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UNDERSTANDING CUSTOMER LOYALTY IN SUSTAINABLE RIDE-HAILING SERVICES A CASE STUDY OF GREEN SM IN HO CHI MINH CITY

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ABSTRACT

As ride-hailing services continue to expand across Vietnam, competition among platforms has become increasingly intense, making customer loyalty a critical issue for long-term business sustainability. At the same time, growing environmental awareness has encouraged the emergence of greener transportation alternatives, including Green SM, Vietnam's pioneering electric ride-hailing platform. Against this backdrop, the present study explores how perceived service quality, safety perception, and sustainability-driven brand image influence customer satisfaction and customer loyalty among Green SM users in Ho Chi Minh City. The study also examines the mediating role of customer satisfaction in linking these factors to customer loyalty. The empirical results reveal that perceived service quality, safety perception, and sustainability-driven brand image all contribute positively to customer satisfaction. Among these determinants, safety perception emerged as the most influential factor. The findings further demonstrate that customer satisfaction significantly enhances customer loyalty and serves as an important mediating mechanism through which the three antecedent variables affect loyalty outcomes. By examining both conventional service-related factors and sustainability- oriented perceptions within a unified framework, this study provides a broader perspective on customer loyalty formation in the context of sustainable ride-hailing services. The findings offer useful managerial insights for Green SM and other mobility providers seeking to improve customer satisfaction, strengthen customer retention, and build sustainable competitive advantages in an increasingly dynamic transportation market.

Keywords: Green SM, customer loyalty, customer satisfaction, perceived service quality, safety perception, sustainability-driven brand image, SOR framework.

INTRODUCTION

Background:

Vietnam's ride-hailing industry has expanded rapidly over the past decade, driven by rapid urbanization, widespread smartphone adoption, and changing transportation behaviors among urban consumers. Ride-hailing platforms such as Grab, Be, and Gojek have become an important part of daily transportation in major cities, particularly in Ho 2 Chi Minh City (HCMC), where ride-hailing usage remains among the highest nationwide. Recent reports indicate that consumers in HCMC demonstrate strong reliance on ride-hailing services, with average monthly spending estimated at approximately VND 250,000 for car ride-hailing and VND 105,000 for motorbike ride-hailing (VnEconomy, 2025). As switching costs between platforms remain relatively low, customer loyalty has become a critical factor for sustaining long-term competitive advantage within the ride-hailing industry (Nguyen-Phuoc *et al.,* 2020).

At the same time, sustainability has become an increasingly important issue in Vietnam's transportation sector. Growing concerns regarding air pollution and environmental sustainability, together with increasing governmental support for electric vehicles (EVs), have encouraged greater public interest in environmentally friendly transportation solutions in Vietnam (Pham *et al.,* 2024). In response to these trends, Green SM has positioned itself as Vietnam's first large-scale electric ride- hailing platform by operating an all-electric vehicle fleet and expanding into related services such as Green Express, an EV-based delivery service launched in December 2023 (GSM, 2023). This positioning is particularly relevant in HCMC, where traffic congestion and environmental concerns continue to intensify alongside rising transportation demand.

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Vietnam's ride-hailing market is expected to expand at a compound annual growth rate (CAGR) of 19.5%, from USD 1.05 bi lion in 2025 to USD 2.56 bi lion by 2030 (Mordor Intelligence, n.d.). However, despite the market's strong growth potential, competition among ride-hailing platforms has become increasingly intense. Ride-hailing companies continue competing aggressively through promotions, service convenience, and platform expansion in order to attract and retain users. In HCMC, where customers frequently switch between platforms depending on convenience, availability, and service experience, this competitive pressure raises an important question regarding whether sustainability-oriented positioning alone is sufficient to foster long-term customer loyalty. This issue highlights the need to better understand whether sustainability-related perceptions meaningfully contribute to customer satisfaction and loyalty within sustainable ride-hailing services.

Green SM provides a relevant context for investigating whether sustainability-oriented positioning can enhance customer satisfaction and loyalty beyond traditional service-related factors. Although environmental concerns are becoming more prominent, ride-hailing users often base their decisions on practical considerations such as service quality, reliability, and safety. Therefore, the extent to which sustainability-related perceptions influence long-term loyalty remains unclear.

To address this gap, this study examines the effects of perceived service quality, safety perception, and sustainability-driven brand image on customer satisfaction and customer loyalty among Green SM users in Ho Chi Minh City. Customer satisfaction is proposed as a mediating variable, and the Stimulus–Organism–Response (SOR) framework is adopted to explain the relationships among the study variables.

This chapter introduces the research background, research problem, objectives, and research questions, significance of the study, and the scope and limitations of the research.

Research Problem:

Despite the growing popularity of sustainability-oriented mobility services, it remains unclear whether Green SM can effectively translate its sustainability-driven positioning into long-term customer loyalty within Ho Chi Minh City's highly competitive ride-hailing market. In practice, ride-hailing users often prioritize immediate functional benefits such as service reliability, convenience, and safety when choosing between competing platforms. Given the relatively low switching costs in ride-hailing services, maintaining customer loyalty has become increasingly challenging for platforms seeking sustainable competitive advantage (Nguyen-Phuoc *et al.,* 2020).

This situation highlights an important research problem. While previous studies have consistently identified traditional service-related factors such as service quality and perceived value as major determinants of customer satisfaction and loyalty, sustainability-driven brand image remains relatively underexplored within ride-hailing loyalty research, particularly in emerging markets such as Vietnam. Existing studies have primarily examined environmentally friendly transportation behavior and policy- related factors while giving relatively limited attention to how sustainability-related 4 perceptions influence customer evaluations and loyalty behavior in electric ride-hailing contexts (Pham *et al.,* 2024).

In addition, prior studies suggest that customer loyalty in ride-hailing services is not always a direct outcome of customer satisfaction, as users may continue switching between platforms due to competitive promotions, convenience, and changing consumption preferences (Katili *et al.,* 2024). As a result, there remains limited understanding of how sustainability-related perceptions interact with traditional service-related factors in shaping customer satisfaction and long-term loyalty toward sustainable ride-hailing services.

Another limitation in the existing literature is that sustainability-related variables are often discussed conceptually but are not fu ly integrated into customer loyalty formation models within ride-hailing contexts. In the case of Green SM, sustainability is positioned as a core part of the company's brand identity rather than merely an operational feature. However, limited empirical evidence currently exists regarding whether customers genuinely consider sustainability-oriented brand image when evaluating ride-hailing services and forming loyalty intentions.

To address these gaps, this study investigates the effects of perceived service quality, safety perception, and sustainability-driven brand image on customer satisfaction and customer loyalty toward Green SM in Ho Chi Minh City. Customer satisfaction is proposed as the mediating mechanism linking these determinants to loyalty outcomes.

Objectives of the Study: To achieve this main goal, the study establishes the following specific research objectives:

1. Examine the effects of perceived service quality, safety perception, and sustainability-driven brand image on customer satisfaction toward Green SM in Ho Chi Minh City.
2. Investigate the influence of customer satisfaction on customer loyalty toward Green SM.
3. Analyze the mediating role of customer satisfaction in the relationships between perceived service quality, safety perception, sustainability-driven brand image, and customer loyalty.
4. Explore the contribution of sustainability-driven brand image to customer loyalty formation within the context of sustainable ride-hailing services.
5. Provide managerial recommendations for Green SM to strengthen customer satisfaction and customer loyalty in Ho Chi Minh City.

LITERATURE REVIEW

Theoretical Foundation

Stimulus–Organism–Response (SOR) Framework

The Stimulus–Organism–Response (SOR) framework, developed by Mehrabian and Russel (1974), explains how individuals react to external stimuli through internal psychological processes that ultimately influence their behavior. The framework suggests that environmental stimuli shape customers' cognitive and emotional evaluations, which subsequently affect their intentions and actions. Owing to its ability to explain customer responses in various service settings, the SOR framework has been widely adopted in studies related to consumer behavior, digital services, and marketing. The framework has also been applied in transportation and ride-hailing research. Prasetyo *et al.,* (2021), for instance, found that service-related stimuli influence customer satisfaction, which in turn affects loyalty intentions toward online transportation platforms. These findings indicate that the SOR framework is appropriate for understanding customer behavior within app-based mobility services.

In the present study, Perceived Service Quality, Safety Perception, and Sustainability-Driven Brand Image are conceptualized as stimulus factors. Customer Satisfaction represents the organism component, reflecting customers' overall evaluation of their experiences with Green SM, while Customer Loyalty represents the response component, referring to customers' intention to continue using, recommending, and supporting the platform.

The relevance of the SOR framework to this study lies in its ability to explain how both functional and psychological factors shape customer loyalty. In ride-hailing services, customer evaluations are influenced not only by service performance but also by perceptions related to safety, brand image, and sustainability. This perspective is particularly important for Green SM, whose brand identity is closely associated with electric mobility and environmentally responsible transportation.

As public interest in sustainable transportation continues to grow in Vietnam, sustainability-related perceptions may increasingly influence how customers evaluate ride-hailing services and develop loyalty toward specific platforms. Therefore, the SOR framework provides an appropriate theoretical basis for examining the relationships among perceived service quality, safety perception, sustainability-driven brand image, customer satisfaction, and customer loyalty in the context of Green SM.

Customer Loyalty Theory

Customer loyalty refers to customers' intention and willingness to continue using a particular service provider despite the availability of competing alternatives. Oliver (1999) conceptualized customer loyalty as a multidimensional process that develops progressively through cognitive, affective, conative, and behavioral stages. From this perspective, loyalty extends beyond repeated purchasing behavior and also includes psychological commitment, favorable attitudes, and long-term preference toward a brand or service provider.

Within service industries, customer loyalty is widely recognized as a critical determinant of long-term business performance because loyal

customers are more likely to engage in repeated usage, provide positive word-of-mouth recommendations, and maintain stable relationships with service providers over time (Reichheld & Sasser, 1990). Previous studies suggest that loyalty is strongly influenced by customers' satisfaction levels and their overall service experiences, particularly within highly competitive service markets.

Maintaining customer loyalty in the ride-hailing industry is especially challenging due to relatively low switching costs and intense platform competition. Customers can easily compare prices, promotions, waiting times, and service 11 availability across multiple applications, causing loyalty behavior to become relatively unstable. Consequently, customer loyalty within ride-hailing services should not be interpreted solely as repeated usage behavior, but also as customers' overall preference and long-term intention to continue using a particular platform (Nguyen-Phuoc *et al.,* 2020).

Existing ride-hailing studies have mainly emphasized transactional and operational determinants of loyalty, including pricing strategies, convenience, and service quality. However, customer loyalty formation may become more complex within sustainability-oriented transportation contexts where customers are also exposed to environmental and ethical considerations. In the case of Green SM, customer loyalty may be influenced not only by convenience and operational reliability, but also by customers' perceptions toward environmentally responsible mobility solutions.

This issue has become increasingly relevant as Vietnam gradually accelerates its transition toward sustainable transportation and electric mobility solutions. Rising fuel price volatility, environmental concerns, and growing public attention toward green transportation may further influence how customers evaluate and develop loyalty toward electric ride-hailing services. Therefore, understanding customer loyalty formation within Green SM provides additional insight into how sustainability-related perceptions interact with traditional service-related factors in shaping long-term customer behavior.

Service Quality and the SERVQUAL

Model Service quality plays a central role in shaping customers' evaluations of service providers and is often associated with higher levels of satisfaction and loyalty. To assess service quality, Parasuraman *et al.,* (1988) introduced the SERVQUAL model, which consists of five dimensions: reliability, assurance, responsiveness, empathy, and tangibles. According to this model, customers form judgments about service quality based on the extent to which actual service performance meets their expectations.

Within ride-hailing services, service quality is typically reflected in factors such as driver professionalism, punctuality, responsiveness, vehicle condition, and the consistency of service delivery. Prior studies have reported that favorable perceptions 12 of service quality contribute positively to customer satisfaction and increase the likelihood of customer loyalty (Zeithaml *et al.,* 1996; Lim *et al.,* 2018). However, some researchers argue that traditional service quality models may not fully capture modern customer experiences that involve emotional and value-based perceptions beyond functional service performance (Grönroos, 1984). This issue is particularly relevant in sustainability-oriented ride-hailing services such as Green SM, where customers may evaluate the service not only based on operational performance but also on broader perceptions related to environmental responsibility and brand image.

Safety Perception in Ride-hailing Services

Safety perception refers to customers' evaluation of how secure and protected they feel when using a ride-hailing service. Because ride-hailing services involve direct physical interaction between passengers and drivers, safety concerns are often associated with driver behavior, driving quality, vehicle condition, and emergency support systems. Customers are generally more likely to continue using a platform when they perceive the service as safe and reliable.

Safety perception is especially relevant for Green SM because customer evaluations of electric ride-hailing services may not depend solely on sustainability- related perceptions but also on whether customers feel comfortable and secure during the service experience. Therefore, safety perception is considered an important functional factor influencing customer satisfaction and loyalty formation.

Sustainability-Driven Brand Image

Sustainability-driven brand image refers to customers' perceptions of a company's commitment to environmental responsibility and sustainable business practices (Hartmann & Ibáñez, 2006). A positive sustainability-oriented image may strengthen corporate reputation, improve customer trust, and shape favorable attitudes toward a service provider.

This suggests that sustainability-driven brand image may influence customer loyalty indirectly by shaping positive evaluations and emotional attachment toward the brand rather than functioning solely as a direct functional benefit. Therefore, examining sustainability-driven brand image together with traditional service-related factors provides a more comprehensive understanding of customer loyalty formation toward Green SM.

Customer Satisfaction as a Mediating Variable

Customer satisfaction represents customers' overall judgment of a service experience. It is generally formed when the perceived performance of a service aligns with or exceeds customer expectations. Previous studies have consistently identified customer satisfaction as an important driver of customer loyalty, since satisfied customers are more likely to revisit, reuse, and maintain a positive relationship with a service provider.

Previous studies consistently suggest that customer satisfaction plays an important mediating role between service-related perceptions and customer loyalty behavior. Zeithaml *et al.,* (1996) argue that positive service experiences contribute to favorable behavioral outcomes through increasing customer satisfaction. Similarly, studies within ride-hailing contexts indicate that satisfaction acts as an important mechanism explaining how customer evaluations influence loyalty intentions (Lim *et al.,* 2018).

Within the context of Green SM, customer satisfaction may represent the primary mechanism through which perceived service quality, safety perception, and sustainability-driven brand image influence customer loyalty. Customers who positively evaluate both the functional performance and sustainability-oriented positioning of the platform are more likely to develop favorable satisfaction levels, which subsequently strengthen their loyalty intentions. Therefore, examining customer satisfaction as a mediating variable provides a clearer explanation of how customer loyalty is formed within sustainable ride-hailing services.

Loyalty Programs and Their Influence on Customer Retention

Previous studies have examined how loyalty programs and customer-related perceptions influence customer retention in ride-hailing services. Katili *et al.,* (2024) investigated the influence of Gojek's loyalty program, GoClub, on customer loyalty using data collected from 555 users and analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM). The study found that factors such as perceived value, system quality, and information quality positively influenced customer satisfaction with the loyalty program. However, customer satisfaction did not always translate directly into stronger customer loyalty toward the platform.

The findings suggest that customer loyalty in ride-hailing services may depend 15 not only on transactional benefits and promotional incentives but also on broader psychological and behavioral factors influencing customer attitudes and continued usage intentions. This indicates that loyalty strategies based solely on reward systems may be insufficient for building long-term customer loyalty in highly competitive ride- hailing markets.

Although the study provides valuable insights into customer retention strategies in ride-hailing services, its primary focus was placed on loyalty program mechanisms and technology-related factors rather than sustainability-related perceptions. In addition, the study did not examine how sustainability-oriented brand positioning may influence customer satisfaction and customer loyalty formation. Therefore, further research is needed to better understand how both functional service factors and sustainability-related perceptions contribute to long-term customer loyalty in sustainable ride-hailing contexts such as Green SM.

The Role of Service Quality in Building Attitudinal Loyalty

The study provides valuable insights into the relationships between service quality, perceived safety, satisfaction, and loyalty in ride-hailing services, the research mainly focused on functional service-related factors. Sustainability-related perceptions and environmental oriented brand positioning were not examined within the proposed framework. Therefore, further research is needed to better understand how sustainability-driven brand image interacts with traditional service-related factors in shaping customer loyalty toward sustainable ride-hailing platforms such as Green SM.

Key Drivers of Loyalty in Ride-Hailing Services

Research on ride-hailing services has consistently highlighted the importance of functional service-related factors in shaping customer loyalty behavior. In highly competitive ride-hailing markets, customers often evaluate platforms based on service performance, convenience, system reliability, pricing, and over an l user experience. Since switching between platforms requires relatively little effort, maintaining customer loyalty remains a major challenge for ride-hailing companies.

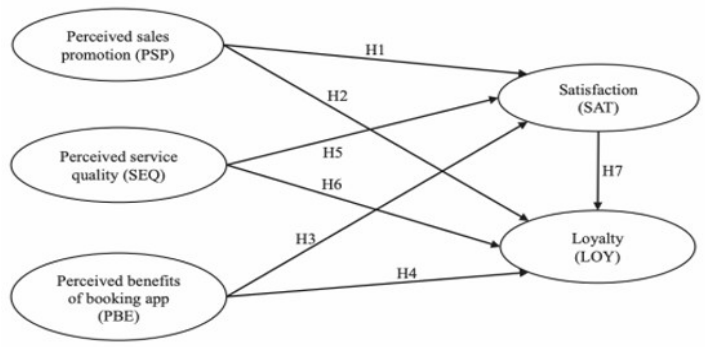
Despite providing valuable insights into customer loyalty formation, the study mainly focused on functional and transactional factors influencing customer behavior. Sustainability-related perceptions and environmental oriented brand positioning were not included within the proposed framework. As sustainability becomes increasingly relevant in urban transportation services, additional research is needed to examine whether sustainability-driven brand image may also contribute to customer satisfaction and long-term customer loyalty within sustainable ride-hailing contexts such as Green SM.

Loyalty Factors in Vietnam's Urban Mobility Landscape

The study further highlights the importance of customer-oriented service performance in highly competitive urban mobility markets such as Vietnam, where customers can easily switch between competing ride-hailing platforms. Reliable service delivery, platform convenience, and positive customer experiences therefore become essential factors for strengthening long-term customer retention.

Although the study provides valuable insights into customer loyalty behavior within Vietnam's ride-hailing context, the proposed framework mainly focused on functional and platform-related factors. Sustainability-related perceptions and environmentally oriented brand positioning were not incorporated into the model. As sustainable transportation becomes increasingly relevant in Vietnam's urban mobility landscape, further research is needed to examine whether sustainability-driven brand image may also contribute to customer satisfaction and customer loyalty toward sustainable ride-hailing platforms such as Green SM.

Proposed Model:



METHODOLOGY

Research Design and Process

A quantitative research approach was adopted to investigate customer loyalty toward Green SM in Ho Chi Minh City. The study focuses on examining how perceived service quality, safety perception, and sustainability-driven brand image influence customer satisfaction and customer loyalty. Data were collected through a cross-sectional survey, capturing respondents' perceptions at a specific point in time. To evaluate the proposed relationships and test the research hypotheses, Partial Least Squares Structural Equation Modeling (PLS- SEM) was performed using SmartPLS 4.

Research Sampling

Participants were selected using purposive sampling, targeting individuals who had used Green SM's ride-hailing services within the previous six months.

The study focused on Green SM users residing in Ho Chi Minh City. After data screening, 303 valid questionnaires were retained for analysis, providing an adequate sample size for PLS-SEM.

Primary data are collected through an online survey distributed using Google Forms. The questionnaire link is shared through social media platforms, online ride- hailing communities, and personal networks.
The questionnaire comprised two parts. The first part collected demographic information, including gender, age, occupation, and usage frequency. The second part 28 measured perceived service

quality, safety perception, sustainability-driven brand image, customer satisfaction, and customer loyalty using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Data Collection and Analysis Data collection was conducted through an online survey using Google Forms. The questionnaire link was distributed through social media platforms, including Facebook groups, Zalo communities, and online networks related to ride-hailing users in Ho Chi Minh City. This approach helped the study reach respondents who had prior experience using Green SM's ride-hailing services.

Before the main survey distribution, a pilot test involving approximately 30 respondents was conducted to evaluate the clarity and consistency of the questionnaire items. Feedback collected from the pilot test was used to revise wording and improve the overall structure of the questionnaire. Only completed and valid responses were included in the final dataset for analysis.

DATA ANALYSIS

Demographic profile of respondents

A total of 303 valid responses were collected from individuals who had prior experience using Green SM services in Ho Chi Minh City. The table summarizes the demographic characteristics of the respondents.

Regarding gender distribution, female respondents accounted for the largest proportion of the sample (59.7%), followed by male respondents (38.6%). A small proportion of respondents selected other genders or preferred not to disclose their gender identity (1.7%). The relatively balanced gender distribution suggests that Green SM services attracted users across different customer groups.

Overall, the demographic profile indicates that the collected sample appropriately represented active ride-hailing consumers in Ho Chi Minh City, particularly younger urban users who regularly engage with digital transportation platforms.

Respondent Demographic Profile

Variable	Category	Frequency	Percentage (%)
Gender	Male	117	38.6
	Female	181	59.7
	Other/Prefer not to disclose	5	1.7
Age	Under 18 years old	8	2.6
	18–24 years old	110	36.3
	25–34 years old	125	41.3
	35–44 years old	39	12.9
	Above 44 years old	21	6.9
Occupation	Student	39	12.9
	Office employee	108	35.6
	Self-employed	137	45.2
	Others	19	6.3

Source: Author's calculation based on survey data (2026)

Reliability and Validity

The findings confirm that a l measurement items adequately represented their intended latent constructs. Therefore, the proposed measurement model demonstrated satisfactory convergent validity and was considered appropriate for subsequent structural model assessment.

Construct Reliability and Validity

Construct	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
CL	0.887	0.891	0.917	0.688
CS	0.904	0.904	0.929	0.722
PSQ	0.874	0.877	0.908	0.664
SBI	0.894	0.899	0.922	0.703
SP	0.902	0.903	0.927	0.719

Source: Author's calculation using SmartPLS 4

Discriminant Validity

Discriminant validity was evaluated to determine whether the constructs in the proposed model were empirically distinct from one another. Following the recommendations of Cheung et al. (2024), both the Heterotrait–Monotrait ratio (HTMT) and the Forne l–Larcker criterion were applied to assess discriminant validity.

Among the construct pairs, Customer Satisfaction and Customer Loyalty recorded the highest HTMT value (0.744). This result is consistent with prior consumer behavior research suggesting that satisfied customers are generally more likely to develop loyalty intentions toward a service provider. However, the value remained well below the acceptable threshold, confirming that the two constructs were conceptually distinct despite their close theoretical relationship.

Construct Pair	HTMT Value
CS <-> CL	0.744
PSQ<-> CL	0.441
PSQ<-> CS	0.497
SBI <-> CL	0.438
SBI <-> CS	0.575
SBI <-> PSQ	0.204
SP <-> CL	0.399
SP <-> CS	0.634
SP <-> PSQ	0.093
SP <-> SBI	0.255

Source: Author's calculation using SmartPLS 4

Beside HTMT analysis, the Fornel–larcker criterion was used to further test the discriminant validity. As seen in Table 5, the AVE square root for each construct was higher than the construct's correlations with other constructs. Specifically, Satisfaction (0.850), Customer Loyalty (0.830), Customer Perceived Service Quality (0.815), Sustainability-Driven Brand Image (0.838), and Safety Perception (0.848) a l demonstrated higher diagonal values compared with the corresponding inter-construct correlations.

Discriminant Validity Assessment Using the Fornell–Larcker Criterion

	CL	CS	PSQ	SBI	SP
CL	0.830				
CS	0.669	0.850			
PSQ	0.395	0.444	0.815		
SBI	0.393	0.522	0.188	0.838	
SP	0.360	0.573	0.037	0.232	0.848

Source: Author's calculation using SmartPLS 4

Collinearity Statistics (VIF)

Collinearity Statistics (VIF)

Relationship	VIF
CS → CL	1.000
PSQ → CS	1.036
SBI → CS	1.094
SP → CS	1.057

Source: Author's calculation using SmartPLS 4

The findings confirm that multico linearity is not present in the proposed structural model. Therefore, the relationships among the constructs can be interpreted with confidence, and the subsequent hypothesis testing results are considered reliable.

Coefficient of Determination (R^2) of Endogenous Constructs

	R-square	R-square adjusted
CL	0.448	0.446
CS	0.615	0.611

Source: Author's calculation using SmartPLS 4

This result further implies that long-term customer loyalty in Ho Chi Minh City's ride-hailing market is primarily developed through consistently positive service experiences rather than relying solely on short-term promotional campaigns or price based competition. Therefore, enhancing customer satisfaction may represent a strategically important approach for strengthening sustainable customer retention within Vietnam's increasingly competitive ride-hailing industry.

Effect Size (f^2) of Structural Relationships

	CL	CS	PSQ	SBI	SP
CL					
CS	0.810				
PSQ		0.328			
SBI		0.279			
SP		0.567			

Source: Author's calculation using SmartPLS 4

Hypotheses Testing Results

Bootstrapping Results and Hypothesis Testing

Hypothesis	Relationship	Path Coefficient (β)	T-value	P-value	Result
H1	PSQ → CS	0.362	9.448	p < .001	Supported
H2	SP → CS	0.480	12.363	p < .001	Supported
H3	SBI → CS	0.343	9.180	p < .001	Supported
H4	CS → CL	0.669	20.776	p < .001	Supported

Source: Author's calculation using SmartPLS 4

The findings confirmed that the proposed research model achieved satisfactory reliability, validity, and explanatory power. A l proposed hypotheses were statistically supported, indicating that perceived service quality, safety perception, and sustainability-driven brand image significantly influenced customer satisfaction, which subsequently affected customer loyalty toward Green SM in Ho Chi Minh City.

Mediation Effects through Customer Satisfaction

Indirect Relationship	Indirect Effect (β)	T-value	P-value	Result
PSQ → CS → CL	0.242	7.992	0.000	Supported
SBI → CS → CL	0.229	8.645	0.000	Supported
SP → CS → CL	0.321	10.460	0.000	Supported

Source: Author's calculation using SmartPLS 4

DISCUSSIONS

The findings of this study provide several important insights into customer loyalty formation toward sustainable ride-hailing services in Ho Chi Minh City. Overall, the results support the proposed research framework and are generally aligned with previous studies on ride-hailing services, customer satisfaction, and customer loyalty. At the same time, the study also addresses several limitations identified in previous literature by incorporating sustainability-driven brand image into the context of electric ride-hailing services in Vietnam.

First, the study confirmed that Perceived Service Quality positively influenced Customer Satisfaction. This finding is consistent with previous studies conducted by Lim *et al.,* (2018) and Nguyen-Phuoc *et al.,* (2020), which suggested that operational performance, responsiveness, reliability, and service consistency remain important determinants of customer satisfaction and loyalty within ride-hailing services.

However, most previous studies mainly emphasized functional and transactional factors such as pricing, convenience, application usability, and promotional benefits. Sustainability-related perceptions were often excluded from the proposed research frameworks. In addition, earlier studies mainly focused on conventional ride-hailing platforms such as Grab and Gojek rather than sustainable electric ride-hailing services. Therefore, the current study contributes additional contextual evidence by examining customer evaluations within sustainability-oriented mobility models in Ho Chi Minh City.

Second, Safety Perception demonstrated the strongest influence on Customer Satisfaction among a l examined antecedents. This finding is generally aligned with the studies of Sari et al. (2024) and Ricardianto *et al.,* (2024), which highlighted the importance of perceived safety in influencing passenger satisfaction and attitudinal loyalty within ride-hailing services.

Nevertheless, previous studies were mainly conducted in broader transportation or international ride-hailing contexts and did not specifically examine electric ride- hailing services within Vietnam's urban transportation environment. The present findings suggest that transportation safety may become even more influential within highly congested cities such as Ho Chi Minh City, where traffic density, driving behavior, and transportation-related risks strongly affect customers' commuting experiences.

The result also indicates that customers prioritize feeling secure, protected, and comfortable before evaluating broader brand-related attributes. This finding provides a more localized understanding of customer behavior within Vietnam's ride-hailing market, where transportation safety remains an important psychological and functional concern for urban consumers.

Third, the study found that Sustainability-Driven Brand Image positively influenced Customer Satisfaction. This finding supports broader sustainability and green marketing literature proposed by Hartmann and Ibáñez (2006) and Pham and Tran (2022), which suggested that environmentally responsible brand positioning, may positively influence customer attitudes and brand evaluations.

More importantly, this study addresses an important research gap identified in previous ride-hailing literature. Existing studies on ride-hailing loyalty have largely concentrated on service quality, pricing, promotions, and convenience factors while giving limited attention to sustainability-oriented brand perception, particularly within emerging electric mobility contexts. In the case of Green SM, sustainability represents a core brand identity rather than merely an additional operational feature.

The results indicate that sustainability-related perceptions are becoming increasingly relevant among urban consumers in Vietnam. However, compared with Safety Perception and Perceived Service Quality, the influence of Sustainability-Driven Brand Image remained relatively moderate. This indicates that sustainability-oriented branding alone may not be sufficient to maintain long-term customer satisfaction if operational service quality and transportation reliability are not consistently delivered.

This pattern may reflect the current stage of sustainable consumption behavior in Vietnam, where environmental awareness is gradually increasing while practical service expectations continue to dominate transportation-related decision-making. As electric mobility ecosystems such as VinFast and Green SM continue expanding and public discussions regarding sustainable transportation become more visible, environmentally friendly transportation services may increasingly be perceived as modern and future-oriented mobility solutions.

Finally, Customer Satisfaction demonstrated a strong positive influence on Customer Loyalty. This finding is consistent with the studies of Oliver (1999), Lim *et al.,* (2018), and Nguyen-Phuoc *et al.,* (2020), which identified customer satisfaction as a major predictor of long-term loyalty behavior within service industries and ride-hailing contexts.

The findings confirmed that satisfied customers were substantially more likely to continue using Green SM services, recommend the platform to others, and maintain favorable loyalty intentions. The result further reinforces the important mediating role of Customer Satisfaction within the proposed research framework.

At the same time, the results also suggest that customer loyalty within ride-hailing services cannot rely solely on short-term promotional campaigns or price competition. In Ho Chi Minh City's highly competitive ride-hailing market, where switching costs remain relatively low and customers can easily move between platforms such as Grab, Be, and Green SM, loyalty is more likely to develop when customers consistently perceive the service as safe, reliable, and aligned with their expectations.

Overall, these outcomes support that Green SM's long-term competitive advantage may depend on its ability to balance sustainability-oriented brand positioning with strong operational performance and transportation safety. While sustainability- related branding contributes positively to customer evaluations, customers continue prioritizing practical transportation experiences and consistent service reliability when forming long-term loyalty intentions toward ride-hailing platforms.

Theoretical contributions

Existing studies on ride-hailing services consistently demonstrate that customer loyalty is shaped by a combination of functional service-related factors and customers' psychological evaluations of service experiences. Previous research has frequently identified perceived service quality, convenience, promotional benefits, pricing, and platform usability as important determinants of customer satisfaction and loyalty within ride-hailing contexts (Nguyen-Phuoc *et al.,* 2020; Assegaff & Pranoto, 2020). In highly competitive ride-hailing markets where switching costs remain relatively low, customers tend to continue using a platform only when their service experiences consistently meet or exceed expectations.

Among the identified determinants, perceived service quality has been repeatedly recognized as one of the strongest predictors of customer satisfaction and loyalty intentions. Studies conducted in both Vietnamese and international ride-hailing contexts suggest that customers place significant importance on driver professionalism, responsiveness, reliability, waiting time, and overall service consistency when evaluating transportation platforms. Positive service experiences contribute not only to repeated usage behavior but also to favorable attitudes and emotional attachment toward the platform (Lim *et al.,* 2018; Ricardianto *et al.,* 2024).

In addition to service quality, previous literature also emphasizes the important role of perceived safety in shaping customer evaluations. Because ride-hailing services involve direct interaction between passengers, drivers, and transportation environments, customers' sense of safety significantly affects their comfort and trust toward the platform. Empirical findings indicate that perceived safety positively influences both customer satisfaction and attitudinal loyalty, particularly in highly urbanized transportation environments where traffic-related risks are common (Ricardianto *et al.,* 2024). These findings suggest that safety perception functions not only as an operational factor but also as a psychological mechanism influencing long- term customer relationships.

At the same time, recent discussions within transportation and consumer behavior literature suggest that customer evaluations may increasingly extend beyond purely functional considerations. As environmental awareness and sustainable mobility discussions become more visible globally, sustainability-related perceptions are beginning to influence customer attitudes toward transportation services. Studies conducted within Vietnam indicate that perceived green value may positively shape customers' attitudes and behavioral intentions toward ride-hailing platforms (Pham *et al.,* 2024). However, existing findings remain relatively inconsistent because customers in emerging markets often continue prioritizing practical considerations such as convenience, affordability, and reliability over environmental concerns.

Furthermore, prior studies have mainly concentrated on conventional ride-hailing platforms and have paid limited attention to sustainability-oriented ride-hailing services such as electric mobility platforms. Sustainability-driven brand image has therefore remained relatively underexplored within current ride-hailing loyalty models. Most previous frameworks primarily focus on operational performance, pricing strategies, or promotional benefits while giving limited consideration to how sustainability-oriented positioning may contribute to customer satisfaction and long-term customer loyalty.

Another important implication emerging from previous studies is the mediating role of customer satisfaction. Existing research consistently demonstrates that customer satisfaction functions as a key

mechanism through which service-related perceptions influence loyalty behavior (Nguyen-Phuoc *et al.,* 2020; Ricardianto *et al.,* 2024). This supports the argument that customer loyalty is not formed solely through repeated transactional behavior, but also through customers' cognitive and emotional evaluations of their overall service experiences.

Based on these findings, the present study adopts the Stimulus–Organism– Response (SOR) framework to provide a more comprehensive explanation of customer loyalty formation toward Green SM in Ho Chi Minh City. Within the proposed framework, perceived service quality, safety perception, and sustainability-driven brand image are conceptualized as stimulus factors influencing customers' internal evaluations. Customer satisfaction represents the organism component reflecting customers' psychological responses toward the service experience, while customer loyalty represents the behavioral response. By integrating both functional service- related factors and sustainability-related perceptions within a single framework, the study aims to extend existing ride-hailing literature and provide deeper insights into customer loyalty formation in sustainable urban mobility services.

Practical implications

The findings of this study provide several important implications for Green SM and the broader ride-hailing industry in Vietnam.

First, transportation safety should remain a core strategic priority due to its strongest influence on Customer Satisfaction. Green SM should continue strengthening driver training systems, passenger protection policies, service monitoring technologies, 53 and vehicle maintenance standards to enhance customers' perceptions of transportation security and reliability. In increasingly congested urban environments such as Ho Chi Minh City, transportation safety may become one of the most important factors differentiating ride-hailing platforms beyond price competition alone.

Second, maintaining consistent service quality remains essential for strengthening customer satisfaction and reducing switching behavior toward competing platforms such as Grab and Be. Customers increasingly expect not only convenience and accessibility, but also stable service experiences, responsive support systems, transparent pricing, and reliable trip performance. Therefore, Green SM should continuously improve operational efficiency and customer experience management in order to maintain long-term competitiveness.

Third, the significant influence of Sustainability-Driven Brand Image indicates that environmentally responsible positioning may become an increasingly valuable competitive advantage within Vietnam's evolving transportation industry. As fuel prices continue fluctuating and public awareness regarding environmental issues gradually increases, electric ride-hailing services may gain stronger acceptance among urban consumers seeking more sustainable transportation alternatives.

The findings are particularly relevant within the context of Vietnam's ongoing transition toward greener mobility systems. The rapid expansion of electric mobility ecosystems through VinFast and Green SM reflects broader changes in transportation consumption patterns, where consumers increasingly associate electric transportation with innovation, modern lifestyles, and environmental responsibility. In addition, discussions surrounding cleaner fuel policies and sustainable transportation development may further strengthen public attention toward environmentally friendly mobility solutions in the coming years.

Finally, the strong relationship between Customer Satisfaction and Customer Loyalty suggests that long-term customer retention strategies should focus more on experience consistency rather than aggressive short-term promotions. In Vietnam's highly competitive ride-hailing market, where switching costs remain relatively low, companies that consistently deliver safe, reliable, and satisfying transportation experiences are more likely to strengthen long-term customer loyalty and sustainable competitive advantage.

CONCLUSION

This study was conducted to examine the factors influencing customer loyalty toward Green SM within the context of ride-hailing services in Ho Chi Minh City. Specifically, the research investigated the impacts of Perceived Service Quality, Safety Perception, and Sustainability-Driven Brand Image on Customer Satisfaction, as well as the influence of Customer Satisfaction on Customer Loyalty.

The empirical results confirmed that all proposed hypotheses were statistically supported. Among the examined variables, Safety Perception demonstrated the strongest influence on Customer Satisfaction. This relationship highlights the importance of transportation safety within Ho Chi Minh City's highly congested urban environment, where traffic density, accident risks, and concerns regarding driving behavior continue affecting customers' commuting experiences. The result suggests that customers prioritize feeling secure and comfortable during transportation usage before evaluating broader brand-related attributes.

The analysis also showed that Perceived Service Quality positively influenced Customer Satisfaction. Customers who perceived Green SM as reliable, responsive, and professionally managed were more likely to develop favorable evaluations toward the platform. This outcome is generally aligned with previous ride-hailing studies emphasizing the importance of operational efficiency, service consistency, and convenience in shaping customer behavior within app-based transportation services.

More importantly, Sustainability-Driven Brand Image significantly influenced Customer Satisfaction, indicating that environmentally responsible positioning positively contributes to customer evaluations toward Green SM. Compared with many earlier ride-hailing studies focusing mainly on pricing, convenience, and promotional activities, the current study provides additional evidence that sustainability-oriented brand perception is becoming increasingly relevant within Vietnam's urban transportation market.

However, the relatively moderate influence of Sustainability-Driven Brand Image compared with Safety Perception and Perceived Service Quality suggests that sustainability alone may not be sufficient to maintain long-term customer satisfaction if the platform fails to deliver reliable operational performance. This pattern reflects the current stage of sustainable consumption behavior in Vietnam, where environmental awareness is increasing while practical transportation expectations continue to dominate consumers' service evaluations.

Overall, the study highlights that Green SM's long-term competitive advantage may depend on its ability to simultaneously maintain transportation safety, operational service quality, and sustainability-oriented brand positioning. While sustainability contributes positively to customer evaluations, customers continue prioritizing practical transportation experiences and consistent service reliability when forming long-term loyalty intentions.

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