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Investigating the Influence of Perceived Quality, Perceived Value, and Customer Satisfaction on Loyalty Towards Huawei Mate50 Smartphones

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Abstract. This study investigates the influence of perceived quality, perceived value, and customer satisfaction on customer loyalty towards Huawei Mate50 smartphones in Thailand. The authors collected data from 400 smartphone users using a structured questionnaire and analyzed the data using structural equation modeling (SEM). The findings reveal significant positive relationships between perceived quality, perceived value, customer satisfaction, and loyalty. However, the study has limitations, such as the use of convenience sampling and the focus on a single smartphone model. The authors suggest that future research should explore the impact of moderating variables and employ longitudinal designs to better understand the dynamics of customer loyalty in the smartphone industry. The study contributes to the understanding of consumer behavior in the smartphone market and provides practical implications for manufacturers seeking to enhance customer loyalty.

Keywords: Perceived quality, Perceived value, Customer satisfaction, Customer Loyalty, Smartphone industry

1. Introduction

The rapid evolution of 5G technology has intensified competition within the mobile phone industry, prompting organizations to strategically leverage 5G innovations in their branding efforts (Chen et al., 2021). Huawei, as a pioneering force in the industry, has successfully captured a significant market share with its offerings in the 5G realm. However, the journey of product innovation entails substantial challenges, including significant investment requirements and inherent risks of failure. The onset of the 5G commercial era has heralded new opportunities for growth within the saturated smartphone market, sparking optimistic trends in the mobile sector.

Despite the potential for growth, the mobile phone industry faces a significant challenge in understanding and meeting consumer needs amidst rapid technological advancements. Consumers now expect more advanced features and functionalities from their smartphones, placing manufacturers under pressure to innovate continuously. For instance, the advent of 5G technology has enabled faster download and upload speeds, lower latency, and enhanced connectivity, driving demand for bandwidth-intensive applications like video streaming, online gaming, and augmented reality experiences. However, the success of these innovations depends not only on technological prowess but also on their ability to resonate with consumers and enhance their satisfaction (Khundyz, 2018).

Amidst this landscape, customer satisfaction stands out as a pivotal goal and strategic imperative for mobile phone manufacturers (Siswi & Wahyono, 2020). Customers who are satisfied are inclined to demonstrate loyalty to a brand, resulting in repeat purchases, favorable word-of-mouth recommendations, and ultimately, sustained profitability. However, despite the critical importance of customer satisfaction, scholarly exploration of user satisfaction specifically with 5G smartphones remains relatively limited (Rasheed & Anser, 2017). This dearth of research can be attributed, in part, to the novelty of these devices in the market and the rapid pace of technological evolution.

Consequently, there is a significant gap in understanding the nuanced impact of 5G smartphones on customer satisfaction, as well as the specific quality criteria that contribute to this impact, and the resulting implications for manufacturers. While the existing literature on customer satisfaction in the mobile phone industry is extensive, it often lacks specificity concerning the unique attributes and dynamics of 5G smartphones (Kang, 2015). Furthermore, bridging this gap contributes to advancing the field of consumer behavior and satisfaction within the mobile phone industry. This fosters a deeper understanding of evolving consumer preferences and drives progress in product development and marketing strategies (Liedtka, 2020). Ultimately, addressing this gap not only enhances the understanding of consumer satisfaction with 5G smartphones but also fuels ongoing innovation and competitiveness within the mobile phone market (Schaefer, 2020).

The problem statement of this research lies in the need to bridge this gap by identifying the potential determinants that influence consumer satisfaction with 5G smartphones and developing a suitable model for evaluating this phenomenon. By addressing this issue, the research aims to offer valuable insights that can enrich both academic discourse and industry practices, thereby contributing to the sustainable growth and success of mobile phone manufacturers in the 5G era.

2. Research Question

1. What is the level of customer loyalty towards Huawei Mate50 5G smartphones, and what are the influential factors affecting it?

2. How do influential factors, such as product quality, pricing, customer service, and user experience, affect customer loyalty towards Huawei Mate50 5G smartphones?

3. How well does the model of influential factors explain the variation in customer loyalty towards Huawei Mate50 5G smartphones?

3. Research Objectives

1. To measure the level of customer loyalty towards Huawei Mate50 5G smartphones and all influential factors.

2. To investigate the effect of influential factors on customer loyalty with Huawei Mate50 5G smartphones.

3. To test for goodness of fit of model of influential factors on customer loyalty with Huawei Mate50 5G smartphones.

4. Literature Review

In selecting the key constructs for this study, careful consideration was given to their relevance in the context of understanding consumer satisfaction with 5G smartphones. The constructs chosen—perceived quality, perceived value, customer satisfaction, and customer loyalty—have been widely acknowledged in existing literature as fundamental determinants of consumer behavior and brand loyalty within the mobile phone industry (Chen et al., 2021; Khundyz, 2018; Siswi & Wahyono, 2020). By examining these key constructs, this study seeks to uncover the intricate relationships between perceived quality, perceived value, customer satisfaction, and customer loyalty in the context of 5G smartphones. This approach not only aligns with established theories in consumer behavior but also addresses the specific needs and challenges faced by smartphone manufacturers in the rapidly evolving 5G landscape.

4.1. Perceived Quality (PQ) and Customer Loyalty (CL)

Perceived quality has long been recognized as a critical determinant of customer loyalty in various industries, including the smartphone sector. Customer perceptions of a product's quality directly influence their overall satisfaction and likelihood of repurchase, thereby impacting brand loyalty (Oliver, 1980). In the context of the smartphone industry, perceived quality encompasses various aspects such as design, functionality, durability, and performance (Kim et al., 2020). Studies have consistently shown that customers who perceive higher quality in their smartphones are more likely to exhibit brand loyalty (Chen et al., 2021). For instance, research by Rasheed and Anser (2017) found that perceived quality significantly influenced customer loyalty in the mobile phone industry, with customers attributing greater importance to product quality when making repeat purchase decisions.

Furthermore, in the specific context of Huawei smartphones, perceived quality plays an important role in shaping customer perceptions and behaviors. Huawei's commitment to innovation and technological advancements has positioned its smartphones as high-quality products with cutting-edge features (Khundyz, 2018). As a result, customers who perceive Huawei Mate50 smartphones as high-quality are more likely to develop a sense of trust and attachment to the brand, leading to increased loyalty (Siswi & Wahyono, 2020).

However, while perceived quality is a significant driver of customer loyalty, it is essential to recognize that other factors also influence loyalty in the smartphone industry. For example, factors such as perceived value, customer satisfaction, and brand image interact with perceived quality to shape customer perceptions and behaviors (Chen et al., 2021).

In summary, Based on existing literature, a positive relationship between PQ and CL in the smartphone industry, including Huawei Mate50 smartphones, is suggested.Therefore, H1 is proposed as follows:

H1: PQ positively affects CL of Huawei Mate50.

4.2. Perceived Quality (PQ) and Perceived Value (PV)

Perceived quality and perceived value are two essential constructs in consumer behavior research, often intertwined and mutually reinforcing. Perceived quality refers to consumers' subjective assessment of a

product's excellence or superiority, while perceived value relates to the perceived benefits or worth derived from a product relative to its cost (Zeithaml, 1988). In the smartphone industry, perceived quality significantly influences consumers' perceptions of value. If consumers perceive high quality when using a smartphone, they are more likely to believe that it offers desirable features, superior performance, and durability, leading to a higher perceived value (Kim et al., 2020). For Huawei Mate50 smartphones, perceived quality encompasses factors such as design aesthetics, build quality, technical specifications, and user experience (Khundyz, 2018).

Research suggests a strong positive relationship between perceived quality and perceived value in the smartphone industry. A study by Chen et al. (2021) found that perceived quality positively influenced perceived value, indicating that consumers tend to perceive greater value in smartphones that are perceived to be of higher quality. Similarly, Kim et al. (2020) demonstrated that smartphones perceived as high in quality are perceived to offer greater value for the price paid.

Furthermore, Huawei's reputation for technological innovation and product excellence contributes to the perceived value of its smartphones. As one of the leading smartphone manufacturers, Huawei has positioned its Mate series, including the Mate50, as premium products offering advanced features and cutting-edge technology (Siswi & Wahyono, 2020). Consequently, consumers who perceive Huawei Mate50 smartphones as high in quality are likely to perceive them as offering excellent value for their investment.

However, it is essential to recognize that perceived value is subjective and can be influenced by various factors beyond perceived quality, such as pricing, brand image, and promotional offers (Zeithaml, 1988). Therefore, while perceived quality positively affects perceived value, other factors also play a role in shaping consumers' perceptions of value in the smartphone market.

In summary, the existing literature supports the hypothesis that PQ positively affects PV of Huawei Mate50 smartphones. Building on this literature, H2 is proposed as follows:

H2: PQ positively affects PV of Huawei Mate50.

4.3. Perceived Quality (PQ) and Customer Satisfaction (CS)

Perceived quality plays a crucial role in shaping customer satisfaction in the smartphone industry. Perceived quality refers to consumers' subjective evaluation of a product's excellence or superiority, encompassing factors such as design, performance, reliability, and features (Zeithaml, 1988). In the context of smartphones, perceived quality influences consumers' overall satisfaction with their purchase and their likelihood of repurchasing or recommending the product (Sekaran & Bougie, 2019).

Research indicates a strong positive relationship between perceived quality and customer satisfaction in the smartphone market. A study by Chen et al. (2021) found that perceived quality positively influenced customer satisfaction, indicating that consumers who perceive smartphones as high in quality are more likely to be satisfied with their purchase. Similarly, Khundyz (2018) illustrated that perceived quality had a significant effect on customer satisfaction within the mobile operator market, where higher perceived quality correlated with increased satisfaction.

In the case of Huawei Mate50 smartphones, perceived quality encompasses various attributes, including design aesthetics, build quality, technical specifications, and user experience. Huawei has established a reputation for producing smartphones known for their innovative features and high-quality craftsmanship (Kim et al., 2020). As such, consumers who perceive Huawei Mate50 smartphones as high in quality are likely to experience greater satisfaction with their purchase.

Furthermore, perceived quality influences customer satisfaction through its impact on perceived value. Consumers who perceive smartphones as high in quality are more likely to perceive them as offering excellent value for their investment, leading to greater satisfaction with the purchase (Kim et al., 2020). Therefore, perceived quality not only directly influences customer satisfaction but also indirectly affects it through its influence on perceived value.

However, it is essential to recognize that customer satisfaction is a multifaceted construct influenced

by various factors beyond perceived quality, such as price, brand image, and post-purchase support (Sekaran & Bougie, 2019). Therefore, while perceived quality positively affects customer satisfaction, other factors also play a role in shaping consumers' overall satisfaction with their smartphone purchase.

In summary, the existing literature supports the hypothesis that PQ positively affects CS of Huawei Mate50 smartphones. Building on this literature, H3 is proposed as follows:

H3: PQ positively affects CS of Huawei Mate50.

4.4. Perceived Value (PV) and Customer Loyalty (CL)

In the smartphone industry, perceived value plays a crucial role in determining customer loyalty. Perceived value encompasses consumers' evaluations of the benefits they derive compared to the costs incurred during product purchase (Zeithaml, 1988). In the context of smartphones, perceived value encompasses both functional benefits, such as features and performance, and emotional benefits, including brand image and status, derived from the product (Kim et al., 2020).

Research suggests a strong positive relationship between perceived value and customer loyalty in the smartphone market. A study by Kim et al. (2020) found that perceived value significantly influenced customer loyalty, indicating that consumers who perceive smartphones as offering high value for the price are more likely to exhibit loyalty towards the brand. Similarly, Rasheed and Anser (2017) demonstrated that perceived value positively impacted customer loyalty in the mobile phone industry, with higher perceived value leading to greater loyalty towards the brand.

In the case of Huawei Mate50 smartphones, perceived value encompasses various factors, including product features, performance, pricing, and brand reputation. Huawei Mate50 smartphones are known for their advanced technology, innovative features, and competitive pricing, which contribute to their perceived value among consumers (Chen et al., 2021). Consumers who perceive Huawei Mate50 smartphones as offering high value for the price are more likely to develop loyalty towards the brand and exhibit repeat purchase behavior.

Furthermore, perceived value mediates the relationship between other factors, such as perceived quality and customer satisfaction, and customer loyalty. Consumers who perceive smartphones as high in quality and experience high satisfaction with their purchase are more likely to perceive them as offering excellent value for their investment, leading to greater loyalty towards the brand (Chen et al., 2021). Therefore, perceived value not only directly influences customer loyalty but also indirectly through its influence on other factors.

However, it is essential to recognize that customer loyalty is a complex construct influenced by various factors beyond perceived value, such as brand trust, service quality, and switching costs (Sekaran & Bougie, 2019). Therefore, while perceived value positively affects customer loyalty, other factors also play a role in shaping consumers' overall loyalty towards a smartphone brand.

In summary, the existing literature supports the hypothesis that PV positively affects CL of Huawei Mate50 smartphones. Building on this literature, H4 is proposed as follows:

H4: PV positively affects CL of Huawei Mate50.

4.5. Perceived Value (PV) and Customer Satisfaction (CS)

Perceived value plays a crucial role in influencing customer satisfaction in the smartphone industry. Perceived value refers to consumers' assessment of the benefits they receive relative to the costs incurred when purchasing a product (Zeithaml, 1988). In the context of smartphones, perceived value encompasses both functional benefits (e.g., features, performance) and emotional benefits (e.g., brand image, status) derived from the product (Kim et al., 2020).

Research indicates a strong positive relationship between perceived value and customer satisfaction in the smartphone market. Perceived value significantly influenced customer satisfaction, suggesting that consumers who perceive smartphones as offering high value for the price are more likely to experience satisfaction with their purchase (Kim et al., 2020). Similarly, Rasheed and Anser (2017) demonstrated that perceived value positively impacted customer satisfaction in the mobile phone

industry, with higher perceived value leading to greater satisfaction among consumers.

In the case of Huawei Mate50 smartphones, perceived value encompasses various factors, including product features, performance, pricing, and brand reputation. Huawei Mate50 smartphones are known for their advanced technology, innovative features, and competitive pricing, which contribute to their perceived value among consumers (Chen et al., 2021). Consumers who perceive Huawei Mate50 smartphones as offering high value for the price are more likely to experience satisfaction with their purchase and perceive it as a worthwhile investment.

Furthermore, perceived value mediates the relationship between other factors, such as perceived quality and customer loyalty, and customer satisfaction. Consumers who perceive smartphones as high in quality and experience high satisfaction with their purchase are more likely to perceive them as offering excellent value for their investment, leading to greater satisfaction (Chen et al., 2021). Therefore, perceived value not only directly affects customer satisfaction but also indirectly through its influence on other factors.

However, it is essential to recognize that customer satisfaction is a multifaceted construct influenced by various factors beyond perceived value, such as product performance, customer service, and brand reputation (Sekaran & Bougie, 2019). Therefore, while perceived value positively affects customer satisfaction, other factors also play a role in shaping consumers' overall satisfaction with a smartphone brand.

In summary, the existing literature supports the hypothesis that PV positively affects CS of Huawei Mate50 smartphones. Building on this literature, H5 is proposed as follows:

H5: PV positively affects CS of Huawei Mate50.

4.6. Customer Satisfaction (CS) and Customer Loyalty (CL)

Customer satisfaction is a critical determinant of customer loyalty in the smartphone industry. Customer satisfaction is defined as the extent to which customers' experiences with a product or service meet or surpass their expectations (Oliver, 1980). In the context of smartphones, customer satisfaction encompasses various aspects, including product performance, features, design, and customer service (Sekaran & Bougie, 2019).

Research consistently demonstrates that there is a robust positive correlation between customer satisfaction and customer loyalty within the smartphone industry. Satisfied customers are inclined to show loyalty to a brand, manifesting in repeat purchases, positive word-of-mouth endorsements, and a reluctance to switch to competitors (Chen et al., 2021). For example, a study by Siswi and Wahyono (2020) found that customer satisfaction significantly influenced customer loyalty in the mobile phone industry, with higher levels of satisfaction leading to greater loyalty among consumers.

In the case of Huawei Mate50 smartphones, customer satisfaction plays a crucial role in driving customer loyalty. Consumers who are satisfied with their experience with Huawei Mate50 smartphones are more likely to develop a strong attachment to the brand and exhibit loyalty over time (Chen et al., 2021). Factors contributing to customer satisfaction with Huawei Mate50 smartphones include product quality, performance, features, pricing, and customer service (Rasheed & Anser, 2017). Consumers who perceive Huawei Mate50 smartphones as meeting their needs and expectations are more likely to develop positive attitudes towards the brand and engage in repeat purchases.

Moreover, customer satisfaction mediates the relationship between perceived quality, perceived value, and customer loyalty. Studies suggest that customer satisfaction acts as a mediator between perceived quality and customer loyalty, as well as between perceived value and customer loyalty (Chen et al., 2021). This highlights the crucial function of customer satisfaction in converting perceived quality and perceived value into customer loyalty within the smartphone market.

However, it's crucial to acknowledge that customer loyalty is shaped by multiple factors beyond just customer satisfaction. Other factors include brand image, trust, and switching costs (Kim et al., 2020). Therefore, while customer satisfaction positively affects customer loyalty, other factors also

contribute to shaping consumers' loyalty towards a smartphone brand.

In summary, the existing literature supports the hypothesis that CS positively affects CL of Huawei Mate50 smartphones. Building on this literature, H6 is proposed as follows:

H6: CS positively affects CL of Huawei Mate50.

Based on a synthesis of literature and theoretical frameworks, the authors proposed six hypotheses (illustrated in Figure 1) to steer subsequent investigation and comprehension of customer loyalty of Huawei Mate50 smartphones.

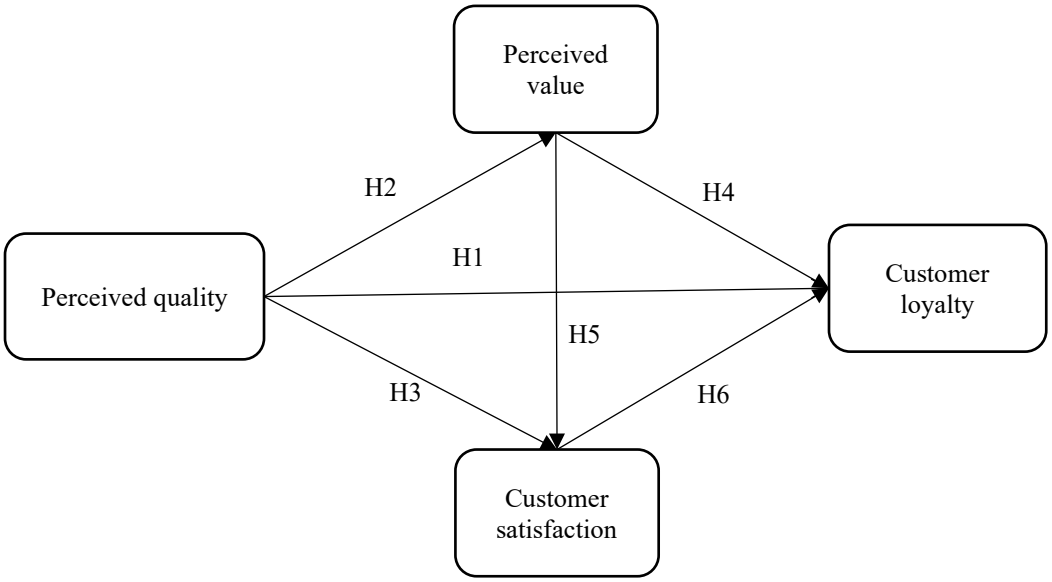

Fig. 1: Conceptual Framework

5. Methodology

5.1. Research Design

This study employed a quantitative research approach to investigate the factors influencing customer loyalty towards the Huawei Mate50 smartphone in Thailand. The quantitative method facilitated the collection and analysis of numerical data, allowing for a systematic examination of the relationships between variables.

The objective of this research was to explore the key factors that could influence customer loyalty in the context of smartphones, with a specific focus on the Huawei Mate50. To achieve this objective, a survey was conducted among smartphone users in Thailand using questionnaires.

The questionnaire was structured to collect information on demographic characteristics, as well as key variables impacting customer loyalty, including perceived quality, perceived value, and customer satisfaction, along with measures of customer loyalty. This multi-section questionnaire facilitated a thorough examination of the factors shaping customer loyalty towards the Huawei Mate50 smartphone.

The research design incorporated convenience sampling, wherein data were collected from a sample of 400 individuals representative of various locations in the country. Convenience sampling facilitated the collection of data from readily available customers, offering practicality and efficiency in data collection. While convenience sampling may introduce some biases, such as selection bias, researchers can ensure diverse representation by sampling from a range of locations and demographics, thus enhancing the generalizability of the findings.

Data collection was carried out through diverse social media channels, particularly WeChat, during the months of April and May in the year 2023. Utilizing social media platforms for data collection facilitated access to a large and diverse pool of participants, enhancing the generalizability of the findings.

Overall, the research design was structured to systematically investigate the factors influencing customer loyalty towards the Huawei Mate50 smartphone, employing a quantitative approach to gather and analyze data from a representative sample of smartphone users.

5.2. Questionnaire Design

The questionnaire utilized in this study was carefully crafted to gather comprehensive data on various aspects related to customer loyalty towards the Huawei Mate50 smartphone. It consisted of three main sections:

1. Demographic Characteristics: This section aimed to collect information on the demographic profile of the respondents and purchase behavior. Understanding these demographic factors helped in analyzing the characteristics of the sample population.

2. Variables Affecting Customer Loyalty: This section comprised questions related to perceived quality, perceived value, and customer satisfaction. Each construct was measured using a series of Likert scale items, with respondents indicating their level of agreement with statements regarding these constructs. The Likert scale items used for measuring perceived quality, perceived value, and customer satisfaction were adapted from validated questionnaires utilized in previous studies (Chen et al., 2021; Khundyz, 2018; Siswi & Wahyono, 2020). Additionally, items were selected based on established scales and measurement tools widely recognized in the field of consumer behavior and marketing research (Aaker & Joachimsthaler, 2002; Kotler & Keller, 2022).

3. Customer Loyalty: The final section assessed the level of customer loyalty towards the Huawei Mate50 smartphone. Similar to the previous section, Likert scale items were used to gauge respondents' agreement with statements reflecting their loyalty towards the brand. The scale items were developed based on previous research study by Han, H., & Ryu, K. (2009).

5.3. Research Instrument Testing

1. Reliability Test: Before proceeding with full-scale implementation, a preliminary reliability test was carried out with a limited sample of 30 respondents. The aim was to assess the internal consistency of the questionnaire items and identify any potential issues or ambiguities in the instrument. Reliability was evaluated using Cronbach's alpha coefficient, a widely recognized measure (Hair et al., 2019). A Cronbach's alpha coefficient equal to or greater than 0.70 signifies acceptable reliability. The results of the preliminary test demonstrated strong internal consistency among the items, with all constructs exceeding the threshold, as Cronbach's alpha values ranged from 0.813 to 0.902.

2. Validity Test: Validity testing was conducted to ensure the questionnaire accurately captured the intended constructs and yielded valid results. Two primary aspects of validity were evaluated: content validity and construct validity. Content validity ensures that the questionnaire items effectively represent the constructs under investigation. To assess content validity, experts in the fields of mobile technology and consumer behavior reviewed the questionnaire items (Sekaran & Bougie, 2019). Their feedback was incorporated to ensure that the items effectively captured the key dimensions of PQ, PV, CS, and CL related to the Huawei Mate50 smartphone. The results from the index of item-objective congruence (IOC) gathered from three experts showed that all items were greater than 0.5, which is considered acceptable.

5.4. Data Analysis

The collected data underwent comprehensive analysis to find the relationships between perceived quality, perceived value, customer satisfaction, and customer loyalty towards the Huawei Mate50 smartphone. The analysis employed both descriptive and inferential statistical techniques to derive

meaningful insights from the dataset.

1. Descriptive statistics, including measures such as means, standard deviations, frequencies, and percentages, were utilized to summarize the demographic characteristics of the respondents and the responses to the questionnaire items. This provided a clear understanding of the sample profile and the distribution of perceptions among the respondents.

2. Structural Equation Modeling (SEM) was selected as the preferred analytical technique to examine the relationships between Product Quality (PQ), Perceived Value (PV), Customer Satisfaction (CS), and Customer Loyalty (CL). SEM offers several advantages over other statistical methods, making it particularly suitable for this study. Firstly, SEM allows for the estimation of both direct and indirect effects among latent variables, providing a comprehensive understanding of the complex interplay of factors influencing customer loyalty. This aligns well with the research objectives of exploring the multifaceted relationships between PQ, PV, CS, and CL in the context of customer loyalty towards Huawei Mate50 5G smartphones. Additionally, SEM enables researchers to assess the overall goodness-of-fit of the hypothesized model, allowing for the evaluation of how well the proposed theoretical framework aligns with the observed data. By testing the hypothesized model, researchers can determine the strength and significance of the relationships between the variables, providing empirical evidence to support theoretical propositions. This rigorous analytical approach enhances the validity and reliability of the study findings, ensuring robust conclusions that can inform strategic decision-making for smartphone manufacturers.

6. Results

6.1. Customer Survey Characteristics

The demographic profile of the 400 respondents surveyed reveals that a majority of participants were male, comprising 53.3% of the sample. A significant portion of respondents, accounting for 41.5%, fell within the age range of 21-30 years old, while the highest proportion, representing 53.8%, held a bachelor's degree. Additionally, a considerable number of respondents, constituting 45%, identified themselves as students. In terms of marital status, the majority of respondents, accounting for 44.3%, reported being single. Economically, half of the respondents, totaling 50%, reported a monthly income of 5,000 CNY or lower. When it comes to purchase behavior, the majority of respondents, comprising 52.3%, purchased the Huawei Mate50 5G smartphone from a Huawei store, while 31.3% made their purchase online.

6.2. Factor Analysis

Table 1 presents the factor loadings, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and Bartlett's test of sphericity for variables related to PQ, PV, CS, and CL. Factor loadings indicate the strength and direction of the relationship between each variable and its underlying factor. The values range from 0.543 to 0.848, providing insights into the degree of association with the respective factor, where higher values indicate a stronger association. The KMO measure evaluates the data's suitability for factor analysis, with values ranging from 0.847 to 0.954, indicating high suitability. Bartlett's test assesses whether the variables in the correlation matrix are significantly interrelated, with a significant p-value (< 0.05) suggesting suitability for factor analysis. In this table, all Bartlett's test values have p-values of 0.000, indicating significant interrelations among the variables.

Overall, the results suggest that the variables have strong factor loadings, high sampling adequacy, and significant interrelations, supporting the purification of variables for further analysis. The strong factor loadings, high sampling adequacy, and significant interrelations observed in the results of the factor analysis indicate that the selected variables are robust indicators of the underlying constructs. The high factor loadings suggest that each observed variable effectively represents its corresponding latent construct, confirming the validity of the measurement model. Additionally, the high sampling adequacy, as indicated by measures such as the Kaiser-Meyer-Olkin (KMO) statistic, suggests that the

data are suitable for factor analysis, further reinforcing the reliability of the findings.

Table 1: Purification of Variables

Factors	Factor loading	KMO	Bartlett's
PQ1	.702	0.943	4235.289
PQ2	.772		
PQ3	.808		
PQ4	.804		
PQ5	.754		
PQ6	.709		
PQ7	.746		
PQ8	.740		
PQ9	.725		
PQ10	.691		
PV1	.756	0.945	3833.375
PV2	.690		
PV3	.698		
PV4	.668		
PV5	.796		
PV6	.707		
PV7	.778		
PV8	.739		
PV9	.721		
PV10	.731		
CS1	.783	0.847	4091.612
CS2	.848		
CS3	.618		
CS4	.755		
CS5	.788		
CS6	.744		
CS7	.656		
CS8	.623		
CS9	.557		
CS10	.727		
CL1	.711	0.954	3123.368
CL2	.726		
CL3	.651		
CL4	.715		
CL5	.635		
CL6	.721		
CL7	.675		
CL8	.771		
CL9	.656		
CL10	.543		

Source: Prepared by the authors (2023)

6.3. Variables Correlation Analysis

Table 2 displays the correlation coefficients among latent variables, providing valuable insights into

their relationships. Following the guidance of Bono et al. (2019) regarding data distribution assessment, a skewness and kurtosis test was conducted. This assessment focused initially on kurtosis, aligning with established criteria: skewness values within |7| and kurtosis values falling between -1.55 and -2.23, and 0.06 and 1.52, respectively. This examination of customer survey characteristics and latent variable correlations lays the groundwork for discussing the findings and their implications, thereby facilitating a comprehensive understanding of the factors that influence customer loyalty towards Huawei Mate50 smartphones.

Table 2: Descriptive Statistics and Correlation of Latent Variables

Latent Variables	**PQ**	**PV**	**CS**	**CL**
PQ	1			
PV	.80**	1		
CS	.89**	.75**	1	
CL	.53**	.67**	.57**	1
Mean	3.64	3.54	3.61	3.75
Standard Deviation (SD)	0.69	0.47	0.72	0.97
Skewness	-1.74	-2.23	-1.55	-2.15
Kurtosis	0.06	1.52	0.72	0.59
Interpretation	high	high	high	high

** p < .01

6.4. Effects of Predictors Results

Table 3 provides a comprehensive overview of the direct effects (DE), indirect effects (IE), and total effects (TE) of different predictors on PV, CS, and CL. DE signify the immediate impact of one variable on another, while IE represent the influence mediated through intermediate variables. TE encompass both direct and indirect effects combined. The mediation testing results on the latent variables are detailed in Table 3. Additionally, Figure 2 illustrates the outcomes of the final hypotheses testing, indicating support for all six hypotheses. Furthermore, all influential factors could explain the variation in customer loyalty at 82%. Notably, when assessing the total effect on customer loyalty towards Huawei Mate50 smartphones, perceived quality emerges as the most influential factor, with an overall effect of 2.64, followed by perceived value at 1.46 and customer satisfaction at 0.57, respectively.

Table 3: Effects of Predictors

Dependent Variables	**R^2**	**Effect**	**Independent Variables**		
			PQ	**PV**	**CS**
PV	0.56	DE	0.89**		
		IE	-		
		TE	0.89**		
CS	0.78	DE	0.87**	0.92**	
		IE	0.82**	-	
		TE	1.69**	0.92**	
CL	0.82	DE	0.84**	0.94**	0.57**
		IE	1.80**	0.52**	-
		TE	2.64**	1.46**	0.57**

** p < .01

When considering the DE, IE, and TE of predictors on PV, CS, and CL. Noteworthy is the

significant direct impact of PQ on PV, CS and CL, indicated by coefficients of 0.89 ($p < 0.01$), 0.87 ($p < 0.01$), and 0.84 ($p< 0.01$), respectively. Additionally, PV significantly influences CS and CL with a coefficient of 0.92 ($p < 0.01$) and 0.94 ($p < 0.01$), respectively. These direct relationships are further elucidated by significant indirect effects, wherein PQ demonstrates an indirect influence on CS with a coefficient of 0.82 ($p < 0.01$), and on CL with a coefficient of 1.80 ($p < 0.01$). Furthermore, PV) indirectly affects CL with a coefficient of 0.52 ($p < 0.01$). Considering total effects, PQ emerges as the most influential predictor of CL with a total effect of 2.64 ($p < 0.01$), followed by PV with a total effect of 1.46 ($p < 0.01$), and CS with a total effect of 0.57 ($p < 0.01$). These findings underscore the pivotal roles of PQ and PV in shaping CS and CL towards Huawei Mate50 smartphones.

When examining the coefficient of determination (R-squared) values, it is observed that for perceived value (PV), the R-squared value is 0.56, for customer satisfaction (CS) it is 0.78, and for customer loyalty (CL) it is 0.82. These values represent the proportion of variance in the dependent variables (PV, CS, and CL) explained by the independent variables in the model. The effect sizes, as indicated by the R-squared values, provide insights into the magnitude of the relationships between the predictors and the respective dependent variables. Additionally, the inclusion of 99% confidence intervals enhances the precision and reliability of these effect size estimates, further bolstering the validity of the findings.

6.5. Final Hypothesis Testing

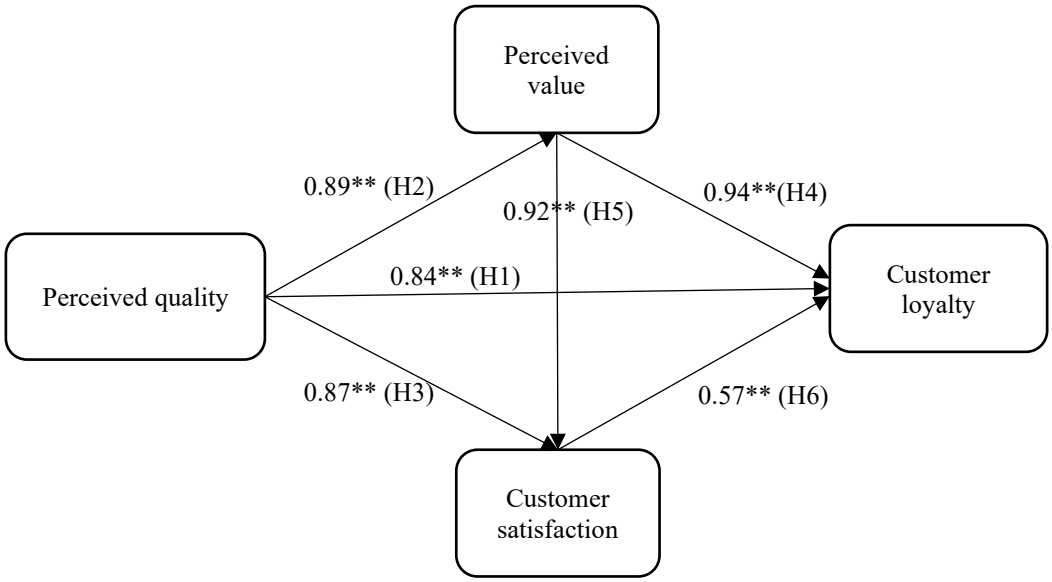

Fig. 2: Final SEM for Customer Loyalty
Note: Chi-Square=96.235, df=98, RMSEA=0.091, GFI = 0.917, AGFI = 0.928
Source: The authors.

Table 4: Research Hypotheses Test Results

Hypothesis	Coef.	Sig.	Results
H1: PV→ CL	0.84	.005**	Supported
H2: PQ→ PV	0.89	.000**	Supported
H3: PQ→ CS	0.87	.000**	Supported
H4: PV→ CL	0.94	.002**	Supported
H5: PV→ CS	0.92	.007**	Supported
H6: CS→ CL	0.57	.000**	Supported

** p < .01

Table 4 presents the outcomes of hypothesis testing concerning the relationships among perceived quality, perceived value, customer satisfaction, and customer loyalty towards Huawei Mate50 smartphones. Each hypothesis is evaluated based on its coefficient (Coef.) and statistical significance (Sig.). The results reveal that all six hypotheses (H1 to H6) are supported, with statistically significant coefficients at the 0.01 level. Specifically, the findings demonstrate positive associations between perceived quality and customer loyalty (Coef. = 0.84, Sig. = .005**), perceived quality and perceived value (Coef. = 0.89, Sig. = .000**), perceived quality and customer satisfaction (Coef. = 0.87, Sig. = .000**), perceived value and customer loyalty (Coef. = 0.94, Sig. = .002**), perceived value and customer satisfaction (Coef. = 0.92, Sig. = .007**), as well as customer satisfaction and customer loyalty (Coef. = 0.57, Sig. = .000**). These findings underscore the importance of PQ, PV, and CS in enhancing CL towards Huawei Mate50 smartphones. Additionally, the goodness of fit results for the final SEM for CL, as depicted in Fig. 2, are as follows: Chi-Square = 96.235, df = 98, RMSEA = 0.091, GFI = 0.917, AGFI = 0.928. These results indicate that the model meets the criteria for acceptable fit, as the Root Mean Square Error of Approximation (RMSEA) falls below the recommended threshold of 0.08, and both the Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI) exceed the acceptable level of 0.90. Therefore, the SEM provides a satisfactory representation of the relationships between PQ, PV, CS, and CL towards Huawei Mate50 smartphones.

Therefore, the findings align with the research questions and hypotheses posited in this study, confirming the theoretical underpinnings regarding the influence of PQ, PV, and CS on CL within the smartphone context. Specifically, the strong positive coefficients underscore the pivotal role of PQ, PV, and CS in shaping CL, highlighting the importance of these constructs in driving consumer behavior and fostering customer loyalty in the competitive smartphone market. Moreover, the satisfactory goodness of fit results for the SEM further validate the robustness of the proposed relationships, indicating that the model effectively captures the complex interplay between PQ, PV, CS, and CL. Overall, these findings provide valuable insights for smartphone manufacturers and marketers, emphasizing the significance of prioritizing product quality, value perception, and customer satisfaction to cultivate enduring relationships with consumers and enhance loyalty in the dynamic smartphone industry landscape.

7. Conclusion

This study provides empirical evidence of the significant influence of perceived quality, perceived value, and customer satisfaction on customer loyalty towards Huawei Mate50 smartphones in Thailand. The findings highlight the importance of these factors in shaping consumer behavior and have practical implications for smartphone manufacturers seeking to enhance customer loyalty. The analysis undertaken in this study delves into the intricate relationships between perceived quality, perceived value, customer satisfaction, and customer loyalty concerning Huawei Mate50 smartphones. Through meticulous data analysis and hypothesis testing, this research has unveiled significant insights that enrich our comprehension of consumer behavior within the realm of China's foremost smartphone brand. The findings affirm the pivotal role of perceived quality, perceived value, and customer satisfaction as

indispensable determinants of customer loyalty. Notably, perceived quality emerged as a primary driver, demonstrating robust positive associations with both perceived value and customer satisfaction. Likewise, perceived value and customer satisfaction exhibited positive impacts on customer loyalty. These outcomes accentuate the imperative for smartphone manufacturers, such as Huawei, to prioritize aspects such as product quality, value propositions, and customer satisfaction initiatives to bolster customer loyalty and sustain competitiveness in the dynamic smartphone market landscape. Ultimately, this study contributes substantially to the existing knowledge base in consumer behavior and offers pragmatic implications for smartphone manufacturers striving to foster enduring relationships with their customers.

8. Discussion

The findings reveal significant support for all research hypotheses, indicating robust relationships among perceived quality, perceived value, customer satisfaction, and customer loyalty towards Huawei Mate50 smartphones. These results align with existing literature highlighting the pivotal role of perceived quality, perceived value, and customer satisfaction in shaping customer loyalty (Aaker & Joachimsthaler, 2002; Keller & Lehmann, 2006). Specifically, perceived quality emerges as a key determinant, demonstrating positive effects on both customer loyalty and perceived value, in line with prior research emphasizing the significance of product quality in influencing consumer perceptions (Abell et al., 2017). Additionally, the findings indicate that perceived quality positively impacts customer satisfaction, underscoring its role in enhancing overall customer experience and satisfaction levels (Brown & Dacin, 1997).

The findings by Kotler and Keller (2022) indicate a noteworthy impact of perceived value on both customer loyalty and satisfaction. However, it is imperative to acknowledge the presence of conflicting evidence within the academic discourse. While certain studies, such as Ahmad et al. (2018), underscore the pivotal role of perceived value in nurturing loyalty and satisfaction, ongoing debates persist regarding the precise nature of the relationship between perceived value and customer loyalty. Indeed, research conducted by Adongo et al. (2015) suggests that perceived value may not consistently eclipse other determinants influencing loyalty. Furthermore, despite the widely acknowledged significance of customer satisfaction as a primary driver of loyalty (Andreassen & Lindestad, 1998), discordant findings from studies, exemplified by Castro et al. (2007), propose that variables such as service quality consistency and competitive pricing strategies may wield substantial influence over customer loyalty. These disparities underscore the intricate dynamics of consumer behavior and advocate for further scholarly inquiry into the nuanced interplay among perceived value, satisfaction, and loyalty.

Overall, the findings underscore the interplay among perceived quality, perceived value, customer satisfaction, and customer loyalty in the smartphone industry, providing valuable insights for marketers and business strategists (Gong et al., 2019). By prioritizing efforts to enhance perceived quality, deliver value to customers, and ensure high levels of customer satisfaction, smartphone manufacturers like Huawei can cultivate strong and enduring relationships with their customers, leading to increased loyalty and sustained competitive advantage (Tan et al., 2015). These results contribute to a deeper understanding of consumer behavior dynamics in the smartphone market and offer practical implications for firms aiming to achieve customer-centric growth strategies (Soroka et al., 2017). In addition to enriching the existing literature on consumer behavior within the smartphone industry, this study's findings offer insights that transcend the specific context of Huawei Mate50 smartphones in Thailand. While the research centered on the Huawei Mate50 model, the identified drivers of consumer loyalty likely apply to other smartphone brands and diverse geographic locations. For instance, recent research by Schaefer (2020) illustrates how innovations within Huawei and ZTE, including product development processes, can resonate with broader industry trends. This suggests that smartphone manufacturers globally can benefit from prioritizing efforts to enhance perceived quality, deliver value,

and ensure high levels of customer satisfaction. Moreover, insights from studies such as those by Blank (2013) and Liedtka (2020) indicate the significance of consumer-centric approaches in adapting marketing strategies and product offerings to evolving consumer demands in dynamic market landscapes. Therefore, the implications of this study extend beyond the Huawei Mate50 smartphones, offering valuable lessons applicable to smartphone manufacturers worldwide.

9. Implications

1. Smartphone manufacturers should prioritize continuous improvements in product quality to enhance customer perceptions. This entails investing in superior materials, manufacturing processes, and design aesthetics to meet or exceed consumer expectations. By emphasizing perceived quality in marketing communications, it can help differentiate brands in a crowded marketplace. Highlighting features such as durability, performance, and craftsmanship can resonate with discerning consumers seeking high-quality products.

2. Understanding the key drivers of perceived value, such as pricing, features, and benefits, is essential for optimizing product offerings. Smartphone companies should strive to deliver exceptional value propositions that align with customer needs and preferences. Implementing pricing strategies that emphasize value for money can attract price-sensitive consumers while maintaining profitability. Bundling offers, discounts, and loyalty programs can enhance perceived value and incentivize purchase decisions.

3. Prioritizing customer satisfaction initiatives, such as responsive customer support, hassle-free returns, and personalized services, can foster positive experiences and build long-term customer relationships. Soliciting feedback from customers and incorporating their suggestions for improvement demonstrates a commitment to satisfaction and continuous enhancement of products and services.

4. Recognizing the strong link between perceived quality, perceived value, customer satisfaction, and loyalty, smartphone manufacturers should focus on cultivating emotional connections with customers. Brands that evoke positive emotions and trust are more likely to enjoy repeat purchases and advocacy. Implementing loyalty programs, exclusive offers, and rewards for repeat purchases can incentivize customer loyalty and increase lifetime value.

10.Limitation

Limitations of this research include the reliance on convenience sampling, which may introduce selection bias. The study focused only on Huawei Mate50 smartphones, potentially overlooking variations in consumer behaviour across different smartphone models. Furthermore, the cross-sectional design of the study limits the ability to establish causality between variables, and longitudinal studies would provide deeper insights into the dynamics of consumer loyalty over time.

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References

Abell, J. A., Chakraborty, D., & Escobar, C. A. (2017). Big Data-Driven Manufacturing—Process-Monitoring-for Quality Philosophy. *Journal of Manufacturing Science and Engineering*, 139.

Aaker, D. A., & Joachimsthaler, E. (2002). *Brand Leadership*. New York: The Free Press.

Adongo, C. A., Anuga, S. W., & Dayour, F. (2015). Will they tell others to taste? International tourists' experience of Ghanaian cuisines. *Tourism Management Perspectives*, 15, 57–64.

Ahmad, S., Wong, K. Y., & Tseng, M. L. (2018). Sustainable product design and development: A review of tools, applications and research prospects. *Resources, Conservation and Recycling*, 132, 49-61.

Andreassen, T. W., & Lindestad, B. (1998). Customer loyalty and complex services: The impact of corporate image on quality, customer satisfaction and loyalty for customers with varying degrees of service expertise. *International Journal of Service Industry Management*, 9(1), 7–23.

Blank, S. (2013). Why the lean start-up changes everything. *Harvard Business Review*, 91(5), 63–72.

Brown, T. J., & Dacin, P. A. (1997). The company and the product: Corporate associations and consumer product responses. *Journal of Marketing*, 61(1), 68-84.

Castro, C. B., Armario, M., & Ruiz, M. (2007). The influence of market heterogeneity on the relationship between a destination's image and tourists' future behavior. *Tourism Management*, 28(1), 175–187.

Chen, S., Chen, H., & Chen, J. (2021). Perceived quality and customer loyalty towards mobile phone brands: The mediating role of customer satisfaction and the moderating role of service quality. *Journal of Retailing and Consumer Services*, 58, 102330.

Gong, M., Gao, Y., & Koh, L. (2019). The role of customer awareness in promoting firm sustainability and sustainable supply chain management. *International Journal of Production Economics*, 217, 88-96.

Han, H., & Ryu, K. (2009). The roles of the physical environment, price perception, and customer satisfaction in determining customer loyalty in the family restaurant industry. *Journal of Hospitality & Tourism Research*, 33(4), 487–510.

Hair, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Researc*h, 109, 101 – 110.

Kang, B. (2015). The innovation process of Huawei and ZTE: Patent data analysis. *China Economic Review*, 36, 378–393.

Keller, K. L., & Lehmann, D. R. (2006). Brands and Branding: Research Findings and Future Priorities. *Marketing Science*, 25(6), 740-759.

Khundyz, A. (2018). An empirical study on the determinants of customer loyalty in the mobile operator market. *Management Science Letters*, 8(5), 431-440.

Kim, H., Lee, Y., & Kim, J. (2020). The impact of perceived value, trust, satisfaction, and service quality on customer loyalty in the mobile telecommunication industry. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(4), 118.

Kotler, P., & Keller, K. L. (2022). *Marketing Management* (16th ed.). Pearson.

Liedtka, J. (2020). Putting technology in its place: Design thinking's social technology at work. *California Management Review*, 62(2), 53–83.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460-469.

Rasheed, A., & Anser, M. K. (2017). Factors influencing customer loyalty in mobile phone industry: Empirical evidence from Pakistan. International Journal of Economics, *Commerce and Management*, 5(5), 131-144.

Ren, S. (2019). A comprehensive review of big data analytics throughout product lifecycle to support sustainable smart manufacturing: A framework, challenges and future research directions. *Journal of Cleaner Production*, 210, 1343-1365.

Schaefer, K. J. (2020). Catching up by hiring: The case of Huawei. *Journal of International Business Studies*, 51(9), 1500–1515.

Sekaran, U., & Bougie, R. (2019). *Research methods for business*. John Wiley & Sons, Incorporated.

Siswi, A.A.; Wahyono, W. (2020). The Role of Customer Satisfaction in Increasing Customer Loyalty. *Management Analysis Journal*. 9, 17–25.

Soroka, A., Liu, Y., & Han, L. (2017). Big Data Driven Customer Insights for SMEs in Redistributed Manufacturing. *Procedia CIRP*, 63, 692-697.

Tan, K. H., Zhan, Y., & Ji, G. (2015). Harvesting big data to enhance supply chain innovation capabilities: An analytic infrastructure based on deduction graph. *International Journal of Production Economics*, 165, 223-233.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2-22.