Journal of Educational Development 13 (1) (2025): 60-77 p-ISSN 2085-4943 | e-ISSN 2502-4469
Pascasarjana Universitas Negeri Semarang https://journal.unnes.ac.id/journals//jed

Online Transportation Services for Educational Mobility in University Environments

Zulva Tinesia Suci Cendani[1], Putri Hana Febrian[2], Indra Nur Fauzi[3], Mohammad Ayub Mirdad[3], Albertus Eka Putra Haryanto[3]

[1]Universitas Airlangga, Surabaya, Indonesia
[2]Universitas Pembangunan Nasional Veteran, Surabaya, Indonesia
3Regional Economic Development Institute, Surabaya, Indonesia

*Corresponding Author: ayub@redi.or.id

Received: 2024-10-25. Accepted: 2025-01-02. Published: 2025-04-10

Abstract. Advances in digital technology have facilitated the expansion of online transportation services as alternative modes of mobility for the public. The study aimed to address dissatisfaction with conventional public transportation, particularly in terms of safety and reliability. University students, as members of the academic community, also make extensive use of these services. The study examined user perceptions, safety perceptions, and perspectives on Gender, Disability, and Social Inclusion (GEDSI) in relation to student satisfaction with online transportation services at Campus B, Airlangga University, Surabaya, Indonesia. A quantitative approach was employed, and primary data were analyzed using binary logistic regression. The findings indicate that payment systems, travel time, and the availability of disability-friendly features exert a significant influence on user satisfaction. Practical payment systems enhance satisfaction by simplifying the transaction process. Short and punctual travel times further increase satisfaction among students. Moreover, the availability of disability-friendly services demonstrates a positive contribution by fostering inclusivity and addressing the mobility needs of students with disabilities.

Key words: educational mobility; social inclusion; gender disability; online transportation services; students' satisfaction; university environment

How to Cite: Cendani, Z. T. S., Febrian, P. H., Fauzi, I. N., Mirdad, M. A., Haryanto, A. E. P. (2025). Online Transportation Services for Educational Mobility in University Environments. *The Journal of Educational Development* 13 (1) 2025,60-77.

INTRODUCTION

Currently, technological developments have changed several aspects of human life by creating various conveniences through innovations in the field of technology originating from the younger generation (Khan et al., 2019; McKenna & Altringer, 2021; Tunggadewi et al., 2020, 2021). One of the changes is the emergence of online transportation services in Indonesia. This service allows users to order transportation facilities through applications on smartphones anywhere and anytime. The ease of access offered by online transportation services is alternative transportation for the community from various other existing public transportation (Divalona & Sfenrianto, 2023; Hedemalm et al., 2021; Olcaytu & Kuyzu, 2021; Purnami et al., 2023). Gojek started the presence of online transportation services in Indonesia in 2010. Initially, the company focused on providing online transportation booking services and developing technology that allowed users to easily download applications through smartphone devices (Monfared et al., 2024; Paramudhita & Sinaga, 2021; Purba et al., 2021; Samuel & Purba, 2025; Yunus et al., 2020). The success of Gojek was followed by other platforms such as Grab, Maxim, inDrive, and several other online transportation service providers which are considered as one of the alternative solutions to public dissatisfaction with various shortcomings of public transportation services. One of the shortcomings that makes people reluctant to use public transportation is security (Azizah et al., 2024; Hermawan & Kusuma, 2023; Panjaitan, 2018; Ratnawati & Budhianti, 2022). Online transportation of users provide statements regarding the possibility of crime occurring. Security is a serious concern for public transport users due to the risk of crime such as pickpocketing (Gunawan et al., 2020; Izzah Zailani & Ahmad, 2022; Keni et al., 2023; A. S. Santoso et al., 2018; Silaban et al., 2023).

Therefore, facilities and infrastructure are needed that provide comfort and protection for users (Bsaybes et al., 2019; Damaini et al., 2018; Ferti, 2019; Nugroho et al., 2024; Putranti & Retnowati, 2020). The online transportation user satisfaction with the highest level of effectiveness is the security variable. This can be seen in online transportation service providers that provide several security features

to increase user protection (Garside et al., 2023; Harun & Abdillah, 2022; Rajab & Sariani, 2021; Sahar, 2019; Yuniastuti et al., 2019). Along with the increasing activities and mobility needs of the community, the trend of using online transportation services continues to increase every year. Online transportation services are the main choice for most consumers. From 2.304 users of online transportation services and 1.152 merchants who utilize online logistics services in Jabodetabek, Bandung, Palembang, Yogyakarta, Denpasar, Surabaya, and Balikpapan areas show that Gojek leads the market for the largest number of users of online transportation services, followed by Grab (INDEF, 2022). The percentage of the most widely used online transportation in Indonesia in 2022 is shown in Figure 1.

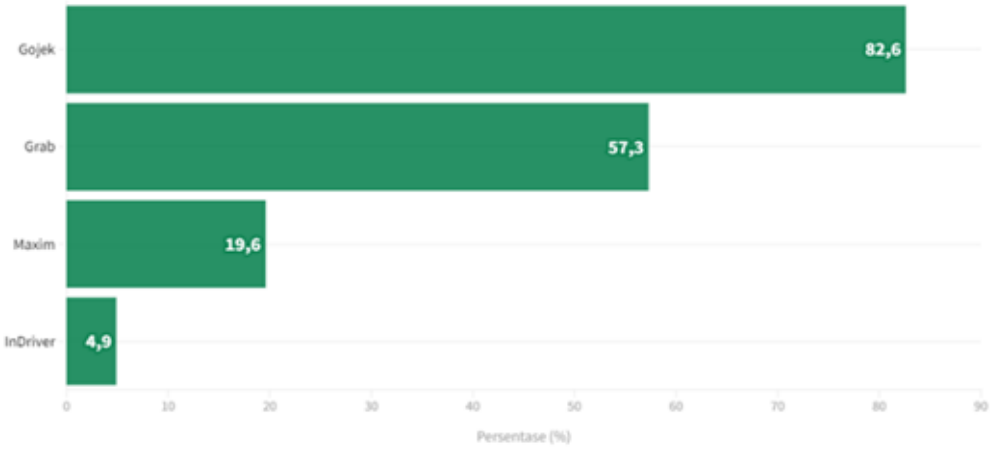

Figure 1. Percentage of most used online transportation
Source: INDEF (2022)

Based on data from the Central Statistics Agency Indonesia in 2018/2019, Airlangga University is one of the public universities in Surabaya that has the most students with 36.212 students. Students were chosen as respondents of this study because they are part of a generation that grows and develops with increasingly advanced technology (Ihsan et al., 2019; Razak et al., 2019; Sembiring et al., 2025; Setiawan et al., 2023; Sun et al., 2023). The subject of this study was Universitas Airlangga Campus B students who tend to prefer online transportation services because their high needs for going to campus, daily activities, and going home show that online transportation services are their main choice. The viral marketing variables, price/tariff, promo, trust, and brand image have a positive effect on the formation of consumer preferences in choosing online transportation in Surabaya City and the trust variable is the dominant variable (Hidayatullah et al., 2020; Miro et al., 2023; Putranti et al., 2024; Rahmadanih & Viantika, 2023; Sanny & Deswantiyar, 2019; Sultan et al., 2019). These results indicate that all hypotheses in this study are proven correct.

The variables that have a significant effect on user satisfaction are price and quality services (Berutu et al., 2025; Jaman et al., 2020; Suroso et al., 2021; Susilowati et al., 2018). The low price provided by Grab will affect user satisfaction 1.475 times more than the high price, and good service quality will affect user satisfaction 1.450 times more than poor service, with a classification accuracy of 92%. Gender equality refers to equality between males and females in obtaining their rights as human beings and participating and enjoying the results of development (Budi et al., 2019; Kasamatsu et al., 2020; Saputra & Giyarsih, 2023; Silalahi et al., 2017). Disability involves the interaction between individual impairments, such as loss of vision, hearing, and physical abilities with barriers in the surrounding environment. These barriers include difficulties in accessing services, education, employment, discriminatory laws, non-inclusive policies, community attitudes, and poverty issues. Social inclusion is a strategy used to protect the rights and improve the roles, status, and conditions, as well as the abilities and dignity of individuals or groups of females and males, including children, youth, the elderly, people with disabilities, low-income groups, and other vulnerable groups marginalized by race, ethnicity, gender, or other factors (Afandi et al., 2019; Arnakim & Rusdyawati, 2022; Arvie & Tanaamah, 2019; Feng et al., 2020; Siahaan & Legowo, 2019). This research looks at the perspective of students of Universitas Airlangga Campus B, with a focus on the security aspect. In addition, this research also focuses on Gender, Disability, and Social Inclusion (GEDSI) with the hope that this research will ensure

inclusive accessibility and security for all individuals, regardless of gender, disability, or social background.

METHODS

This research employed a quantitative approach using primary data obtained through a survey of Universitas Airlangga Campus B students at the diploma, undergraduate, and postgraduate levels who use online transportation services. Data were collected through face-to-face surveys conducted for two hours per day, between 9:00 AM and 11:00 AM, to ensure the acquisition of relevant and representative information. The variables analyzed in the study are presented in Table 1.

Table 1. Research Variables

No.	Latent variables	Indicators	Categories
1.	User perceptions of online transportation services	Comfort (X_1) Price (X_2) Payment systems (X_3) Safety (X_4) Driver waiting time (X_5) Travel time (X_6) Access to applications (X_7) Promos offered (X_8)	1 = Yes 3 = No
2.	Perceptions of security	Protection of personal data (X_9) Sense of security from criminal acts (X_{10}) Accident insurance for using online transportation services (X_{11})	1 = Yes 3 = No 98 = Do not know
3.	Perceptions of GEDSI	Driver gender preferences (X_{12})	1 = Female 2 = Male
		User experience or knowledge of physical and sexual violence in online transportation (X_{13})	1 = Yes 3 = No
		User experience or knowledge related to disability-friendly online transportation (X_{14})	1 = Yes 3 = No 98 = Do not know
4.	User preferences for online transportation services	User satisfaction with online transportation services (Y)	1 = Very satisfied 2 = Satisfied

The population relevant to the focus of this research consists of active students of Universitas Airlangga at Campus B who use online transportation services, with an estimated total of 136 students. The population estimate was determined based on observations conducted at two designated online transportation meeting points at Universitas Airlangga Campus B. The sample size calculation to estimate the population proportion is formulated as follows:

$$n = \frac{N\hat{P}\,\hat{Q}}{(N-1)\,D + \hat{P}\,\hat{Q}}, D = \left(\frac{B}{Z_{1-\alpha/2}}\right)^2$$

Table 2. Population proportion by meeting points

Meeting point 1	Meeting point 2
$D = \left(\frac{0{,}125}{1{,}645}\right)^2 = 0{,}006$	$D = \left(\frac{0{,}125}{1{,}645}\right)^2 = 0{,}006$
$n = \frac{(504)(0{,}3)(0{,}7)}{(504-1) + (0{,}3)(0{,}7)}$	$n = \frac{(584)(0{,}3)(0{,}7)}{(584-1) + (0{,}3)(0{,}7)}$
$n = 33{,}978 \approx 34$	$n = 34{,}286 \approx 35$

Table 2 shows that a total of 69 respondents were surveyed at the two meeting points over a period of eight days. The research applied systematic sampling to ensure that the selected respondents represented the population in a structured and consistent manner. Systematic sampling was conducted

using predetermined patterns or intervals in the selection process. The calculation of the sample size is presented in Table 2, and the detailed procedure is as follows:

$$k = \frac{N}{n}$$

Table 3. Population interval based on meeting points

Meeting point 1	Meeting point 2
$k = \frac{504}{34} = 15$	$k = \frac{584}{34} = 18$

Table 3 presents the interval patterns applied during the survey at the two meeting points over an eight-day period.

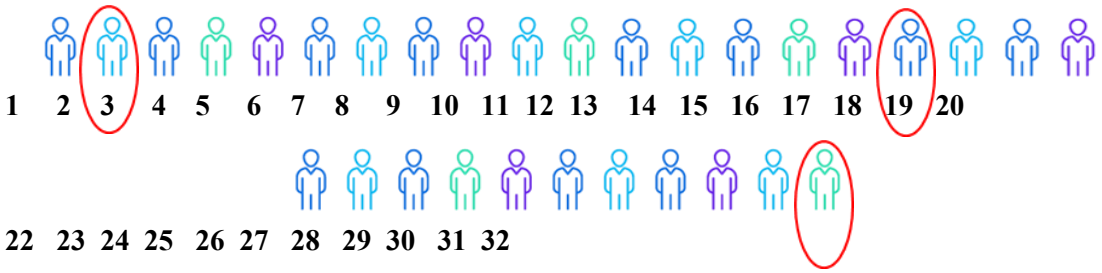

Figure 2. Systematic sampling scheme in research**.** Sample (every 15th interval)

Based on the data collected at Meeting Point 1, the target population consisted of 504 respondents, while the total number of survey samples was 34 students. The sampling procedure was conducted using an interval of 15, which meant that every fifteenth student arriving at the meeting point was selected as a survey participant, as illustrated in Figure 2. The survey began randomly with the second student to arrive, after which every fifteenth student was systematically included. The validity of the research instrument was tested using a correlation technique. The instrument contained 15 questions, and items were considered valid if the correlation coefficient was ≥ 0.3 (Sugiyono, 2016), as presented in Table 4.

Table 4. Validity Test of Research Instruments

Variables	Item	Pearson correlation (r)	r-table	Sig. (2-tailed)	Description
User perception of online transportation services	$X_{1.1}$	0.549	0.3	0.002	Valid
	$X_{1.2}$	0.656		0.000	Valid
	$X_{1.3}$	0.604		0.000	Valid
	$X_{1.4}$	0.658		0.000	Valid
	$X_{1.5}$	0.631		0.000	Valid
	$X_{1.6}$	0.627		0.000	Valid
	$X_{1.7}$	0.581		0.001	Valid
	$X_{1.8}$	0.537		0.002	Valid
Perceptions of security	$X_{2.1}$	0.654		0.000	Valid
	$X_{2.2}$	0.888		0.000	Valid
	$X_{2.3}$	0.892		0.000	Valid
	$X_{2.4}$	0.861		0.000	Valid
Perceptions of GEDSI	$X_{3.1}$	0.967		0.000	Valid
	$X_{3.2}$	0.940		0.000	Valid
	$X_{3.3}$	0.911		0.000	Valid

Source: Data processed by the authors

After the validity test was completed, the reliability test was conducted using the Cronbach's Alpha coefficient (r_∝). The r_∝ values for the service user perception and security perception variables were 0.741 and 0.849, respectively, indicating high reliability. For the GEDSI perception variable, the r_∝ value was 0.930, which demonstrates very high reliability.

Table 5. Value and reliability

Value	Reliability
r < 0.20	Very low
0.20 ≤ r < 0.40	Low
0.40 ≤ r < 0.70	Medium
0.70 ≤ r < 0.90	High
0.90 ≤ r < 1.00	Very high

The calculated r value was compared with the r table value to determine reliability. An instrument was considered reliable if the calculated r value exceeded the corresponding r table value, as presented in Table 6.

Table 6. Reliability check

Variables	r_α	Description
Service User Perceptions	0.741	Reliable
Perceptions of Security	0.849	Reliable
Perceptions of GEDSI	0.930	Reliable

Source: Data processed by the authors

Binary logistic regression was employed to analyze the relationship between one or more predictor variables and a binary categorical response variable. The logistic regression model with predictor variables is expressed in the following equation:

$$\pi(x) = \frac{e^{\beta_0+\beta_1 x_1+\beta_2 x_2+\ldots+\beta_p x_p}}{1 + e^{\beta_0+\beta_1 x_1+\beta_2 x_2+\ldots+\beta_p x_p}}$$

In the model, p represents the number of predictor variables used to estimate the regression parameters. The term $\pi(x)$ denotes the probability of a successful event, with values ranging from 0 to 1, while β refers to the parameter value for j = 1, 2, …, p. Because $\pi(x)$ is a non-linear function, it must be transformed into the logit form of $\pi(x)$, resulting in the following equation.

$$g(x) = ln\left[\frac{\pi(x)}{1-\pi(x)}\right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_p x_p$$

The model expressed in the equation constitutes a linear function of its parameters. Parameter estimation testing is a test used to test the significance of the β coefficient of the model. This test can use simultaneous or partial tests. The hypotheses for the logistic regression model are formulated with the null hypothesis (H_0) stating that $\beta_1 = \beta_2 = \ldots = \beta_p = 0$, which indicates that the predictor variables have no simultaneous significant effect on the response variable. The alternative hypothesis (H_1) states that at least one $\beta_j \neq 0$ for $j = 1, 2, \ldots, p$, meaning that at least one predictor variable has a significant effect on the response variable. The analysis employs a significance level (α) of 10%, with the G test used as the test statistic. The decision rule is to reject H_0 if $G > x^2 0{,}10;3$ or if the *p*-value is less than 0.10. A rejection of H_0 leads to the conclusion that at least one independent variable significantly influences the satisfaction level of online transportation service users.

To evaluate the effect of each independent variable on the dependent variable, partial hypothesis testing was conducted using the Wald test statistic. The null hypothesis (H_0) states that $\beta_j = 0$, indicating that the predictor variable has no significant effect on the response variable, while the alternative hypothesis (H_1) states that $\beta_j \neq 0$ for $j = 1, 2, \ldots, 6$, indicating that the predictor variable has a significant effect on the response variable. The significance level (α) was set at 10%. The decision rule is to reject H_0 if $W > x^2 0{,}10;1$or if the *p*-value < 0.10. A rejection of H_0 leads to the conclusion that the corresponding independent variable partially and significantly affects the satisfaction level of online transportation service users.

The odds ratio is a measure used to interpret the coefficients of predictor variables in logistic regression analysis. In general, the odds ratio represents the ratio of one set of odds to another. It is defined as the tendency of the response variable to take a particular value when $x = 1$, compared with the condition when $x = 0$. The calculation of the odds ratio is presented in equation as follows.

$$OR = \frac{\pi(1)/[1-\pi(1)]}{\pi(0)/[1-\pi(0)]}$$

It is known that $\pi(1) = \frac{exp(\beta_0+\beta_j)}{1+exp(\beta_0+\beta_j)}$ and $\pi(0) = \frac{exp(\beta_0)}{1+exp(\beta_0)}$ where j = 1,2,...,p. Based on equation OR value will be obtained according to equation below.

$$OR = exp(\beta_j)$$

If variable X is data with a ratio scale, then the odds ratio calculation in equation as follows.

$$OR(c) = OR(x+c, x) = exp(c\beta_1)$$

The logistic regression model fit test is conducted to assess whether the estimated model is appropriate. The null hypothesis (H_0) states that the model fits, indicating no significant difference between the observed values and the model's predicted values, while the alternative hypothesis (H_1) states that the model does not fit, indicating a significant difference between observations and predictions. The significance level (α) is set at 10%, and the $\hat{C}$ test statistic is applied. The decision rule is to reject H_0 if $\hat{C} > x^2$ 0, 10;3 or if the *p*-value < 0.10. Rejection of H_0 indicates that the model is not suitable for explaining user satisfaction with online transportation services. Conversely, failure to reject H_0 suggests that the model is appropriate for explaining the satisfaction of online transportation service users, which represents the expected outcome of the test.

The accuracy of the classification results was evaluated using the confusion matrix. For response variables with two classes, the confusion matrix generates four possible prediction outcomes: true positive (TP), true negative (TN), false positive (FP), and false negative (FN). The structure of the confusion matrix for a binary response variable is presented in Table 7.

Table 7. Confusion matrix

		Predicted membership	
		1	0
Actual	1	TP	FN
Membership	0	FP	TN

In the confusion matrix, true positive (TP) represents the number of observations from class 1 that are correctly classified as class 1, while true negative (TN) represents the number of observations from class 0 that are correctly classified as class 0. False positive (FP) refers to the number of observations from class 0 that are incorrectly classified as class 1, and false negative (FN) refers to the number of observations from class 1 that are incorrectly classified as class 0. Based on these four outcomes, the level of accuracy is calculated using the formula presented in the following equation.

$$ACCURACY = \frac{TN+TP}{TP+FP+FN+TN}$$

RESULTS AND DISCUSSION

The following are the characteristics of respondents of Universitas Airlangga Campus B students as online transportation users based on gender, age and faculty origin.

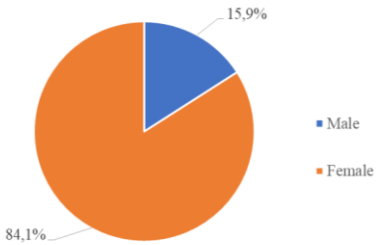

Figure 3. Percentage of respondent's gender

Figure 3 shows that at the online transportation service meeting point, the respondents who are often encountered are females, while male respondents were rarely encountered. This results in a larger percentage of female respondents in the study than male respondents. The age range of respondents ranged from 18-35 years old, then grouped into (i) 18-23 years old, (ii) 24-30 years old, and (iii) >30 years old.

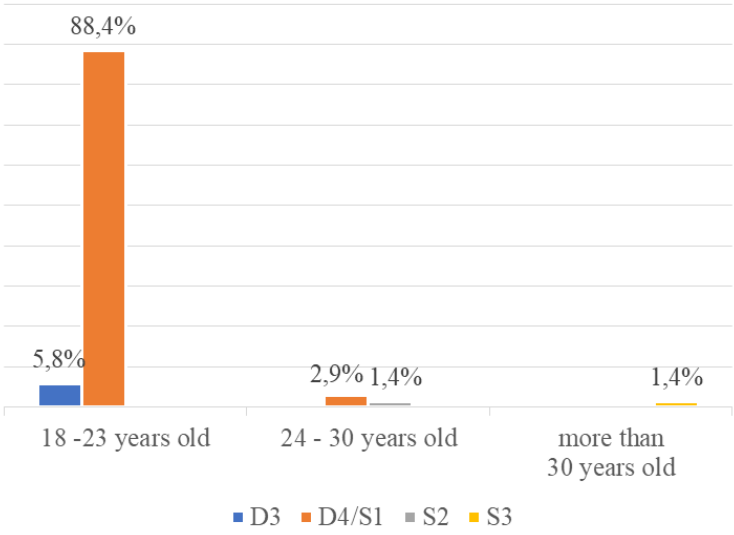

Figure 4. Percentage of respondents' age by study level

Overall, the majority of respondents encountered at the online transportation service meeting points were in their current study level up to doctoral level. Figure 4 shows that most of the respondents were aged 18-23 years, with most of them currently studying at the D4 / S1 (88.4%) and D3 (5.8%) levels. Respondents with an age range of 24-30 years old are around 4.3%, and the rest are over 30 years old with a doctoral degree.

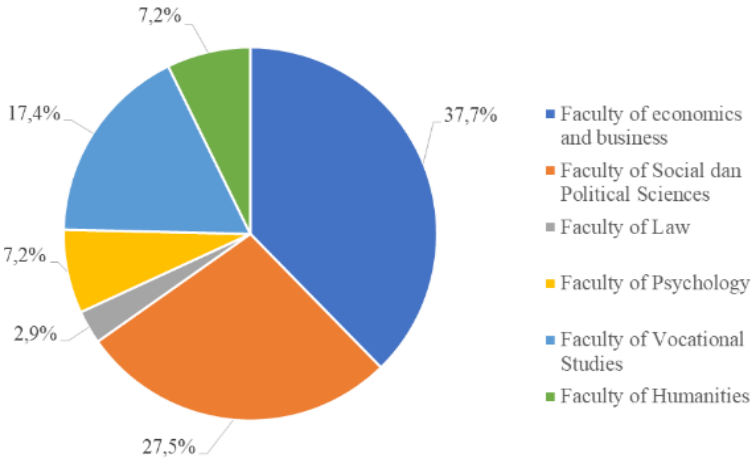

Figure 5. Percentage of respondent faculty

The majority of respondents, 38%, came from the Faculty of Economics and Business (FEB) as shown in Figure 5. This can be explained by the location of meeting point 2 which is in front of the FEB building, attracting many respondents from the faculty. The Faculty of Social and Political Sciences (FISIP) occupied the second largest percentage, at 28%, due to the location of the FISIP building close to meeting point 1. Meanwhile, the percentage of respondents from the Faculty of Law was only 3%, influenced by the one study program so that the contribution of students is relatively small.

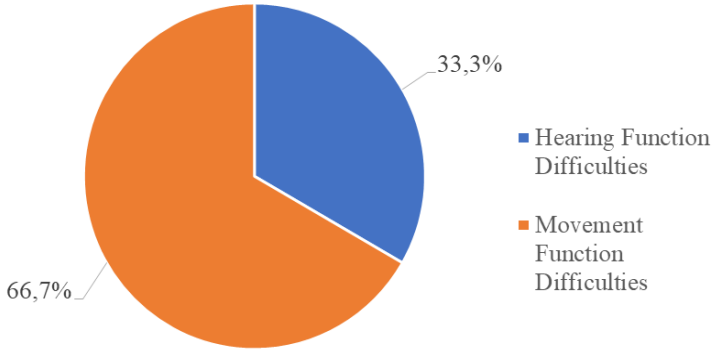

Figure 6. Percentage of specific functional hardship types

The survey results show that most respondents have functional difficulties, namely difficulty moving (66.7%) and difficulty hearing (33.3%). These respondents were users of online transportation services with an intensity of use of more than 6 times a month.

User experience of online transportation services

User experience in using online transportation services includes a series of interactions and perceptions that can vary between users and depends on a number of factors while using the service. The types of online transportation services used by respondents were motorcycles and cars. Furthermore, the frequency of using online transportation services in one month is shown in figure 7.

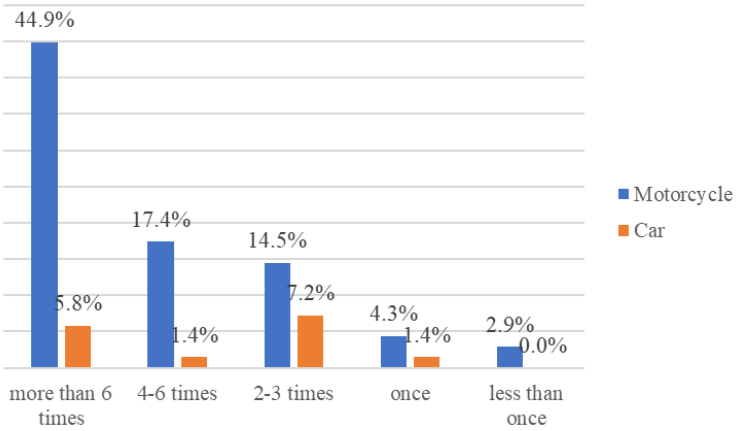

Figure 7. Percentage of respondents' frequency of use of online transportation services by type of online transportation service (per-month)

Figure 7 shows that 84.1% of respondents most frequently use motorcycle services, while 16% prefer cars. The majority's preference for motorcycles is driven by the need to minimize the risk of being stuck in traffic or other obstacles, thereby reaching their destination more quickly. In contrast, respondents who choose cars consider this option more comfortable as it provides protection from the scorching sun and offers a greater sense of security against potential crime. When analyzed by frequency or intensity of use, 44.9% of motorcycle users reported using the service more than six times per month. Meanwhile, 17.4%, 14.5%, 4.3%, and 2.9% of motorcycle users use the service 4–6 times, 2–3 times, and once a month, respectively. For car users, the highest frequency is 2–3 times per month (7.2%), followed by 5.8% using the service more than six times per month, and 1.4% each for 4–6 times and once per month.

Perceived Security When Using Online Transportation Services

Based on the respondents' gender overall level of trust in the current online transportation service provider is shown in figure 8.

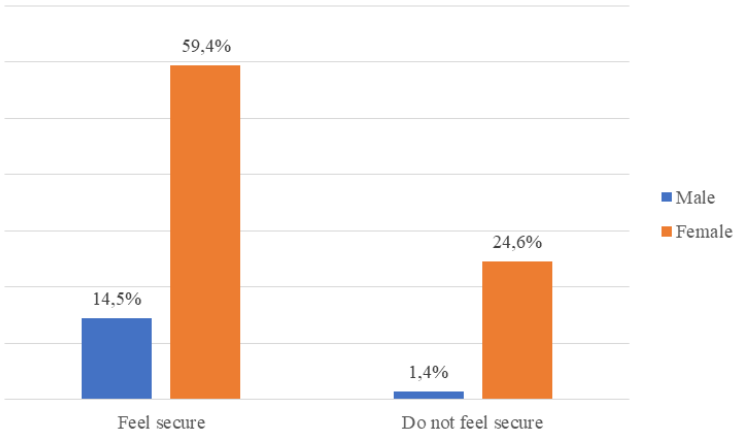

Figure 8. Percentage of feeling security from crime by gender of respondents

Based on Figure 8, 73.9% of respondents reported feeling safe from criminal acts such as kidnapping, theft, fraud, or other crimes committed by drivers when using online transportation services. This sense of security is attributed to the availability of various safety features, including digital footprints and driver identification containing complete identity information, which helps reduce the risk of kidnapping. Overall, the survey results indicate that 90.9% of male respondents felt safe from criminal acts, compared to 70.7% of female respondents. The lower percentage among female respondents is likely influenced by gender stereotypes, which shape different perceptions of safety among women when using online transportation services.

Perception of GEDSI

Perceptions in this context refer to users' views and attitudes toward aspects of online transportation services. GEDSI (Gender Equality, Disability, and Social Inclusion) perceptions encompass user preferences regarding driver gender as well as experiences and knowledge of users with functional difficulties. The following figure illustrates the distribution of driver gender preferences based on user gender.

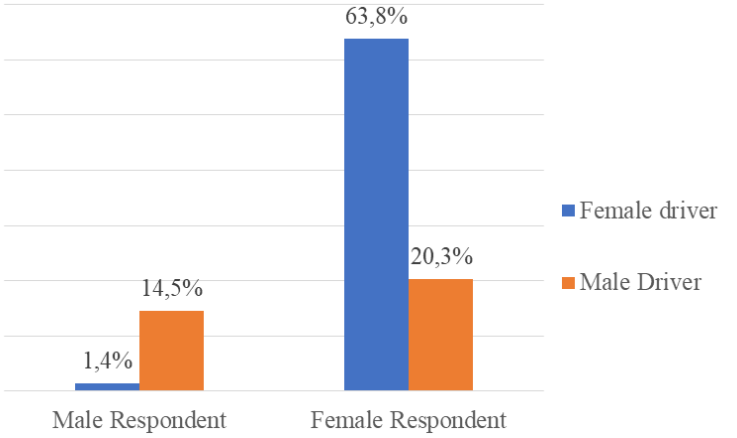

Figure 9. Percentage of driver gender preference by user gender

Based on Figure 9, 65.2% of respondents, consisting of 63,8% female and 1.4% male, stated that the users felt safer with a female driver. Based on the respondents' answers, the high percentage of female respondents who choose female drivers is due to the belief that feelings of security increase when in a vehicle driven by someone of the same gender. The remaining 34.8% of respondents said they felt safer with a male driver. This is because male drivers are better able to provide protection from crimes that might happen out there.

Binary Logistic Regression Analysis Modeling

Simultaneous parameter testing is carried out to assess the effect of the independent variables as a whole on the dependent variable through the G test. The simultaneous test results are displayed in the Omnibus Test of Model Coefficient Table 8.

Table 8. Omnibus Test Of Model Coefficient

	Chi-square	Df	Sig.
Model	11.064	3	0.011

Source: Data processed by the authors

Based on Table 8, the Sig. Model is 0.011. Because the sig value is smaller than 0,10, the decision taken is to reject H_0 at the 10% significance of 10%. Thus, it can be concluded that there is at least one predictor variable that simultaneously affects the response variable.

Partial test

Partial testing is carried out to determine the extent of the influence of each independent variable on the satisfaction of online transportation service users, using the Wald test statistic.

Table 9. Partial Test Statistic Values

Independent variable	Coefficient B	S.E	Wald	Db	Sig.
Payment system	2.797	1.086	6.630	1	0.010
Travel time	-2.500	1.458	2.940	1	0.086
Experience/Knowledge related to disability-friendly online transportation	1.493	0.857	3.037	1	0.081
Constant	-2.846	0.777	13.401	1	0.000

Source: Data processed by the authors

Table 9 is the main table of the logistic regression analysis, showing the independent variables that significantly affect the satisfaction of users of online transportation services. The variables of payment system, travel time, and experience/knowledge related to disability-friendly online transportation have a Wald test significance value of less than 0,10, rejecting H_0, and are considered as significant variables in influencing the level of user satisfaction. Odds ratio is used to facilitate interpretation of the binary logistic regression model. The results of the individual parameter significance test show that the predictor variables that are significant in influencing the response are the payment system, travel time, and experience/knowledge related to disability-friendly online transportation.

Binary logistic regression modeling and odds ratio (β)

The next step is to model the binary logistic regression for the coefficient values.

$$g(x)= \ln \left[\frac{\pi(x)}{1-\pi(x)}\right] = -2.846 + 2.797X_3 - 2.500X_6 + 1.493X_{14}$$

Odds ratio is used to facilitate interpretation of the binary logistic regression model. The results of the individual parameter significance test show that the predictor variables that are significant in influencing the response are the payment system, travel time, and experience/knowledge related to disability-friendly online transportation.

Table 10. SPSS output odds ratio

Significant variable	Odds ratio	Interpretation
Payment system	16.387	The ease of the payment system provided by online transportation services will affect user satisfaction 16,387 times greater than the difficulty of the payment system.
Travel time	0.082	Travel time or the accuracy of time estimates when using online transportation services will affect user satisfaction 0,082 times greater than the inaccuracy of time estimates.
Experience/knowledge related to disability-friendly online transportation	4.449	User experience or knowledge related to disability-friendly online transportation will affect user satisfaction 4.449 times greater than users who do not have experience or knowledge related to disability-friendly online transportation.

Source: Data processed by the authors

Goodness of Fit

Model fit testing was carried out using the Hosmer and Lemeshow Goodness of Fit test to evaluate the feasibility of the binary logistic regression model that has been made.

Table 11. Hosmer and Lemeshow Test

Df	Chi-square	Sig.
3	0.403	0.940

Source: Data processed by the authors

Based on Table 11, the chi-square significance value is 0.904, greater than the significance level of 0.10, so the decision is to fail to reject H_0 and the calculated chi-square test result obtained is 0,403. Because the calculated chi-square value = 0.403 < table chi-square value = 6.251, H_0 is accepted. So, it can be concluded that the binary logistic regression model used is suitable for explaining the level of satisfaction of online transportation service users.

Classification accuracy check

The results of the accuracy of the classification of satisfaction of Universitas Airlangga Campus B students as users of online transportation services are in Table 12.

Table 12. Classification accuracy

Observed		Predicted Satisfaction		% correct
		Satisfied	Very satisfied	
Satisfaction	Satisfied	57	1	98.3
	Very satisfied	10	1	9.1
Overall percentage				84.1

Source: Data processed by the authors

Based on the information in Table 12, it can be concluded that the classification accuracy obtained is 84.1% and is classified as a good category for classifying the level of user satisfaction of online transportation service users in the digital era using logistic regression analysis.

Previous studies on online transportation in Indonesia have largely concentrated on traditional service quality dimensions such as tangibility, reliability, and assurance (Silalahi et al., 2017; Yudhistira, 2019). While these dimensions remain relevant, they provide an incomplete understanding of customer satisfaction in the digital era. This study fills the gap by demonstrating that digital payment systems, punctual travel time, and disability-friendly services significantly predict student satisfaction. These findings indicate that conventional SERVQUAL models must be adapted to the realities of technology-

mediated services, where inclusivity and digital infrastructure play central roles. The significance of the payment system resonates with earlier findings that digital financial technology (FinTech) integration strongly affects consumer trust and satisfaction in online platforms (Fernando et al., 2022; Winanti & Fernando, 2024). However, the effect size observed in this study, here practical payment systems increase satisfaction by more than 16 times, underscores a stronger relationship than reported previously. This confirms the transformative role of seamless digital transactions in enhancing user experience, particularly among younger populations who are digital natives.

Similarly, the importance of travel time accuracy aligns with studies in Bandung and other urban centers where efficiency in reaching destinations drives online transportation adoption (Miharja et al., 2023). Yet, this study adds depth by quantifying the dissatisfaction caused by delays, showing that inaccurate travel times substantially reduce satisfaction. This suggests that punctuality is not merely a functional attribute but a determinant of overall service quality in urban mobility contexts. Finally, the positive association between disability-friendly services and satisfaction highlights an underexplored dimension in Southeast Asian research on online transportation. While previous works acknowledged inclusivity in a general sense (Afandi et al., 2019; Purnami et al., 2023), empirical evidence linking disability considerations to user satisfaction has been scarce. By providing statistical confirmation, this study addresses a key research gap, reinforcing calls for transport systems that prioritize accessibility and inclusivity (Sembiring et al., 2025).

The findings resonate with global and national research but also reveal critical distinctions. For instance, Purwati & Hamzah (2019) emphasized the role of Total Service Quality Management (TSQM) in building customer satisfaction and loyalty in Indonesian online transportation. Their study found that customer satisfaction mediates the relationship between service quality and loyalty. Our study corroborates the emphasis on quality but demonstrates that not all service quality indicators matter equally. Variables such as convenience, price, and promotions, while significant in earlier studies (Divalona & Sfenrianto, 2023), were insignificant in this context. This divergence suggests that as online transportation services mature, users may place less emphasis on basic price-related attributes and more on advanced features such as inclusivity and efficiency.

Moreover, the findings extend insights from Santoso (2023), who argued that social media marketing shapes trust and brand loyalty in online transportation. While marketing remains relevant, our evidence indicates that intrinsic service features, such as payment ease and punctuality, are stronger determinants of satisfaction. Thus, companies cannot rely solely on branding strategies but must invest in the operational dimensions that directly affect user experience.

Comparative evidence from other Asian countries also strengthens the discussion. Research in Bangladesh (Khan et al., 2019) demonstrated the positive macroeconomic impact of online transportation but did not address inclusivity at the micro-level. Similarly, studies in Malaysia and China have examined safety and efficiency as core issues (Arnakim & Rusdyawati, 2022; Azizah et al., 2024). This study's incorporation of GEDSI dimensions therefore introduces a novel theoretical and practical extension that reflects Indonesia's socio-cultural emphasis on inclusivity in education and mobility.

The novelty of this research lies in three interrelated aspects. First, it empirically integrates GEDSI considerations into models of online transportation satisfaction. Unlike prior studies that focused exclusively on service quality (Silalahi et al., 2017; Yudhistira, 2019), this study shows that disability-friendly services significantly enhance satisfaction, thereby enriching the SERVQUAL framework with inclusivity indicators. This integration responds to recent scholarly calls for embedding equity and accessibility in service quality theories (Saputra & Giyarsih, 2023).

Second, the study quantifies the disproportionate influence of digital payment systems on satisfaction. The extremely high odds ratio (16.387) suggests that FinTech adoption is not just a facilitator but a primary driver of user experience. This supports and extends FinTech adoption theories that highlight trust, usefulness, and ease of use as determinants of behavioral intention (Winanti & Fernando, 2024). Our findings suggest that in service ecosystems like online transportation, payment ease may overshadow other attributes, thus requiring theoretical models to be recalibrated accordingly.

Third, by focusing on university students, the study provides insights into a critical demographic segment often underrepresented in transportation research. Students are heavy users of online transportation, and their satisfaction drivers reflect broader generational preferences for digital integration and inclusivity. Thus, the study contributes to generational mobility theory by illustrating how young populations redefine service quality expectations in line with their digital lifestyles

(McKenna & Altringer, 2021).

The practical implications of these findings are multifaceted. For online transportation providers, prioritizing seamless digital payment systems should be a strategic focus. Companies that invest in reliable, secure, and user-friendly payment platforms will likely enjoy higher levels of customer satisfaction and loyalty, as evidenced in loyalty program evaluations such as Gojek's GoClub (Ginanjar et al., 2024). Second, service punctuality must be strengthened. Traffic congestion remains a structural challenge in Indonesian cities (Bria et al., 2021), but companies can mitigate user dissatisfaction by improving predictive algorithms for travel time and transparently communicating delays. Investments in artificial intelligence and real-time data analytics, as suggested by Zhang et al. (2018), could significantly improve accuracy and customer trust. Third, inclusivity must be embedded in service design. Disability-friendly features, such as wheelchair-accessible vehicles, driver training on inclusivity, and application interfaces that support accessibility, are not optional but essential for enhancing satisfaction and fulfilling corporate social responsibility. By adopting such measures, companies can position themselves as socially responsible actors in line with government policy directions promoting accessibility in transport (Amri et al., 2023).

The findings also carry broader societal and policy relevance. The demonstrated importance of disability-friendly services directly supports the national agenda on Gender, Disability, and Social Inclusion (GEDSI), aligning with Indonesia's commitments to the Sustainable Development Goals (SDGs), particularly Goal 10 (Reduced Inequalities) and Goal 11 (Sustainable Cities and Communities). Policymakers can leverage these findings to mandate minimum inclusivity standards in online transportation regulations, ensuring that marginalized groups are not excluded from urban mobility. Furthermore, the strong role of digital payment systems reinforces the importance of financial literacy and secure FinTech ecosystems. Regulatory bodies must ensure that digital payment platforms integrated into online transportation services are secure, transparent, and inclusive to prevent fraud and exclusion of technologically disadvantaged groups (Damaini et al., 2018). From a societal perspective, these findings demonstrate how digital transportation services can contribute to educational mobility by enabling safe, efficient, and inclusive travel for students. In a context where access to education is uneven, reliable and inclusive transport options become a critical enabler of equal opportunities in higher education.

Despite its contributions, this study has limitations that provide avenues for future research. The focus on a single university setting in Surabaya limits the generalizability of findings to broader populations across Indonesia. Future studies should adopt multi-city or cross-regional samples, incorporating diverse socio-economic and demographic groups to validate the robustness of these predictors. Second, the reliance on self-reported survey data introduces potential biases such as social desirability and recall errors. Complementary methodologies such as ethnographic observations or big data analytics of ride-hailing platforms could provide richer insights. Third, while this study highlights payment systems, travel time, and inclusivity, it does not fully examine emerging variables such as environmental sustainability, data privacy, and gig-worker welfare, which are increasingly relevant in the discourse on digital mobility (Sardjono et al., 2020; Silaban et al., 2023). Future research should expand the model to include these dimensions, thereby creating a more holistic framework for assessing satisfaction and sustainability in online transportation services.

CONCLUSION

The analysis results indicate that variables significantly influencing user satisfaction with online transportation services include payment systems, travel time, and experience or knowledge related to disability-friendly services. In the digital era, the convenience of cashless payment systems increases user satisfaction by a factor of 16.387 compared with the difficulties associated with cash payments. The accuracy of travel time, which provides shorter and more scheduled trip experiences, increases user satisfaction by a factor of 0.082 compared with inaccurate travel times. Furthermore, user experience and knowledge of disability-friendly online transportation services enhance satisfaction by a factor of 4.449, reflecting user appreciation for inclusive service initiatives provided by drivers. Several variables, however, did not show significant effects, including perceptions related to convenience, price, safety, driver waiting time, application access, and promotional offers. This outcome is expected, as user satisfaction is influenced by diverse individual preferences. Perceptions of safety also yielded

insignificant results, as respondents generally considered the basic security standards of online transportation services to be adequate. Similarly, GEDSI-related perceptions, such as driver gender preferences and user experiences with violence in online transportation, were found to be insignificant because these factors are not regarded as primary determinants of user satisfaction.

ACKNOWLEDGEMENT

This research was made possible through financial support of the Regional Economic Development Institute (REDI). Sincere appreciation is extended to Ms. Erlyn Yuly Astuti, Director of REDI Research, for her invaluable guidance, advice, patience, and expertise throughout the study. Gratitude is also expressed to the participants who generously contributed their time and insights.

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