store.

2) For consumers who enjoy comparing prices, businesses should implement dynamic pricing strategies and offer exclusive online discounts. After customers visit the store and explore products, they could receive personalized discount codes via email or app notifications, encouraging them to complete their purchase online. Additionally, retailers should monitor competitor pricing and adjust their offers accordingly to remain competitive. This strategy not only supports price-sensitive consumers but also strengthens the link between offline exploration and online conversion.

3) When dealing with complex products, such as electronics or specialized equipment, the retailers must provide comprehensive support across both channels. In-store staff should be equipped to explain product features clearly, while online platforms should include tutorial videos, FAQs, and live chat support. Offering virtual consultations or augmented reality tools that simulate product usage can help customers understand the product better before making a decision. These services reduce uncertainty and increase the likelihood of purchase.

4) To mitigate concerns about online security, retailers must invest in robust e-commerce infrastructure. This includes implementing SSL encryption, secure payment gateways, and multi-factor authentication. Clearly communicating these security measures on the website and during checkout reassures customers that their personal and financial information is protected. Providing customer service support for online transactions also builds trust and encourages repeat purchases.

5) Improving geographic accessibility is another key factor. Retailers should consider opening stores in locations that are convenient for target customers, such as near residential areas or business districts. Additionally, offering “Click and Collect” services allows customers to order online and pick up products at a nearby store, combining the convenience of online shopping with the immediacy of physical access. This strategy reduces delivery wait times and enhances customer satisfaction.

6) To build loyalty among showrooming and webrooming customers, businesses should develop integrated loyalty programs that reward engagement across both online and offline channels. For instance, customers who browse in-store and purchase online could earn points that can be redeemed for future discounts or gifts. Promotions that encourage cross-channel behavior, such as bonus points for using both platforms, help create a seamless shopping experience and foster long-term customer relationships.

By implementing these strategies, retailers can effectively respond to evolving consumer behaviors, enhance customer satisfaction, and increase sales through a well-integrated Omni-channel approach.

7.2 Suggestions for Future Research

This research collected data from a broad sample without specifying a specific study area, which may not fully reflect consumer behavior in areas with different social or economic characteristics. Therefore, future research should expand the study area to other regions of the country, specifically by specifying the target areas or groups, such as the North, Northeast, and South, to increase the diversity of the sample and increase the ability to explain the research results at the national level.

In addition, the research used an online questionnaire as the main tool, which may limit the sample to only those who have internet skills and access to digital devices. As a result, some sample groups, such as the elderly or low-income people, may have been overlooked. Thus, future research should use a variety of research tools, such as in-depth interviews or paper questionnaires, to cover a wider range of populations and reduce bias in sample selection.

Although the research used statistical methods for analysis, using only questionnaires may not be able to deeply explore the reasons or motivations behind consumer behavior. Therefore, future research should consider using mixed methods research by combining quantitative and qualitative research, such as interviews or focus groups, to obtain more in-depth and comprehensive data.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211.

Ali, T., Rehman, S. U., & Iqbal, J. (2021). The role of perceived product complexity and ease of use in the adoption of technology products: Evidence from emerging markets. *Journal of Retailing and Consumer Services, 63,* 102759.

Alzahrani, A. I., Mahmud, I., Ramayah, T., Alfarraj, O., & Alalwan, N. (2017). Extending the theory of planned behavior (TPB) to explain online game playing among Malaysian undergraduate students. *Telematics and Informatics*, *34*(4), 239-251.

Aw, E. C. X. (2019). Understanding the webrooming phenomenon: shopping motivation, channel-related benefits and costs. *International Journal of Retail & Distribution Management*, *47*(10), 1074-1092.

Aw, E. C. X., Basha, N. K., Ng, S. I., & Ho, J. A. (2021). Searching online and buying offline: Understanding the role of channel-, consumer-, and product-related factors in determining webrooming intention. *Journal of Retailing and Consumer Services*, *58*, 102328.

Carvalho de Mesquita, J. M., Shin, H., Longuinho, J. P., & Moura, L. R. C. (2024). The consequences of showrooming behaviour on customer satisfaction and loyalty. *International Journal of Retail & Distribution Management*, *52*(12), 1125-1141.

Chinomona, R., & Dubihlela, J. (2021). Brand loyalty and its influence on consumer purchase behavior: Evidence from a developing market. *Journal of Brand Management, 28*(3), 245-260.

Cho, E., & Kim, S. (2015). Cronbach's coefficient alpha: Well-known but poorly understood. *Organizational Research Methods*, *18*(2), 207-230.

Cochran, W. G., & Carroll, S. P. (1953). A sampling investigation of the efficiency of weighting inversely as the estimated variance. *Biometrics*, *9*(4), 447-459.

Damaschi, G., Aboueldahab, A., & D'Addario, M. (2025). Decomposing brand loyalty: an examination of loyalty subcomponents, product price range, consumer personality, and willingness to pay. *Behavioral Sciences*, *15*(2), 189.

de Carvalho, G. J., Machado, M. C., & Correa, V. S. (2024). Omnichannel and consumer and retailer perceived risks and benefits: a review. *International Journal of Retail & Distribution Management*, *52*(3), 295-311.

Ewim, C. P. M., Alabi, O. A., Okeke, N. I., Igwe, A. N., & Ofodile, O. C. (2024). Omni-channel customer experience framework: Enhancing service delivery in SMEs. *World Journal of Advanced Research and Reviews*, *24*(2), 655-670.

Fernandez-Lores, S., Crespo-Tejero, N., Fernández-Hernández, R., & García-Muiña, F. E. (2024). Online product returns: The role of perceived environmental efficacy and post-purchase entrepreneurial cognitive dissonance. *Journal of Business Research*, *174*, 114462.

Flavián, C., Gurrea, R., & Orús, C. (2020). Combining channels to make smart purchases: The role of webrooming and showrooming. *Journal of Retailing and Consumer Services*, *52*, 101923.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50.

Frasquet, M., & Miquel-Romero, M. J. (2021). Competitive (versus loyal) showrooming: An application of the push-pull-mooring framework. *Journal of Retailing and Consumer Services*, *62*, 102639.

Fürst, A., Pecornik, N., & Hoyer, W. D. (2024). How product complexity affects consumer adoption of new products: The role of feature heterogeneity and interrelatedness. *Journal of the Academy of Marketing Science*, *52*(2), 329-348.

Hair, Jr. F., Black, W.C., Babin, B.J., Anderson, R.E. (2006), *Multivariate Data Analysis* (7th ed.). Upper Saddle River, New Jersey: Pearson Education Limited.

Hair Jr, F., Gabriel, M. L., & Patel, V. K. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. *REMark: Revista Brasileira de Marketing*, *13*(2), 44-55.

Heitz-Spahn, S., Belaud, L., & Ferrandi, J. M. (2024). A regulatory focus theory approach to understanding cross-channel free-riding behaviour. *Journal of Retailing and Consumer Services*, *78*, 103749.

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: updated guidelines. *Industrial Management & Data Systems*, *116*(1), 2-20.

Holkkola, M., Tyrväinen, O., Makkonen, M., Karjaluoto, H., Kemppainen, T., Paananen, T., & Frank, L. (2024). The drivers of showrooming behavior: A meta-analysis. In *Bled eConference* (pp. 597-614). University of Maribor. https://researchportal.tuni.fi/en/publications/the-drivers-of-showrooming-behavior-a-meta-analysis

Howard, J. A., & Sheth, J. N. (1969). *Marketing: Critical Perspectives on Business and Management*. New York: Taylor & Francis.

Jiao, C., & Hu, B. (2022). Showrooming, webrooming, and operational strategies for competitiveness. *Production and Operations Management*, *31*(8), 3217-3232.

Lin, C., Huang, X., & Hsu, Y. (2022). Exploring the role of consumer enjoyment in online price comparison behaviors: Implications for retail strategies. *Journal of Consumer Behavior, 21*(4), 523–537.

Kahneman, D., & Tversky, A. (2013). Prospect theory: An analysis of decision under risk. In *Handbook of the fundamentals of financial decision making: Part I* (pp. 99-127).

Kang, J. Y. M. (2018). Showrooming, webrooming, and user-generated content creation in the omnichannel era. *Journal of Internet Commerce*, *17*(2), 145-169.

Kim, H. Y., & Huh, J. (2019, December). The Role of Curiosity on Showrooming and Webrooming. In *International Textile and Apparel Association Annual Conference Proceedings*, *76*(1). Iowa State University Digital Press. https://www.iastatedigitalpress.com/itaa/article/id/8287/

Kim, L., Jindabot, T., & Yeo, S. F. (2024). Understanding customer loyalty in banking industry: A systematic review and meta analysis. *Heliyon*, *10*(17).

Kleinlercher, K., Linzmajer, M., Verhoef, P. C., & Rudolph, T. (2020). Antecedents of webrooming in omnichannel retailing. *Frontiers in Psychology*, *11*, 606798.

Krasonikolakis, I., Vrechopoulos, A., Pouloudi, A., & Dimitriadis, S. (2018). Store layout effects on consumer behavior in 3D online stores. *European Journal of Marketing*, *52*(5/6), 1223-1256.

Li, X., Dahana, W. D., Ye, Q., Peng, L., & Zhou, J. (2021). How does shopping duration evolve and influence buying behavior? The role of marketing and shopping environment. *Journal of Retailing and Consumer Services*, *62*, 102607.

Liu, T., & Liu, M. (2024). Does cross-channel consistency always create brand loyalty in omni-channel retailing? *International Journal of Retail & Distribution Management*, *52*(1), 125-145.

Mukherjee, S., & Chatterjee, S. (2021). Webrooming and showrooming: a multi-stage consumer decision process. *Marketing Intelligence & Planning*, *39*(5), 649-669.

Nguyen, T. T., Tran, T. N. H., Do, T. H. M., Dinh, T. K. L., Nguyen, T. U. N., & Dang, T. M. K. (2024). Digital literacy, online security behaviors and E-payment intention. *Journal of Open Innovation: Technology, Market, and Complexity*, *10*(2), 100292.

Rodríguez-Torrico, P., San-Martín, S., & San José Cabezudo, R. (2024). Navigating the digital era: exploring consumer behavior across multiple channels: a review and research agenda. *The Impact of Digitalization on Current Marketing Strategies*, 211-229.

Rosillo-Díaz, E., Blanco-Encomienda, F. J., & Crespo-Almendros, E. (2020). A cross-cultural analysis of perceived product quality, perceived risk and purchase intention in e-commerce platforms. *Journal of Enterprise Information Management*, *33*(1), 139-160.

Rovinelli, R. J., & Hambleton, R. K. (1977). On the use of content specialists in the assessment of criterion-referenced test item validity. *Dutch Journal of Educational Research, 2*, 49-60.

Schiessl, D., Korelo, J., & Dias, H. B. A. (2023). How online shopping experiences shape consumer webrooming behavior. *Marketing Intelligence & Planning*, *41*(1), 16-30.

Sharma, A. P., Star**č**evi**ć**, S., & Saha, R. (2024). Determinants of customer buying behaviour in omnichannel retailing: a systematic literature review and future research directions. *Journal of Service Theory and Practice*, *34*(6), 822-863.

Sharma, A., Priya, P., Dutta, N., & Sharma, N. (2025). Identifying the drivers of 'loyal showrooming': a systematic literature review. *The International Review of Retail, Distribution and Consumer Research*, *35*(3), 237-259.

Sharma, G., Sharma, S., & Dwivedi, Y. K. (2021). Investigating the role of perceived security, trust, and privacy concerns in the adoption of electronic payment systems. *Journal of Retailing and Consumer Services, 61,* 102606.

Shao, R., Derudder, B., & Witlox, F. (2022). The geography of e-shopping in China: On the role of physical and virtual accessibility. *Journal of Retailing and Consumer Services*, *64*, 102753.

Tang-am, O. (2021). *The study of factors affecting fashion product purchase intention through Omni-channel of Generation Y.* Retrieved 3 April, 2025, from https://ethesisarchive.library.tu.ac.th/thesis/2021/ TU_2021 _6433140339_14839_18634.pdf

Theocharis, D., Tsekouropoulos, G., Chatzigeorgiou, C., & Kokkinis, G. (2025). Empirical Categorization of Factors Affecting Online Consumer Behavior of Gen Z Regarding Newly Launched Technological Products and Moderating Impact of Perceived Risk. *Behavioral Sciences*, *15*(3), 371.

Wang, C., Liu, T., Zhu, Y., Wang, H., Wang, X., & Zhao, S. (2023). The influence of consumer perception on purchase intention: Evidence from cross-border E-commerce platforms. *Heliyon*, *9*(11), 1-21.

Wang, R. J. H., Malthouse, E. C., & Krishnamurthi, L. (2015). On the go: How mobile shopping affects customer purchase behavior. *Journal of Retailing*, *91*(2), 217-234.

Wong, A., & Lee, M. (2022). Building engagement in online brand communities: The effects of socially beneficial initiatives on collective social capital. *Journal of Retailing and Consumer Services*, *65*, 102866.

Yaqub, R. M. S., Gillani, S. F., Murad, M., & Ali, N. S. (2022). Search Online and Purchase Offline: The Role of Instagram Marketing, Consumer Behavior and Webrooming in Building Brand Loyalty. *Review of Applied Management and Social Sciences*, *5*(3), 291-308.

Zafar, S., Badghish, S., Yaqub, R. M. S., & Yaqub, M. Z. (2023). The agency of consumer value and behavioral reasoning patterns in shaping webrooming behaviors in omnichannel retail environments. *Sustainability*, *15*(20), 14852.