

SERVICE QUALITY ANALYSIS OF CAMPUS-BASED MOTORCYCLE TAXI (GOPUS): AN INTEGRATED SERVQUAL–IPA–PGCV APPROACH

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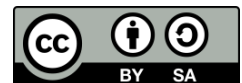
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ABSTRACT

This study evaluates the service quality of GOPUS, an informal, WhatsApp-based campus ride-hailing service at UINSU, Indonesia. Using a quantitative approach, data were collected from 100 student respondents via Likert-scale questionnaires assessing expectations and perceptions across five SERVQUAL dimensions. After validity and reliability screening, 16 items remained for analysis. The SERVQUAL gap analysis, Importance-Performance Analysis (IPA), and Potential Gain in Customer Value (PGCV) index were applied to identify improvement priorities. Results reveal a negative service gap across key attributes, with five indicators falling into IPA Quadrant I (Concentrate Here). PGCV prioritizes driver service satisfaction ($PGCV = 5.95$) and training ($PGCV = 3.75$) for immediate intervention. The findings provide actionable recommendations for enhancing operational standards, safety, and user satisfaction in informal campus transport systems.

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1. INTRODUCTION

Nowadays, there are many people who prefer to use online transportation services that can reach them quickly, for instance, Gojek, In-drive, Grab, etc. Online transportation services offer a wide range of services, such as passenger pick-up and drop-off, food ordering, and package delivery, all accessible through online motorcycle taxi platforms. The widespread presence of online motorcycle taxis in Indonesian society has significantly facilitated

daily activities, reaching nearly all regions. Their rapid development began with the establishment of Gojek Indonesia in 2011 by Nadiem [1]. As Rozi explains, online motorcycle taxis function as a public transportation system similar to conventional motorcycle taxis, but they are distinguished by their integration of digital technology, making them a more modern and efficient alternative [2].

The presence of online motorcycle taxis around the Universitas Islam Negeri Sumatera Utara (UINSU) reflects the high demand among students. This demand encouraged one of the UINSU students to establish an online motorcycle taxi platform called GOPUS [3]. Unlike mainstream services, Gopus relies solely on chat applications such as WhatsApp to attract customers and promote its services, which makes it relatively unfamiliar to the wider community [4]. To improve service quality and expand its customer base, the development of a dedicated application, similar to other established online motorcycle taxi platforms, is necessary [5].

Customer satisfaction is a clear indicator of the quality of a company's products and services, as higher quality contributes to greater satisfaction. To ensure successful operations and foster long-term customer relationships, prioritizing customer satisfaction is essential [6]. Customer satisfaction is closely linked to the quality of service provided, which plays a central role in business strategy [7],[8]. Service quality strongly influences consumer decision-making when choosing between competing products and services. Thus, quality must be embedded as a defining characteristic of every product or service, as it determines the extent to which consumer needs are effectively met [9].

One way the company can enhance its performance is by improving service quality. This issue can be systematically assessed using the Servqual (Service Quality) model proposed by Zeithaml et al in 1988 to measure the performance of campus online motorcycle taxi services (GOPUS) based on service users [10]. Servqual measures service quality across specific dimensions to identify gap values between expectations and perceptions. The framework highlights five critical issues: knowledge gap, standards gap, delivery gap, communications gap, and service gap. As such, the Servqual method provides an appropriate and reliable model for measuring service quality [11]. Important Performance Analysis (IPA) measures improvements in a service aspect as seen based on quadrant location. The four quadrants are: top priority (Quadrant 1), maintain quality (Quadrant 2), low priority (Quadrant 3), and finally, excessive quality (Quadrant 4) [2]. After the IPA method provides a qualitative visualization of the attributes that need attention, a quantitative approach is then carried out using the Potential Gain In Customer Value (PGCV) method to determine the potential to be gained from improvements [12].

By using the Servqual, Importance Performance Analysis (IPA), and Potential Gain In Customer Value (PGCV) methods, this study will focus on "Analysis of Campus Online Motorcycle Taxi Service Quality (GOPUS) Using the Servqual, Importance Performance Analysis (IPA), and Potential Gain In Customer Value (PGCV) Methods" which aims to improve the quality of campus online motorcycle taxi customer service.

2. RESEARCH METHOD

This study adopted a quantitative research approach, which aims to develop and apply mathematical models, theories, or hypotheses to explain natural phenomena. The primary data were collected directly from study subjects through observation and interviews, with online questionnaires serving as the main data collection instrument. The population consisted of students who use campus-based online motorcycle taxi services (Gopus). The questionnaire assessed two aspects: performance perceptions and expectations, using a five-point Likert scale. The research process involved designing the questionnaire, distributing it, and collecting responses, followed by validity and reliability testing to ensure data accuracy. Once the data were confirmed valid and reliable, analyses were conducted using the SERVQUAL method to identify service quality gaps, the Importance-Performance Analysis (IPA) method to evaluate service attributes, and the PGCV index to determine improvement priorities. The research stages are summarized in Figure 1.

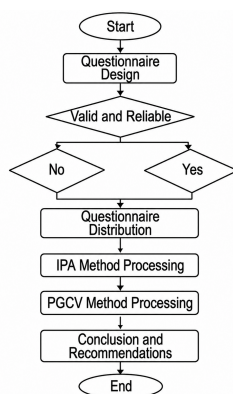


Figure 1: Research flowchart illustrating data collection and analysis stages

2.1 Population and Sample

The target population comprises UINSU students who have used GOPUS at least once. Purposive sampling was applied to select respondents meeting the usage criterion. The sample size was determined using Slovin's formula to ensure statistical adequacy:

$$n = \frac{N}{1 + Ne^2}$$

where n is the sample size, N is the population size, and e is the margin of error (0.10). Based on the calculated requirement, 100 respondents were targeted to maintain a 10% error tolerance and ensure representativeness within the campus user base.

2.2 Data Collection Technique

The questionnaire comprises 21 paired items covering expectations and perceptions across five dimensions: Reliability ($X1$), Assurance ($X2$), Responsiveness ($X3$), Empathy ($X4$), and Tangibles ($X5$). Items were adapted from established SERVQUAL literature and contextualized for campus ride-hailing operations. Table 1 outlines the operational variables.

Table 1: Research Variables and Indicators

Dimension	Code	Indicator
Reliability ($X1$)	X1.1	Fare matches service quality
	X1.2	Drivers are trained in safe motorcycle operation
	X1.3	Drivers deliver passengers accurately and safely
	X1.4	Drivers pick up passengers on time
Assurance ($X2$)	X2.1	Passengers feel safe using GOPUS
	X2.2	Satisfaction with driver service quality
	X2.3	Pricing is more affordable than competitors
Responsiveness ($X3$)	X3.1	Drivers respond quickly to booking requests
	X3.2	Drivers demonstrate sincerity in service delivery
	X3.3	No obstacles in ordering without a dedicated app
	X3.4	Drivers provide responsive, clear information
	X3.5	Drivers handle complaints effectively
Empathy ($X4$)	X4.1	Drivers do not discriminate based on social status
	X4.2	Willingness to recommend GOPUS to others
	X4.3	Drivers care about passenger comfort and safety
	X4.4	Drivers maintain good relationships with passengers
Tangibles ($X5$)	X5.1	Transition to a dedicated booking application
	X5.2	Provision of special helmets for passengers
	X5.3	Completeness of vehicle attributes
	X5.4	Vehicle condition is well-maintained
	X5.5	Drivers are neatly dressed and clean

2.3 Data Analysis Techniques

The data analysis technique in this study was conducted quantitatively using a tiered and structured approach to obtain valid and reliable results that can be used as a basis for the researcher's decision-making. The stages of the data analysis technique used in this study are as follows:

a. Validity Test

Validity testing is a test that functions to determine whether a measuring instrument is valid or invalid. The measuring instrument in question is the questions in the questionnaire. Validity testing is necessary in this study to support the SERVQUAL method by assessing and ensuring that the questionnaire used will produce valid data. A questionnaire can be declared valid if each question in the questionnaire can be used as a means to reveal and understand what the questionnaire is intended to measure [13].

- b. Reliability Test The index test that indicates the extent to which a measuring instrument is trustworthy or reliable is called a reliability test. A questionnaire is considered reliable if the answers to its questions are consistent over time. Reliability calculations can be performed once all data has been validated and validated. If a variable shows a Cronbach's Alpha value > 0.6 , it can be concluded that the variable is reliable or consistent in its measurement. The closer the Cronbach's Alpha value is to 1, the higher the internal consistency constraints [14].

3. RESULTS AND DISCUSSION

3.1 Validity and Reliability Test

Tables 2 and 3 show the results of the validity tests for the Reality and Expectation attributes.

Table 2: Results of Validity Test Analysis of 1 Perception Data

Dimensions	Item Statement	R Count	R Table	Probability	Information
Reliability	X1.1	0.267	0.1654	$0.00 < 0.05$	Valid
	X1.2	0.728	0.1654	$0.00 < 0.05$	Valid
	X1.3	0.773	0.1654	$0.00 < 0.05$	Valid
	X1.4	0.744	0.1654	$0.00 < 0.05$	Valid
Assurance	X2.1	0.738	0.1654	$0.00 < 0.05$	Valid
	X2.2	0.763	0.1654	$0.00 < 0.05$	Valid
	X2.3	0.754	0.1654	$0.00 < 0.05$	Valid
Responsiveness	X3.1	0.699	0.1654	$0.00 < 0.05$	Valid
	X3.2	0.751	0.1654	$0.00 < 0.05$	Valid
	X3.3	0.779	0.1654	$0.00 < 0.05$	Valid
	X3.4	0.822	0.1654	$0.00 < 0.05$	Valid
	X3.5	0.768	0.1654	$0.00 < 0.05$	Valid
Empathy	X4.1	0.736	0.1654	$0.00 < 0.05$	Valid
	X4.2	0.789	0.1654	$0.00 < 0.05$	Valid
	X4.3	0.806	0.1654	$0.00 < 0.05$	Valid
	X4.4	0.769	0.1654	$0.00 < 0.05$	Valid
Tangibles	X5.1	0.713	0.1654	$0.00 < 0.05$	Valid
	X5.2	0.781	0.1654	$0.00 < 0.05$	Valid
	X5.3	0.785	0.1654	$0.00 < 0.05$	Valid
	X5.4	0.743	0.1654	$0.00 < 0.05$	Valid
	X5.5	0.741	0.1654	$0.00 < 0.05$	Valid

Table 3: Results of Validity Test Analysis of 1 Expectation Data

Dimensions	Item Statement	R Count	R Table	Probability	Information
Reliability	X1.1	-0.065	0.1654	$0.00 < 0.05$	Invalid
	X1.2	0.708	0.1654	$0.00 < 0.05$	Valid
	X1.3	0.578	0.1654	$0.00 < 0.05$	Valid
	X1.4	0.527	0.1654	$0.00 < 0.05$	Valid
Assurance	X2.1	0.245	0.1654	$0.00 < 0.05$	Valid
	X2.2	0.232	0.1654	$0.00 < 0.05$	Valid
	X2.3	0.496	0.1654	$0.00 < 0.05$	Valid
Responsiveness	X3.1	0.234	0.1654	$0.00 < 0.05$	Valid
	X3.2	0.295	0.1654	$0.00 < 0.05$	Valid
	X3.3	0.555	0.1654	$0.00 < 0.05$	Valid
	X3.4	0.325	0.1654	$0.00 < 0.05$	Valid
	X3.5	0.312	0.1654	$0.00 < 0.05$	Valid
Empathy	X4.1	0.452	0.1654	$0.00 < 0.05$	Valid

Tangibles	X4.2	0.468	0.1654	$0.00 < 0.05$	Valid
	X4.3	0.350	0.1654	$0.00 < 0.05$	Valid
	X4.4	0.163	0.1654	$0.00 < 0.05$	Invalid
	X5.1	0.111	0.1654	$0.00 < 0.05$	Invalid
	X5.2	0.395	0.1654	$0.00 < 0.05$	Valid
	X5.3	0.057	0.1654	$0.00 < 0.05$	Invalid
	X5.4	0.112	0.1654	$0.00 < 0.05$	Invalid
	X5.5	0.458	0.1654	$0.00 < 0.05$	Valid

From Table 4.6. The results of the validity test on the expectation data for testing statements 1 to 21, there are 5 invalid statement items, namely X1.1, X4.4, X5.1, X5.3, and X5.4. This is because the five items have a calculated r value that is less than the table r. Therefore, the invalid data must be deleted and the validity test must be carried out again to obtain valid data. Furthermore, the invalid statement items in the expectation data are deleted, to obtain a balanced value, the same items in the perception data must also be deleted.

Table 4: Results of Validity Test Analysis of 2 Expectation Data

Dimensions	Item Statement	R Count	R Table	Probability	Information
Reliability	X1.2	0.708	0.1654	$0.00 < 0.05$	Valid
	X1.3	0.578	0.1654	$0.00 < 0.05$	Valid
	X1.4	0.527	0.1654	$0.00 < 0.05$	Valid
Assurance	X2.1	0.245	0.1654	$0.00 < 0.05$	Valid
	X2.2	0.232	0.1654	$0.00 < 0.05$	Valid
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Responsiveness	X3.1	0.234	0.1654	$0.00 < 0.05$	Valid
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Empathy	X4.1	0.452	0.1654	$0.00 < 0.05$	Valid
	X4.2	0.468	0.1654	$0.00 < 0.05$	Valid
	X4.3	0.350	0.1654	$0.00 < 0.05$	Valid
Tangibles	X5.2	0.395	0.1654	$0.00 < 0.05$	Valid
	X5.5	0.458	0.1654	$0.00 < 0.05$	Valid

Table 5: Results of Validity Test Analysis of 2 Perception Data

Dimensions	Item Statement	R Count	R Table	Probability	Information
Reliability	X1.2	0.728	0.1654	$0.00 < 0.05$	Valid
	X1.3	0.773	0.1654	$0.00 < 0.05$	Valid
	X1.4	0.744	0.1654	$0.00 < 0.05$	Valid
Assurance	X2.1	0.738	0.1654	$0.00 < 0.05$	Valid
	X2.2	0.763	0.1654	$0.00 < 0.05$	Valid
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	X3.4	0.822	0.1654	$0.00 < 0.05$	Valid
	X3.5	0.768	0.1654	$0.00 < 0.05$	Valid
Empathy	X4.1	0.736	0.1654	$0.00 < 0.05$	Valid
	X4.2	0.789	0.1654	$0.00 < 0.05$	Valid
	X4.3	0.806	0.1654	$0.00 < 0.05$	Valid
Tangibles	X5.2	0.781	0.1654	$0.00 < 0.05$	Valid
	X5.5	0.741	0.1654	$0.00 < 0.05$	Valid

After the invalid statement items were removed and the validity test was repeated, the results of the second validity test in Table 4 (expectation) and Table 5 (perception) showed that 16 statement items were considered valid, meaning they had a calculated r value $>$ r table (0.207).

Next is reliability testing. To test the data's reliability, the Cronbach's Alpha formula, or a measure of reliability testing, will be used. A variable is considered reliable if r alpha $>$ 0.70. Conversely, if r alpha $<$ 0.70, the questionnaire's statements are considered unreliable.

Table 6: Results of the Perception Reliability Test Using the Cronbach's Alpha Technique

Cronbach's Alpha	N of Items
0.954	16

Table 7: Results of the Expectancy Reliability Test Using the Cronbach Alpha Technique

Cronbach's Alpha	N of Items
0.719	16

Table 7 shows that the Cronbach's alpha value for the 16 statement items regarding expectation data is 0.719, which is greater than 0.70. Therefore, the Cronbach's alpha value for the expectation data is considered reliable because the Cronbach's alpha value is greater than 0.70.

3.2 SERVQUAL Analysis

The computed gap scores are presented in Table 2. Overall, the service exhibits a negative perception-expectation gap across multiple attributes. The largest deficit was observed in X4.1 (Empathy: Driver does not discriminate based on social status; Gap = -0.19), while X5.2 (Tangibles: Provision of special helmets) showed the highest positive gap ($+0.22$), indicating performance exceeding expectations. The presence of predominantly negative gaps suggests that GOPUS currently operates below user expectations, particularly in reliability and safety assurance.

Table 8: Average SERVQUAL Gap Scores

Attribute	Mean Perception	Mean Expectation	Gap Value
X1.2	2.69	2.86	-0.17
X1.3	2.81	2.91	-0.10
X1.4	2.77	2.90	-0.13
X2.1	2.77	2.87	-0.10
X2.2	2.84	2.93	-0.09
X2.3	2.78	2.81	-0.03
X3.1	2.79	2.82	-0.03
X3.2	2.81	2.78	+0.03
X3.3	2.90	2.70	+0.20
X3.4	2.81	2.94	-0.13
X3.5	2.99	2.97	+0.02
X4.1	2.85	3.04	-0.19
X4.2	2.82	2.72	+0.10
X4.3	2.86	2.82	+0.04
X5.2	2.87	2.65	+0.22
X5.5	2.98	2.81	+0.17
Overall Mean	2.83	2.85	-0.02

3.3 Importance Performance Analysis Analysis

Mapping the 16 valid attributes onto the IPA matrix (Figure 2) reveals critical improvement areas. Five attributes fall into Quadrant I (Concentrate Here): X1.2 (Driver training), X1.4 (Timely pickup), X2.1 (Safety

assurance), X2.2 (Overall driver service satisfaction), and X4.2 (Willingness to recommend). These attributes are highly valued by users but underperform, aligning with the negative SERVQUAL gaps. Quadrant II contains X3.5 and X4.1, indicating strong performance that should be maintained. Quadrant III includes X2.3 and X3.1, reflecting lower user importance and moderate performance. Quadrant IV comprises attributes where performance exceeds perceived importance, such as X5.2 and X5.5, suggesting potential resource over-allocation.

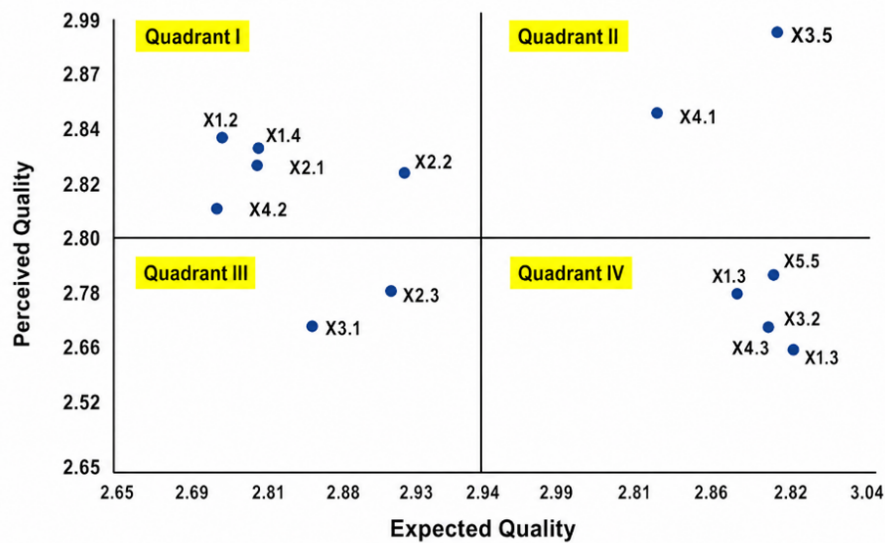


Figure 2: IPA Cartesian diagram mapping service attributes across four priority quadrants.

- Quadrant I (Top Priority)** This quadrant contains factors that customers consider important, but in reality, do not meet their expectations. Each variable in this quadrant is a high priority for immediate improvement. In the diagram above, the variables in Quadrant I are: X1.2 (Drivers are well-trained in driving motorcycles), X1.4 (Drivers pick up customers on time), X2.1 (Feel safe using Gopus online motorcycle taxis), X2.2 (Satisfied with Gopus driver service when using their online transportation service), X4.2 (Highly recommend using Gopus online transportation to others). The company prioritizes focusing on improving the attributes in this quadrant due to the still unsatisfactory performance quality.
- Quadrant II (Maintain Priorities)** Quadrant II is the area containing factors considered important by customers, and each factor is considered consistent with their perceptions. There are only two variables included in this quadrant: X3.5 (Driver responds well to customer complaints) and X4.1 (Driver does not discriminate based on customer social status). These two variables need to be maintained because they create a superior product or service.
- Quadrant III (Low Priority)** In this quadrant, the variables are considered less important by customers, and their performance is also considered less than exceptional. The following are the variables in quadrant III: X2.3 (GOPUS's pricing is more affordable than its online transportation competitors) and X3.1 (Drivers respond very quickly to customer requests).
- Quadrant IV (Excessive)** This quadrant contains factors that customers consider less important and are considered excessive. The following variables fall into quadrant IV: X1.3 (Driver delivers to destination accurately and safely), X3.2 (Driver demonstrates sincerity in serving customers), X3.3 (No problems ordering online motorcycle taxis without a special app), X4.3 (Driver cares about customer comfort and safety), X5.2 (Gopus provides special helmets for passengers), and finally, X5.5 (Driver is neatly dressed, clean, and does not emit any unpleasant odors).

3.4 Potential Gain in Customer Value (PGCV) Analysis

The PGCV index quantifies the strategic priority for each underperforming attribute (Table 3). X2.2 (Assurance: Service satisfaction) ranks first with a PGCV of 5.95, followed by X1.2 (Reliability: Driver training; 3.75), X1.4 (Reliability: Timeliness; 3.57), X2.1 (Assurance: Safety; 3.53), and X4.2 (Empathy: Recommendation likelihood; 3.21). These results corroborate the IPA findings and provide a clear, data-driven hierarchy for managerial intervention.

Table 9: PGCV Index and Improvement Priority

Attribute	Perception	Expectation	ACV Index	UDCV Index	PGCV Value	Priority
X1.2	2.69	2.86	7.6934	11.4400	3.7466	2
X1.4	2.77	2.90	8.0330	11.6000	3.5670	3
X2.1	2.77	2.87	7.9499	11.4800	3.5301	4
X2.2	2.84	2.93	5.7700	11.7200	5.9500	1
X4.2	2.82	2.72	7.6704	10.8800	3.2096	5

3.5 Discussion

The integration of SERVQUAL, IPA, and PGCV reveals that GOPUS's primary deficiencies lie in operational consistency, safety perception, and driver professionalism—common challenges in informal, app-less transport models. Unlike commercial platforms that enforce standardized training, real-time tracking, and insurance, GOPUS relies on informal coordination, leading to variability in service delivery. The high PGCV priority for assurance (X2.2, X2.1) underscores the critical role of perceived safety in student mobility decisions. Furthermore, the negative gap in reliability (X1.2, X1.4) suggests that trust-building mechanisms, such as driver background verification and pickup scheduling protocols, are urgently needed. These findings align with recent studies on micro-mobility and informal gig services, which emphasize that standardized training and transparent communication significantly enhance user retention and satisfaction [9],[15].

Limitations and Future Research: Despite its methodological rigor, this study is limited by its single-campus scope and cross-sectional design, which may affect the generalizability of findings across different institutional or regional contexts. Additionally, the purposive sampling approach, while appropriate for active users, may exclude infrequent or lapsed users whose perspectives could further refine service improvement strategies. Future research could employ longitudinal tracking to assess service improvement trajectories, expand the sample to multi-campus informal transport networks for comparative analysis, or integrate structural equation modeling (SEM) to validate latent constructs within the SERVQUAL framework.

4. CONCLUSION

Based on the results of the discussion on the quality analysis of online campus motorcycle taxi services (Gopus), it can be concluded that the service provided has almost fully met customer expectations. This study obtained a conformity level of 99.58%, with a gap between perceptions and expectations of only 0.42%. These results indicate that the overall service delivery is closely aligned with user needs. Although the conformity level does not directly measure customer satisfaction, it can serve as an indirect indicator of satisfaction. This is consistent with customer satisfaction theory, which states that satisfaction occurs when the service received meets or exceeds customer expectations. Therefore, the conformity level of 99.58%, which is close to the ideal value of 100%, shows that customer expectations were nearly fulfilled and indicates a high tendency toward satisfaction with the Gopus service. In addition, based on the calculations using the IPA and PGCV methods, several variables were identified as the main priorities for improvement. These variables include X1.2, which refers to drivers being properly trained in riding motorcycles; X1.4, which refers to drivers picking up customers on time; X2.1, which relates to customers feeling safe when using Gopus online motorcycle taxi services; X2.2, which refers to customer satisfaction with the service provided by Gopus drivers; and X4.2, which indicates the willingness of users to highly recommend Gopus online transportation services to others.

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