APPLYING CONTENT ANALYSIS METHOD TO EVALUATE CUSTOMER SATISFACTION WITH RIDE-SHARING SERVICES: EVIDENCE OF ENTERPRISES GRAB AND BE IN VIETNAM

**Nguyen Hong Quan*, Tran Dieu Linh, Bui Dieu Hang, Lai Quang Huy,
Dang Thuy Nguyet, Ngo Hai Yen**

Foreign Trade University, 91 Chua Lang, Dong Da District, Ha Noi, Vietnam

* Correspondence to Nguyen Hong Quan <quannh@ftu.edu.vn>

Abstract. The article aims to explore the factors affecting customer satisfaction using ride-sharing services, exemplifying two enterprises Grab and Be in Vietnam by using the content analysis method. Data was collected from 510 customers' feedback on two platforms: Google Play and Apple App Store. Then, the authors dealt with the data and built a scale corresponding to the content of customer feedback. The authors further employed the software SPSS 20 to validate and test the research hypotheses. The test results claim that all six main factors affect customer satisfaction: Service quality; Policy (of the company); Price Fairness; Promotions; Payment method and System quality. In addition, the demographic factor of gender also contributes to the difference in perceived satisfaction when customers experience ride-sharing services.

Key words: customer experience, customer satisfaction, ride-sharing services, sharing economy

1   Introduction

The sharing economy is defined as an economic model combining ownership and sharing [1], in which the role of the participants is peer-to-peer, based on the sharing of rights to use goods and services, thereby increasing the benefits of each party [2]. The sharing economy, also known as cooperative consumption, cooperative economy, or peer-to-peer economy... has existed for a long time in the world. Still, until 2014, thanks to the development of information technology - industrial revolution 4.0, the sharing economy has exploded in the Vietnamese market) [3]. Nowadays, the sharing economy has been applied in many different fields, including five key sharing industries (P2P finance, online staffing, P2P accommodation, ride-sharing, and music/ video streaming) that have the potential to generate $335 billion in worldwide revenue by 2025 [4]. Vietnam is known as one of the pioneers in ASEAN allowing ride-sharing services since 2014 [5], therefore, ride-sharing service stands out as a typical example that has developed rapidly [6]. The success of service hinges on the quality of the service platforms, which connect providers and customers of on-demand services and facilitate such transactions [7]. In the intensely competitive market, service providers offer diverse features that impact customer satisfaction [8].

Moreover, customers always tend to compare their favorite services with their expectations, so customer satisfaction is a research area of interest to many scholars worldwide. However, there are still gaps in previous studies. Firstly, studies on user behavior when using ride-sharing services mainly use the questionnaire method, which has limitations on user personal perception, or is impacted by external factors such as education, culture, age, or socioeconomic position [9]. Second, previous studies have only mentioned certain factors affecting customer satisfaction and behavior towards services, such as research by Nguyen Ngoc Duy Phuong et al. [10] or research on customer satisfaction with the taxi-hailing service of Duy Quy Nguyen-Phuoc et al. [11]. There are limited studies that synthesize different factors affecting customer satisfaction in the experience of ride-sharing services for both motorbikes and taxis by using content analysis. For that reason, this research was conducted to test customer satisfaction with the ride-sharing service in Vietnam experimentally. Through the content analysis method, the research used customer feedback for two technology ride-sharing applications that are currently leading the market in Vietnam: Grab (belonging to GrabTaxi Holdings Pte Ltd) accounted for 74.6% market share and Be (belonging to Be Group) accounted for 12.4% market share and ranked second [12]. The responses were collected and filtered on the two largest online app stores in Vietnam: Google Play (for websites) or CH Play (for mobile apps) for Android and App Store of iOS systems. The results of the research have shown that six elements of this service, including Service quality; Policy (of the firm); Price fairness; Sales Promotion; Payment method and System quality have impacts on customer satisfaction in ride-sharing service through two intermediate variables: perceived usefulness and perceived ease of use. This research will contribute to consolidating and adding new hypotheses to the research system related to ride-sharing services, especially this research has reference value for markets of developing economies like Vietnam. According to the research results, state management agencies, ride-sharing service providers and other related parties have a basis to come up with solutions to increase customer satisfaction from ride-sharing services, thereby helping to improve the ride-sharing model in particular as well as contributing to promoting the development of Vietnam's economy in general.

2   Theoretical framework and research model

2.1   Customer Satisfaction with Ride-sharing services

Customer satisfaction is defined as an individual's perception of whether they are satisfied or unsatisfied with a product or service [13]. Measuring customer satisfaction with transportation services is an advantage [14]. Service experiences, customer attitudes, and customer expectations are all drivers of how satisfied or disappointed consumers are with various services, and they all have a direct impact on repurchase behavior [15, 16]. Hence, determining customer satisfaction for ride-sharing services is critical, as customer satisfaction may explain consumers' demands and wants while also increasing market share from services delivered by a firm [17]. As a result,

customer satisfaction is defined in this study as an individual's view of ride-sharing services in Vietnam, whether satisfied or unsatisfied.

Ride-sharing service system has been expanded with the capabilities of the WoT (Web of Things), The WoT (Web of Things) and smartphone technology to create more convenient connection opportunities between drivers and users through smartphone applications [18]. Companies that develop mobile applications are being pressured to meet ever-increasing standards, such as quick time to market and excellent quality. Users also have more influence on apps because they can simply offer feedback on the product. As a result, feedback is an important source of product enhancement or customer satisfaction [19]. The content of feedback affects downloaded numbers: positive words often result in higher ratings, and vice versa.

2.2   Related theory models

The number of research about customer satisfaction with technology services is more and more popular; nevertheless, it is uncommon in terms of ride-sharing services in Viet Nam. Therefore, this research investigated based on three theories: TPB, TAM and SERVQUAL to bring out different views and opinions to clarify how customer satisfaction with ride-sharing services is formed.

(1) Theory of planned behavior - TPB was proposed by Ajzen and Fishbein to indicate how the behavior of individuals can change [20]. According to TPB (Ajzen), customer behavior is determined by three main factors: attitude (personal attitude toward the behavior), subjective norm (person's perception of social support), and perceived behavioral control (belief about the ability to perform the behavior) [21]. The TPB model is widely applied in several fields such as marketing, psychology, management, finance, etc. For example, in the case of enterprises Grab and Be in Viet Nam, customers' intention to use ride-sharing services is affected by attitude toward branding, evaluation of closed people or other customers on different platforms and affordability within control…

(2) Technology acceptance model - TAM was introduced by Davis in 1986 to clarify factors affecting the belief of customers towards a technology system [20]. TAM model is formed by two primary beliefs: Perceived Usefulness - PU (level of work efficiency when employing a technology system) and Perceived Ease of Use - PEU (expectation of potential customers to use the target system to be effortless) [22]. In the transportation sector like ride-sharing services, PU is considered as a group of factors including service quality, drivers, price, incentives and promotion, policy and PEU involves general determinants like payment method, user interface, stable operation, etc.

(3) Service Quality model - SERVQUAL was developed by Parasuraman et al. and it defined service quality as a level of customer's expectation about service and their perception of the quality [23]. SERVQUAL model is highly appreciated for its degree of reliability and accuracy in

many sectors and the model involves the five most significant components: reliability; responsiveness; assurance; empathy and tangibles [24]. For example, in shared transportation, customer experience would be improved if service quality met the requirements: the ability to provide an excessive number of drivers and vehicles 24/7; the Customer care department is always ready to respond and solve problems; Driver attitude; Level of safety each trip…

2.3   Research hypothesis and research model

Research hypothesis

As already defined in the previous part, this research uses 3 theories: Technology acceptance model - TAM, Theory of planned behavior - TPB, Service Quality model - SERVQUAL to define how customers' satisfaction is formed while using ride-sharing services. Afterwards, applying the content analysis method, we defined service quality, policy, price fairness, and sales promotion as four variables contributing to customers' perceived usefulness; diversity of payment methods and system quality as two variables contributing to customers' perceived ease of use. These are our research hypotheses related to the six mentioned variables.

The relationship between service quality and customer satisfaction has been mentioned in many studies [25–27]. If the customers have better experiences, they will be more satisfied with the service and the product [28]. In the transportation sector, the impact of service quality on customer satisfaction has been proven through a lot of research works [29–31]). The research has supposed that the customer would feel the most clearly about the service from the attitude, the manner of the driver and the quality of the vehicle, and the vehicles' quality. Therefore, these factors can increase the client's satisfaction while using this kind of service.

Hypothesis H1a: Service quality is positively correlated to customer satisfaction

The research also supposes that factors related to the Policy provided by the ride-sharing service businesses also determine customer satisfaction. Firstly, regarding policies related to customers, the research results of Wolfinbarger & Gilly [32], Liu X. et al. [33] demonstrated that customer service influences user satisfaction. Regarding the security of customer information when using the service, Elliot et al. [34], Szymanski et al. [35] also confirmed the influential relationship between customer information security and satisfaction with online purchases. Therefore, we also use studies in this e-commerce field to hypothesize about customer satisfaction when using ride-sharing services, according to which, customer satisfaction will increase if the customer perceives the safety of the customer's personal information protection policy. In addition, whether the driver is ready for the trip or not or whether the driver prefers short or long trips is also a decisive factor in customer satisfaction. These factors are included in the salary and remuneration policies for drivers of the sharing transport business. Therefore, the research assumes that customer satisfaction is also influenced by remuneration policies for drivers.

Hypothesis H1b: Policy is positively correlated to customer satisfaction

In this study, the price is defined as the fairness in price toward the consumers' feeling, or it means that the amount of money paid for service is worth it or not. In the retail sector, the research of Huddleston et al. [36] and Zeithaml and Bitner [37], both show the positive effect of price on customer satisfaction. As a result, this research decided to use this hypothesis to infer the similar one about the effect of reasonable prices on the satisfaction of customers when it comes to ride-sharing services.

Hypothesis H1c: Price Fairness is positively correlated to customer satisfaction.

Nowadays, global GDP continuously increases, which leads to a significant change in customer behavior. Consumers are willing to pay more for shopping and enjoying services; however, they also make a negotiation to reach a better deal. The relationship between promotions and customer satisfaction has been investigated in different situations, such as service and product [38]. Promotion campaigns and programs have a significant influence on the customer intention to use services and products, and the number of customer access [39].

Hypothesis H1d: Sales promotion is positively correlated to customer satisfaction.

A vital factor that directly increases the satisfaction level of customers is the fast, easy, convenient, secure and diverse payment method. Studies by Nhu, Uyen and Ngan [40], Guo, Ling and Liu [41] suggest that payment method has a significant impact and is positively correlated to online customer satisfaction. Although the research only mentioned the field of online shopping, we used this research to hypothesize that the same case happened to customers using transport services.

H2a hypothesis: Payment method is positively correlated to customer satisfaction.

Customer satisfaction with shared transportation services is also tied to the quality of the service provider's system design. Many studies have been conducted to determine the impact of software system quality. In the field of e-commerce, studies on the influence of website design on customer satisfaction can be mentioned, such as the studies of Cho et al. [42]; Lee et al. [43]; and Guo, Ling and Liu [41], which demonstrated that website design has a positive influence on both customer satisfaction and perceived service quality. Customization, user compatibility, software enhancement, software features [44], application compatibility with mobile phones, data quality, exchange speed, data security, data quality, and ease of use [45] are all factors that contribute to customer satisfaction.

H2b: System quality is positively correlated to customer satisfaction.

As a result, the research proposes a conceptual framework that reveals the correlations among seven constructs as follows:
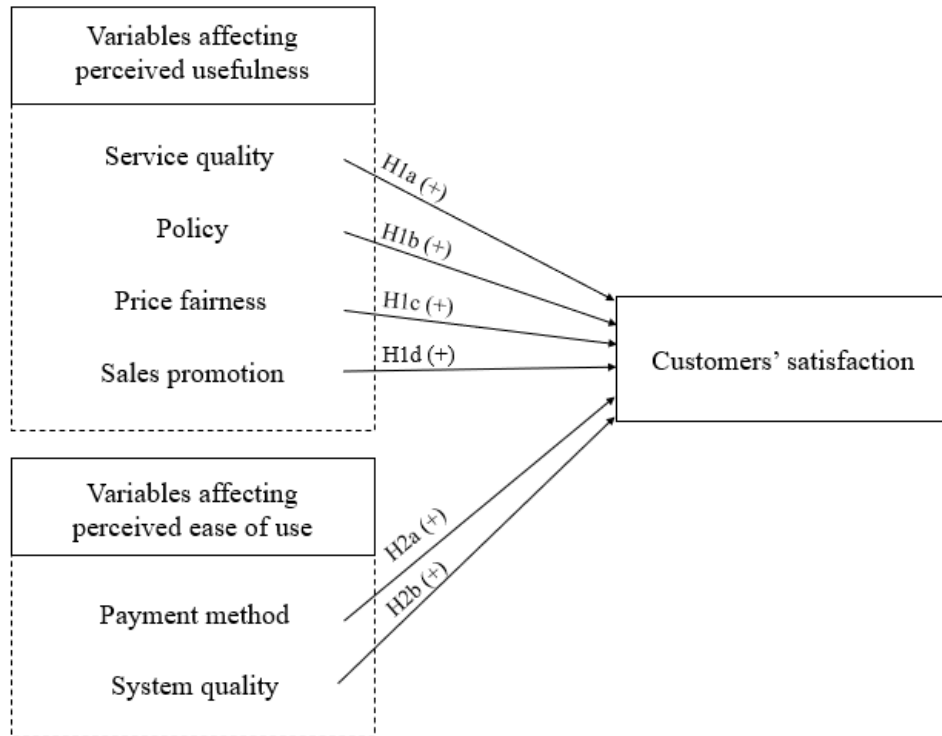
Figure 1. Conceptual framework of the study

Research model

We propose a standardized regression equation as below:

$$SATISFACTION = \beta_1\,SERVICE\ QUALITY + \beta_2\,POLICY + \beta_3\,PRICE\ FAIRNESS + \beta_4$$
$$PROMOTION + \beta_5\,PAYMENT + \beta_6\,SYSTEM\ QUALITY + \beta_7\,GENDER + \varepsilon \tag{1}$$

Where: The dependent variable of the model is SATISFACTION (customer satisfaction); The residual in the model is ε.

SERVICE QUALITY: Service quality is the quality of the customer's trip when using the ride-sharing service, which is assessed by several criteria such as driver's attitude, trip time, and trip safety.

POLICY: Customer's perception of customer care policies, driver treatment policies, and community policies.

PRICE FAIRNESS: Customers' perception of the reasonableness of service prices.

PROMOTION: Customer's perception of the company's promotion policy.

PAYMENT: Customers' perception of the convenience and variety of payment methods.

SYSTEM QUALITY: At each observation, the model quality is evaluated as the customer's perception of the in-app experience (interface, operation, sensitivity, application smoothness or convenience of the booking operation).

GENDER: The variable that controls the gender of the feedback giver is determined by the profile name and user avatar, assigned a value of 1 for the female gender and 0 for the male gender.

After sifting through customer feedback (selecting feedback with the most upvotes, with the most factors to be evaluated), we have chosen 510 high-quality feedback to conduct content analysis for the research paper.

3   Methodology and dataset

3.1   Methodology

For the data of customer feedback used in this research, we use the content analysis method to adjust the model and build a suitable scale measurement for the data. Several studies were conducted that apply this method to access qualitative data such as ZhengXiang & et al. [46] analyzed customer feedbacks on Expedia.com to understand hotel guest experience and its association with satisfaction. Similarly, in Viet Nam, there are several studies which used the content analysis method; specifically, the research about the customer experience at Nikko Hotel written by Hien, Thuy and Quan [47]. In this research, two authors analyzed customers' feedback on booking websites: www.tripadvisor.com.vn, www.agoda.com and www.booking.com. Besides, in terms of the ride-sharing sector, Eddy Yunus et al. [48], through the interaction of consumers in Grab's posts on social networks, synthesized data into tables and studied the influence of marketing on different platforms. Following the success of previous research, the research team chose to apply the content analysis method; the sample sizes are carried out by users of ride-sharing services from two platforms (Apple and Google Play) on smartphones.

First and foremost, the research team looked through the customer responses and synthesized data. The contents of the responses are about customer experiences and contribution ideas (both positive and negative ideas) about the service quality of services Grab and Be in Viet Nam. In the next steps, the research team built a scale corresponding to the content of customer feedback and the reinforcement of experts in the fields of transportation. The last step is to run the regression model to test the hypothesis about the factors affecting customer satisfaction using ride-sharing services in Vietnam.

3.2   Dataset

We used the content analysis method to filter and score the factors mentioned in the customer feedback about the two share-riding apps, Grab and Be in the Vietnamese market on Google Play

Store and Apple App Store, whose feedback mainly comes from domestic customers and a few from foreign tourists. Up to now, a total of 8,626,999 customer feedbacks about Grab and Be's services have been posted on the two platforms Google Play Store and Apple App Store, which were posted publicly by customers. Hence, raw data obtained from Google Play Store and Apple App Store gives our research a high level of confidence. All 510 feedbacks have been posted from 2019 to the present, in which 239 feedbacks for Be app and 271 feedbacks for Grab app. Afterwards, all 510 feedbacks were analyzed by the research team to look for keywords that show the satisfaction level of about five independent variables (SERVICE QUALITY, POLICY, PRICE FAIRNESS, PROMOTION, PAYMENT, SYSTEM QUALITY) of customers. With all the keywords found using content analysis methods, following the research of Hien, Thuy and Quan (2019) [47]**,** Staple scale (-1 to 1) and Likert scale (1 to 5) were also alternatively applied to transform these keywords into numbers (except our dummy variable GENDER). In this research, some minor modifications were made to Staple scaling method to perform better the effect of independent variables on dependent variable SATISFACTION:

To be more particular, this is how we scaled the variables:

● Score level -1: Applied to variables associated with keywords that show customer dissatisfaction: *poor, slow, error, can't log in, can't register, bad attitude, expensive, disappointed, not satisfied.*

● Score level 0: Applied when the customer does not mention any negative elements in the feedback with a low star level (1, 2, 3 stars / 5 stars).

● Score level 0.25: Applied when the customer does not directly mention the positive element in the feedback with a high star level (4 stars, 5 stars).

● Score level 0.5: Applied with the variables associated with the keywords that show medium customer satisfaction: *good, nice, friendly, affordable, cheap, satisfied, pretty good.*

● Score level 1: Applied with variables associated with keywords that show high customer satisfaction: very good, extremely friendly, very satisfied, many promotions, super cheap, super convenient.

The dependent variable is customer satisfaction, which is scored on a Likert 5 scale (1-5), equal to the star level (1-5 stars) given by customers themselves when posting feedback on two platforms.

The control variable of the model is the sex variable (GENDER), to which we assign the value 1 for females, 0 for males.

4   Research results

4.1   Sample Descriptive Statistics

The sample descriptive statistics table shows that the 510 collected feedback gives the average value of satisfaction is 3.903922 stars/ 5 stars, and the standard deviation variable is 1.595852. Furthermore, the findings of the sample descriptive statistics table demonstrate that, of the six criteria determining customer happiness, customers evaluate Grab and Be's service quality (variable SERVICE QUALITY) as the best (average 0.3843137 points), followed by promotion policies (average 0.3715686 points). This result also reveals that users evaluate Be and Grab's system quality (variable SYSTEM QUALITY) as the lowest of the five variables (average 0.1857843 points).

The sample descriptive statistics table shows that the 510 collected feedback gives the average value of satisfaction is 3.903922 stars/ 5 stars, the standard deviation variable is 1.595852. Furthermore, the findings of the sample descriptive statistics table demonstrate that, of the six criteria determining customer happiness, customers evaluate Grab and Be's service quality (variable SERVICE QUALITY) as the best (average 0.3843137 points), followed by promotion policies (average 0.3715686 points). This result also reveals that users evaluate Be and Grab's system quality (variable SYSTEM QUALITY) as the lowest of the five variables (average 0.1857843 points).

Table 1. Sample Descriptive Statistics

Variable	Mean	Standard Deviation (std. de)	Min	Max
SATISFACTION	3.903922	1.595852	1	5
SERVICE QUALITY	0.3843137	0.5924782	-1	1
POLICY	0.268664	0.5935143	-1	1
PRICE FAIRNESS	0.3588235	0.4610791	-1	1
PROMOTION	0.3715686	0.3957355	-1	1
PAYMENT	0.1892157	0.3627842	-1	1
SYSTEM QUALITY	0.1857843	0.6403422	-1	1
GENDER	0.48	0.5	0	1

Source: Quantitative Research Results

4.2   Correlation analysis

The Pearson correlation matrix table reveals that the Sig value (correlation significance level) between the variables is zero, and the independent variables have a strong correlation with the dependent variable SATISFACTION, indicating that the independent variables are all equal. The dependent variable and the independent variable have a linear relationship. Aside from that, the correlation matrix table reveals that certain dependent variables have a linear relationship with one another. Variable PROMOTION and variable PRICE FAIRNESS have a correlation coefficient of 0.699, while variable POLICY and variable SERVICE QUALITY have a correlation coefficient of 0.656, indicating that policies toward drivers (as well as other issues such as customer care or policies with the community) have a direct impact on the customer experience with that ride-sharing service.

Table 2. Pearson correlation matrix

		SERVICE QUALITY	POLICY	PRICE FAIRNESS	PROMO-TION	PAYME-NT	SYSTEM QUALITY	GENDE-R	SATISFA-CTION
SERVICE QUALITY	Pearson Corr.	1	0.656	0.499	0.458	0.371	0.392	0.071	0.727
	Sig (2-tailed)		0	0	0	0	0	0.109	0
	N	510	510	510	510	510	510	510	510
POLICY	Pearson Corr.	0.656	1	0.505	0.507	0.466	0.47	0.071	0.769
	Sig (2-tailed)	0		0	0	0	0	0.11	0
	N	510	510	510	510	510	510	510	510
PRICE FAIRNESS	Pearson Corr.	0.499	0.505	1	0.699	0.378	0.375	0.025	0.608
	Sig (2-tailed)	0	0		0	0	0	0.572	0
	N	510	510	510	510	510	510	510	510
PROMOTION	Pearson Corr.	0.458	0.507	0.699	1	0.398	0.446	0.026	0.612
	Sig (2-tailed)	0	0	0		0	0	0.563	0
	N	510	510	510	510	510	510	510	510
PAYMENT	Pearson Corr.	0.371	0.466	0.378	0.398	1	0.487	0.055	0.557
	Sig (2-tailed)	0	0	0	0		0	0.215	0
	N	510	510	510	510	510	510	510	510
SYSTEM QUALITY	Pearson Corr.	0.392	0.47	0.375	0.446	0.487	1	0.052	0.675

		SERVICE QUALITY	POLICY	PRICE FAIRNESS	PROMO-TION	PAYME-NT	SYSTEM QUALITY	GENDE-R	SATISFA-CTION
	Sig (2-tailed)	0	0	0	0	0		0.244	0
	N	510	510	510	510	510	510	510	510
GENDER	Pearson Corr.	0.071	0.071	0.025	0.026	0.055	0.052	1	0.109
	Sig (2-tailed)	0.109	0.11	0.572	0.563	0.215	0.244		0.013
	N	510	510	510	510	510	510	510	510
SATISFACTI ON	Pearson Corr.	0.727	0.769	0.608	0.612	0.557	0.675	0.109	1
	Sig (2-tailed)	0	0	0	0	0	0	0.013	
	N	510	510	510	510	510	510	510	510

Source: Quantitative Research Results

4.3   Evaluate and test the suitability of the research model

The R-squared = 0.811 (81.1%) result in the evaluation results table shows that the independent variables explain 81.1 percent of the variance of the dependent variable in our model, while the remaining 18.9 percent is explained by variables not included in the model or residuals. Furthermore, the model's standardized residual (Adjusted R-squared) is > 0.5 (= 0.808), indicating that the model may be used in practice. The fit of our model is further supported by the Durbin-Watson coefficient (=1.714, less than 2.5, higher than 1.5) and the Sig values in the ANOVA test (=0).

4.4   Some other statistical assumptions

Multicollinearity problem

The above results show that all the VIF coefficients of variance are < 10, as well as the correlation coefficients between the independent variables from the Pearson correlation matrix table are < 1, showing that our model does not encounter any problems of multicollinearity, which ensures the accuracy of statistical testing hypotheses.

Table 3. Evaluation of the suitability of the model

Model	R-squared	Adjusted R-squared	Durbin-Watson
1	0.811	0.808	1.714

Source: Quantitative Research Results

Table 4. Variance inflation factor VIF

Variables	VIF
SERVICE QUALITY	1.895
POLICY	2.143
PRICE FAIRNESS	2.159
PROMOTION	2.19
PAYMENT	1.482
SYSTEM QUALITY	1.535
GENDER	1.008

Source: Quantitative Research Results

The problem of the normal distribution of residuals when running a regression model

The standardized residuals plot for the model reveals a very equal range of residual values ranging from -2 to 2. A distribution curve is also included in the histogram. This curve is bell-shaped and follows the normal distribution's form. It can be concluded from these results, as well as the mean and standard deviation statistics (Mean = 6.23E-16; Std.dev = 0.993), that our regression model does not violate the hypothesis.
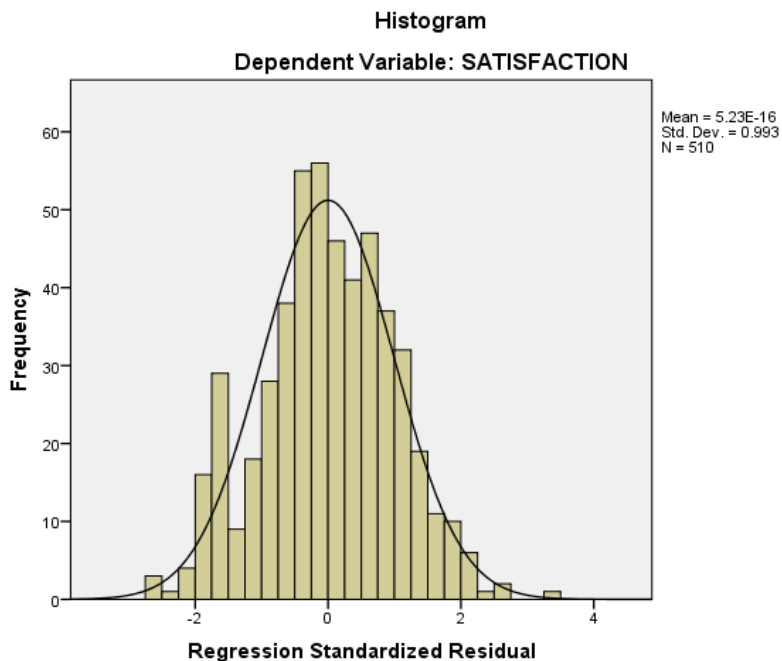

Figure 2. Regression Standardized Residual

Source: Quantitative Research Results

4.5   Results of regression

We conclude that all of the independent variables (SERVICE QUALITY, POLICY, PRICE FAIRNESS, PROMOTION, PAYMENT, SYSTEM QUALITY) are statistically significant for the dependent variable SATISFACTION when the Sig coefficients of all variables are approximately equal to 0 (PROMOTION variable has Sig equal to 0.004, the rest have Sig equal to 0, all are less than 0.05). Furthermore, the positive Beta values (and also the normalized Beta) suggest a positive relationship between the independent factors and the dependent variable, leading to the acceptance of our six statistical hypotheses favorable. Furthermore, the control variable GENDER still has correlation coefficients, as seen by the Beta value (0.043) and the sig value (0.029 < 0.05).

With the normalized Beta values obtained, we give the normalized regression model as follows:

$$SATISFACTION = 0.285*SERVICE\ QUALITY + 0.299*POLICY + 0.109*PRICE\ FAIRNESS + 0.084*PROMOTION + 0.09*PAYMENT + 0.298*SYSTEM\ QUALITY + 0.043*GENDER + \varepsilon. \tag{2}$$

From the normalized regression equation, we find that the factors related to policy and system quality have the strongest impact on customer satisfaction when using the ride-sharing service, right behind is the quality of service. The remaining three factors (price, promotion and payment method) have less influence on customer satisfaction. The control variable GENDER has the lowest influence on SATISFACTION.

Table 5. Regression Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.854	0.053		53.774	0
SERVICE QUALITY	0.768	0.072	0.285	10.65	0
POLICY	0.804	0.077	0.299	10.503	0
PRICE FAIRNESS	0.376	0.099	0.109	3.802	0
GENDER	0.136	0.062	0.043	2.189	0.029
PROMOTION	0.339	0.116	0.084	2.92	0.004
PAYMENT	0.397	0.104	0.09	3.813	0
SYSTEM QUALITY	0.744	0.06	0.298	12.399	0

Source: Quantitative Research Results

5   Conclusion and Discussion

5.1   Conclusion

The study has demonstrated a group of factors including Service quality; Policy (of the company); Price Policy; Promotions; Payment method and System quality which affect customer satisfaction when using ride-sharing services. In which, factors related to policy and system quality have the most substantial impact on customer satisfaction when using ride-sharing services, followed by service quality. This is different from previous studies because most researchers in the field of ride-sharing services pay little attention to policy factors; however, through research, collection, analysis, and evaluation of the data, the research found that this is the first factor that customers care about when considering satisfaction. In the two factors of system quality and service quality, the research has demonstrated that system quality has a greater influence on satisfaction than service quality. This result is similar to the Duy Phuong's et al. [10] but in contrast to the results of Nguyen-Phuoc et al. [11]. In addition, the research also showed that promotional factors have the least influence on consumer satisfaction, similar to the study of Nguyen-Phuoc et al. [11], Wen et al. [49], Lai and Chen [50].

5.2   Discussion

From our research results, the research team concluded that among 6 variables, the three most important factors that providers need to improve to enhance their customers' satisfaction are policy, system quality and service quality.

Firstly, regarding policy, ride-sharing providers need to frequently update the drivers' demand about their preferred time slot, ride distance and unpreferred destinations to reduce ride cancelling from drivers to avoid customer irritation. Besides, ride-sharing businesses also need to strengthen their customer care policy by having a conscientious, thorough and thoughtful group of customer care staff; customer privacy and security also need to be guaranteed to ensure that their customers can use the service without the risk of stealing personal information.

Secondly, service providers need to optimize their system quality by improving factors like system GPS, ease of use, navigation, app accessibility, compatibility and quality of information that is provided by their system.

Thirdly, service providers need to guarantee high-quality service to enhance their customers' satisfaction. Training about traffic law, driving skills and driver attitude need to be included in the requirements for drivers. Our research also shows that the quality of vehicles also contributes to the satisfaction of customers. Drivers' vehicles should be carefully checked in the driver recruiting process; further policies are also needed to reduce discomfort in the vehicles, especially for cars, such as prohibiting smoking in the vehicles to ensure the satisfaction of customers.

Besides the contributions, due to limited time and resources, the research paper still has some shortcomings, specifically as follows:

(1) About the research space: The research data on the app stores are primarily Vietnamese, the results are not for reference and comparison with other countries. In the future, if it is possible to expand the scope of the study, it is possible to refer to data sets from app stores of different countries to compare groups of factors.

(2) About the research object: Due to the privacy policy of user information, when using the content analysis method in this research, there have not been enough favorable conditions to analyze in-depth the influence of human factors. Demographics such as gender, age, occupation, nationality, etc., to the research subjects. In addition, due to the complicated situation of the Covid-19 pandemic during the research period, conducting in-depth interviews also faced many difficulties. However, the appropriateness of the survey sample has been considered by ensuring that the invited experts have extensive experience as well as extensive knowledge about the sharing economy model in Vietnam in general and the shared transport model in particular.

(3) About the research model: In addition to the factors mentioned, there are still other factors that can affect customer satisfaction when using the ride-sharing service, such as the group of factors on the perceived risk.

These limitations provide some interesting ideas for further research to gain better insight.

References

1. Lessig, L. (2008), *Remix: Making art and commerce thrive in the hybrid economy*, Penguin.

2. Hamari, J., Sjöklint, M., & Ukkonen, A. (2016), The sharing economy: Why people participate in collaborative consumption, *Journal of the association for information science and technology*, 67(9), 2047–2059.

3. Ministry of Planning and Investing of The Socialist Republic Vietnam (2020), impact assessment of various types of sharing economy to Vietnam economy, *Hanoi: Ministry of Planning and Investing.*

4. Vaughan, R., & Hawksworth, J. (2014), The sharing economy: How will it disrupt your business. *Megatrends: The collisions. PwC Presentation*.

5. H. V. Cuong (2020), *Sharing Economy: Situation and Solutions*, [Online]. Available: https://vjst.vn/vn/tintuc/2686/kinh-te-chia-se--thuc-trang-va-giaiphap.aspx. [Accessed 20 2 2022].

6. Statista (2021), *Ride-hailing market in Vietnam*, [Online]. Available: https://www.statista.com/topics/8081/ride-hailing-market-in-vietnam/#topicHeader__wrapper.

7. Lee, Z. W., Chan, T. K., Balaji, M. S., & Chong, A. Y. L. (2018), Why people participate in the sharing economy: An empirical investigation of Uber, *Internet Research*.

8. Sharma, K., & Das, S. (2017), Service quality and customer satisfaction-with special focus on the online cab industry in India, *International Journal of Business and Management*, 12(7), 192–200.

9. Hyman Jr, I. E., Husband, T. H., & Billings, F. J. (1995), False memories of childhood experiences, *Applied cognitive psychology*, 9(3), 181–197.

10. Phuong, N. N. D., & Dai Trang, T. T. (2018), Repurchase intention: The effect of service quality, system quality, information quality, and customer satisfaction as mediating role: A PLS approach of m-commerce ride hailing service in Vietnam, *Marketing and Branding Research*, 5(2), 78.

11. Nguyen-Phuoc, D. Q., Su, D. N., Tran, P. T. K., Le, D. T. T., & Johnson, L. W. (2020), Factors influencing customer's loyalty towards ride-hailing taxi services –A case study of Vietnam, *Transportation Research Part A: Policy and Practice*, 134, 96–112.

12. Abiresearch.com (2020) , *Will be the Year of Cooperative Mobility via the Connected Car*. [Online]. Available: https://www.abiresearch.com/press/2020-will-be-year-cooperative-mobility-connected-car. [Accessed 23 2 2022].

13. Kotler, P., & Keller, K. L. (2006), Marketing management 12e, *New Jersey*, 143.

14. Pan, J., Yang, Y., Li, J., Wang, F., Abdullah, Y., & Xu, L. (2020), Control of high-performance drive feeding by four-level hybrid clamped converter for transportation electrification, *IEEE Transactions on Transportation Electrification*, 6(2), 568–577.

15. Ahmad, I., & Ahmad, S. B. (2019), The mediation effect of strategic planning on the relationship between business skills and firm's performance: Evidence from medium enterprises in Punjab, Pakistan, *Opción: Revista de Ciencias Humanas y Sociales*, (24), 746–778.

16. Nadeem, M. A., Qamar, M. A. J., Nazir, M. S., Ahmad, I., Timoshin, A., & Shehzad, K. (2020), How investors attitudes shape stock market participation in the presence of financial self-efficacy, *Frontiers in Psychology*, 11, 2286.

17. Samengon, H., Hashim, N. A. A. N., Nawi, N. M. M., Ahmad, G., Awang, Z., Yusoff, A. M., ... & Simpong, D. B. (2020), Factors Affecting Turnover Intention of Three-Star Hotel Industry in Malaysia, *TEST Engineering and Management*.

18. Chan, N. D., & Shaheen, S. A. (2012), Ridesharing in North America: Past, present, and future. *Transport reviews*, 32(1), 93–112.

19. Scherr, S. A., Elberzhager, F., & Meyer, S. (2019), Listen to your users–quality improvement of mobile apps through lightweight feedback analyses, *International Conference on Software Quality* (45–56), Springer, Cham.

20. Lai, P. C. (2017). The literature review of technology adoption models and theories for the novelty technology, *JISTEM-Journal of Information Systems and Technology Management*, 14, 21–38.

21. Liao, C., Chen, J. L., & Yen, D. C. (2007), Theory of planning behavior (TPB) and customer satisfaction in the continued use of e-service: An integrated model, *Computers in human behavior*, 23(6), 2804–2822.

22. Wixom, B. H., & Todd, P. A. (2005), A theoretical integration of user satisfaction and technology acceptance, *Information systems research*, 16(1), 85–102.

23. Buttle, F. (1996), SERVQUAL: Review, critique, research agenda, *European Journal of marketing*.

24. Haywood-Farmer, J. (1988), A conceptual model of service quality, *International journal of operations & production management*, 8(6), 19–29.

25. Negi, R. (2009), Determining customer satisfaction through perceived service quality: A study of Ethiopian mobile users, *International journal of mobile marketing*, 4(1).

26. Chumpitaz, R., & Swaen, V. (2002, May), Service quality and brand loyalty relationships: Investigating the mediating effect of customer satisfaction, *31st European marketing academy conference, Braga, Portugal* (1–7).

27. Wang, Y. H. (2017), Expectation, Service Quality, Satisfaction, and Behavioral Intention-Evidence from Taiwan's Medical Tourism Industry, *Advances in Management and Applied Economics*, 7(1), 1.

28. Saravanan, R., & Rao, K. S. P. (2007), Measurement of service quality from the customer's perspective–an empirical study, *Total Quality Management and Business Excellence*, 18(4), 435–449.

29. Chen, C. F. (2008), Investigating structural relationships between service quality, perceived value, satisfaction, and behavioral intentions for air passengers: Evidence from Taiwan. *Transportation Research Part A: Policy and Practice*, 42(4), 709–717.

30. Sumaedi, S., Bakti, I. G. M. Y., & Yarmen, M. (2012), The empirical study of public transport passengers' behavioral intentions: The roles of service quality, perceived sacrifice, perceived value, and satisfaction (case study: paratransit passengers in Jakarta, Indonesia), *International Journal for Traffic & Transport Engineering*, 2(1).

31. Wen, C. H., Lan, L. W., & Cheng, H. L. (2005), Structural equation modeling to determine passenger loyalty toward intercity bus services, *Transportation Research Record*, 1927(1), 249–255.

32. Wolfinbarger, M., & Gilly, M. C. (2003), eTailQ: Dimensionalizing, measuring and predicting etail quality, *Journal of retailing*, 79(3), 183–198.

33. Liu, X., He, M., Gao, F., & Xie, P. (2008), An empirical study of online shopping customer satisfaction in China: a holistic perspective, *International Journal of Retail & Distribution Management*.

34. Elliot, S., & Fowell, S. (2000), Expectations versus reality: A snapshot of consumer experiences with Internet retailing, *International journal of information management*, 20(5), 323–336.

35. Szymanski, D. M., & Hise, R. T. (2000), E-satisfaction: An initial examination. *Journal of retailing*, 76(3), 309–322.

36. Wilson, A., Zeithaml, V., Bitner, M. J., & Gremler, D. (2016), *EBOOK: Services Marketing: Integrating Customer Focus Across the Firm*, McGraw Hill.

37. Nawaz, A. (2018), Impact of products, promotion and after sale services on satisfaction of PTCL's (Pakistan Telecommunication Company Ltd.) Customers, *Review of Public Administration and Management*, 6(1), 1–14.

38. Zhang, L. X., & Tang, S. L. (2010), An empirical study on impact of sales promotion on brand loyalty of service enterprise, *2010 International Conference on Management and Service Science* (1–3).

39. Lin, Y. J. (2009), An integrated vendor–buyer inventory model with backorder price discount and effective investment to reduce ordering cost, *Computers & Industrial Engineering*, 56(4), 1597–1606.

40. Nh, N. T., Uyen, N. T., & Ngan, Đ. T. K. (2017), Factors affecting customer satisfaction when shopping online: A study in Kon Tum city, *Journal of Science and Technology-The University of Danang*, 69–73.

41. Guo, X., Ling, K. C., & Liu, M. (2012), Evaluating factors influencing consumer satisfaction towards online shopping in China, *Asian Social Science*, 8(13), 40.

42. Cho, N., & Park, S. (2001), Development of electronic commerce user-consumer satisfaction index (ECUSI) for Internet shopping, *Industrial Management & Data Systems*.

43. Cheung, C. M., & Lee, M. K. (2005, August). Consumer satisfaction with internet shopping: A research framework and propositions for future research. In *Proceedings of the 7th international conference on Electronic commerce* (327–334).

44. Srinivasan, S. S., Anderson, R., & Ponnavolu, K. (2002), Customer loyalty in e-commerce: An exploration of its antecedents and consequences, *Journal of retailing*, 78(1), 41–50.

45. Shih, Y. Y., & Fang, K. (2006), Effects of network quality attributes on customer adoption intentions of internet banking. *Total Quality Management & Business Excellence*, 17(1), 61–77.

46. Xiang, Z., Schwartz, Z., Gerdes Jr, J. H., & Uysal, M. (2015), What can big data and text analytics tell us about hotel guest experience and satisfaction?, *International Journal of Hospitality Management*, 44, 120–130.

47. Hien, T. T., Thuy, N. T., & Quan, N. H. (2019), Customer experience, perceived value and satisfaction. *Journal of Economics and Development*, 266, 53–62.

48. Yunus, E., Susilo, D., Riyadi, S., Indrasari, M., & Putranto, T. D. (2019), The effectiveness marketing strategy for ride-sharing transportation: Intersecting social media, technology, and innovation, *Entrepreneurship and Sustainability Issues*, 7(2), 1424.

49. Lai, W. T., & Chen, C. F. (2011), Behavioral intentions of public transit passengers—The roles of service quality, perceived value, satisfaction and involvement, *Transport policy*, 18(2), 318–325.

50. Van Lierop, D., Badami, M. G., & El-Geneidy, A. M. (2018), What influences satisfaction and loyalty in public transport? A review of the literature, *Transport Reviews*, 38(1), 52–72.