

Revisiting the DeLone and McLean Model: System Quality, Information Quality, and Service Quality as Determinants of Driver Satisfaction in Ride-Hailing Platforms

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Abstract

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This study investigates the effects of system quality, information quality, and service quality on driver satisfaction in a ride-hailing platform context. The research focuses on drivers using the Maxim application in Mimika Regency, Central Papua, Indonesia. A quantitative explanatory approach was employed using survey data collected from 114 drivers. Data were analyzed using multiple regression and path analysis to examine both partial and simultaneous effects of the independent variables on driver satisfaction. The results indicate that information quality has a significant positive effect on driver satisfaction, while system quality and service quality do not show a significant direct influence. However, jointly, the three variables significantly explain variations in driver satisfaction, accounting for 63.1% of the total variance. These findings suggest that accurate, complete, and timely information plays a critical role in shaping driver satisfaction, particularly in regions with geographical and infrastructural constraints. This study contributes to the literature on information systems success by providing empirical evidence from an emerging and peripheral regional context.

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1. Introduction

The rapid development of information technology has fundamentally transformed business processes and service delivery across various sectors, including transportation. Information systems are no longer merely operational tools but have become strategic assets that influence user satisfaction and organizational performance. A system is generally defined as a set of interrelated components that work together to achieve specific objectives (Andrianof, 2018; Erwati, 2019). In the context of information systems, these components integrate technology, procedures, and human activities to produce meaningful information that supports decision-making processes (Wahyudi & Ridho, 2019; Tokino, 2018).

Information quality represents the value of data that has been processed into useful and meaningful outputs for users. High-quality information is characterized by accuracy, relevance,

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timeliness, and completeness, enabling users to make effective decisions (Gordon B. Davis, 1991; Jogiyanto, 1999; DeLone & McLean, 2003). Several studies emphasize that information quality plays a critical role in determining user satisfaction with information systems, as users expect reliable and understandable information to support their activities (Hervina, 2020; Jansen et al., 2018). When information meets user expectations, satisfaction with the system is likely to increase (Livari, 2005).

In addition to information quality, system quality reflects the technical performance of an information system, including ease of use, reliability, security, and response speed. A well-designed system enables users to interact efficiently and comfortably with the application (Nelson et al., 2005; Aparicio & Oliveira, 2017). System quality has been widely recognized as a key determinant of information system success, as proposed in the DeLone and McLean Information Systems Success Model (DeLone & McLean, 1992; 2003). Higher system quality is expected to enhance user satisfaction and encourage continued system usage (Prayanthi et al., 2020).

Service quality is another important dimension influencing user satisfaction, particularly in technology-based service platforms. Service quality refers to the level of support provided by system developers or service providers in addressing user needs, resolving technical issues, and ensuring system reliability (Tjiptono & Chandra, 2011; Lupiyoadi, 2013). Previous studies indicate that responsive, reliable, and empathetic services contribute positively to user satisfaction and trust (Handini, 2020; Syahra et al., 2020). Poor service quality, on the other hand, may reduce satisfaction and discourage system use (Suhendro, 2016).

The ride-hailing industry represents one of the most prominent applications of information systems in daily life. Maxim is a global ride-hailing platform that provides transportation services through mobile applications. In Indonesia, Maxim has expanded its operations to several regions, including Mimika Regency, Central Papua Province, where it officially began operating in January 2024. The presence of Maxim in Mimika offers employment opportunities and supports community mobility. However, drivers frequently encounter challenges such as limited navigation accuracy, slow system responses, unequal order distribution, and high operational costs influenced by geographical conditions and fuel prices.

Despite the growing adoption of ride-hailing applications, empirical studies examining driver satisfaction in peripheral and infrastructure-constrained regions remain limited. Most previous research on information system success has focused on urban or organizational contexts, leaving a gap in understanding how system quality, information quality, and service quality influence driver satisfaction in emerging regional markets. Therefore, this study aims to examine the effects of system quality, information quality, and service quality on driver satisfaction among Maxim application drivers in Mimika Regency, Central Papua Province. By applying the DeLone and McLean Information Systems Success Model, this study seeks to provide empirical evidence on the determinants of driver satisfaction and contribute to the broader literature on information system success in regional and emerging market contexts.

2. Literature Review

Information Systems Success Model

The success of an information system has been widely examined through the Information Systems Success Model developed by DeLone and McLean (1992; 2003). This model proposes that system quality, information quality, and service quality are key determinants influencing user satisfaction and system use. The model has been extensively applied in various organizational and technological contexts to evaluate the effectiveness of information systems (Livari, 2005; Meilani et al., 2020). In this study, the DeLone and McLean model serves as the primary theoretical foundation to examine driver satisfaction in a ride-hailing application context.

System Quality

System quality refers to the technical performance of an information system and focuses on how well the system functions during user interaction. According to Nelson et al. (2005), system quality can be assessed through reliability, response time, and system integration. A system is considered to have high quality when it operates consistently, securely, and efficiently, enabling users to complete tasks without technical obstacles (Aparicio & Oliveira, 2017).

Several studies indicate that system quality plays an important role in shaping user satisfaction. A system that is easy to use, responsive, and reliable is more likely to be accepted and used continuously by users (Prayanthi et al., 2020). DeLone and McLean (2003) emphasize that system quality directly influences user satisfaction and system usage, making it a critical component of information system success. However, empirical findings regarding the effect of system quality on user satisfaction remain inconsistent, particularly in non-organizational and regional contexts (Pujo Hari Saputro, 2015).

Information Quality

Information quality refers to the quality of output produced by an information system, particularly the usefulness and reliability of the information provided to users. Information is defined as data that has been processed into a meaningful form to support decision-making (Gordon B. Davis, 1991; Jogiyanto, 1999). According to DeLone and McLean (2003), information quality is characterized by accuracy, relevance, completeness, and timeliness.

High-quality information enables users to perform tasks effectively and reduces uncertainty in decision-making processes (Hervina, 2020). Jansen et al. (2018) emphasize that information quality significantly affects user satisfaction, as users rely on accurate and relevant information to support their activities. Research by Duwita Sigalingging and Indah Permatasari (2021) also confirms that better information quality leads to higher user satisfaction. In the context of ride-hailing applications, information quality is particularly important for drivers, as it affects route accuracy, order details, and operational efficiency.

Service Quality

Service quality reflects the level of support provided by system developers or service providers to users. According to Tjiptono and Chandra (2011), service quality is the ability of a service to meet user expectations consistently. DeLone and McLean (2003) argue that service quality has become increasingly important as system users are now treated as customers rather than internal users.

Previous studies indicate that service quality influences user satisfaction through responsiveness, reliability, and technical support (Handini, 2020; Syahra et al., 2020). Poor service quality, such as slow response to complaints or inadequate technical support, can reduce user trust and satisfaction (Suhendro, 2016). In technology-based services, effective service quality ensures that users can rely on the system and resolve issues efficiently, thereby enhancing overall satisfaction.

User Satisfaction

User satisfaction represents the overall evaluation of users based on their experience with an information system. According to Jogiyanto (2005), user satisfaction is the result of users' responses to system output and performance. Satisfaction reflects whether the system meets user needs and expectations (Setyo & Rahmawati, 2015). When users perceive that an information system provides useful information, reliable performance, and adequate support, satisfaction is likely to increase (Handini, 2020).

In the context of ride-hailing platforms, driver satisfaction is influenced by how effectively the system supports daily operations, including order allocation, navigation accuracy, and service

responsiveness. Therefore, examining the relationship between system quality, information quality, service quality, and user satisfaction is essential to understand the success of ride-hailing applications, particularly in regional and emerging market contexts.

Research Hypotheses

Based on the theoretical framework and empirical findings discussed above, the following hypotheses are formulated:

- **H1:** System quality has a significant effect on driver satisfaction.
- **H2:** Information quality has a significant effect on driver satisfaction.
- **H3:** Service quality has a significant effect on driver satisfaction.

3. Methodology

Research Design

This study employs a quantitative research approach with an explanatory survey design. The purpose of this approach is to examine causal relationships between independent variables and a dependent variable by testing formulated hypotheses (Garaika & Darmanah, 2019). The research focuses on analyzing the effects of system quality, information quality, and service quality on driver satisfaction among users of the Maxim ride-hailing application in Mimika Regency, Central Papua Province, Indonesia.

Population and Sample

The population of this study consists of all registered Maxim application drivers operating in Mimika Regency, totaling 466 drivers. Population refers to the entire group of individuals or objects that possess specific characteristics relevant to the research objectives (Garaika & Darmanah, 2019).

The sample size was determined using the Slovin formula with a 95% confidence level and a margin of error of 5%. The Slovin formula is expressed as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = sample size

N = population size

e = margin of error

$$n = \frac{466}{1 + 466(0.05)^2} = 114.4$$

Based on this calculation, the final sample used in this study consisted of 114 drivers. The sampling technique applied was random sampling, ensuring that each driver in the population had an equal opportunity to be selected as a respondent.

Variables and Operational Definitions

This study involves three independent variables and one dependent variable. System quality refers to the technical performance of the Maxim application as perceived by drivers during system use. This construct reflects how well the application operates in supporting drivers' activities and is assessed through indicators including ease of use, access speed, system reliability, and system security (Nelson et al., 2005). Information quality represents the quality of information generated and delivered by the application to its users. It is measured based on the accuracy, relevance, completeness, timeliness, and route management capability of the information provided, which are essential for supporting drivers' operational decisions (DeLone & McLean, 2003).

Service quality refers to the level of support provided by the application provider in assisting users and ensuring smooth system operation. This variable is evaluated through indicators such as ease of response, order availability, and technical support, which reflect the responsiveness and reliability of the service offered (Tjiptono & Chandra, 2011). User satisfaction reflects the overall evaluation of drivers' experiences with the Maxim application, measured through efficiency, effectiveness, and satisfaction with system performance. User satisfaction indicates the extent to which the application meets drivers' expectations and supports their work effectively (Jogiyanto, 2005). All variables were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Data Collection Technique

Primary data were collected through a structured questionnaire distributed online using the Google Forms platform. A questionnaire is a data collection instrument consisting of a series of written questions designed to obtain information from respondents (Alhamid & Anufia, 2019). Respondents were asked to complete the questionnaire after using the Maxim driver application to evaluate their experience regarding system quality, information quality, service quality, and satisfaction.

Data Analysis Technique

Data analysis was conducted using Statistical Package for the Social Sciences (SPSS) version 25. The analysis process included validity testing, reliability testing, and classical assumption tests (normality and heteroscedasticity). Validity was assessed by comparing the calculated correlation coefficient (*r*-count) with the *r*-table value at a significance level of 0.05. Reliability was measured using Cronbach's Alpha, with values exceeding the acceptable threshold indicating reliable instruments.

Multiple linear regression analysis was employed to examine the partial and simultaneous effects of system quality, information quality, and service quality on user satisfaction. In addition, path analysis was applied to analyze the direct and indirect relationships among variables and to identify the magnitude of influence of each independent variable on the dependent variable (Achmad Kuncoro, 2008; Saleh, 2017). Hypothesis testing was conducted using *t*-tests and *F*-tests at a significance level of 5%.

4. Results

Validity and Reliability Tests

Validity testing was conducted as shown at table 1 to examine whether each questionnaire item accurately measured the intended construct. An item is considered valid if the calculated correlation coefficient (*r*-count) exceeds the *r*-table value at a significance level of 0.05. Based on the sample size of 114 respondents, the *r*-table value was 0.1824.

Table 1. Summary of Validity Test Results

Variable	Number of Items	Sig.	Result
System Quality (X_1)	8	0.000	Valid
Information Quality (X_2)	10	0.000	Valid
Service Quality (X_3)	6	0.000	Valid
User Satisfaction (Y)	9	0.000	Valid

Source: Authors' calculations

The results indicate that all questionnaire items have significance values below 0.05 and correlation coefficients higher than the r-table value. Therefore, all items are considered valid and suitable for further analysis.

Reliability testing was performed as shown at table 2 using Cronbach's Alpha to assess the internal consistency of the measurement instruments. A variable is considered reliable if the Cronbach's Alpha value exceeds the acceptable threshold.

Table 2. Reliability Test Results

Variable	Cronbach's Alpha	Result
System Quality (X_1)	0.927	Reliable
Information Quality (X_2)	0.918	Reliable
Service Quality (X_3)	0.862	Reliable
User Satisfaction (Y)	0.660	Reliable

Source: Authors' calculations

The results show that all variables have Cronbach's Alpha values above the minimum acceptable level, indicating that the instruments used in this study are reliable and consistent.

Classical Assumption Tests

The normality test was conducted to assess whether the data were normally distributed. The results indicate that the residual values are distributed around the diagonal line, suggesting that the normality assumption is satisfied.

The heteroscedasticity test was performed using a scatterplot of standardized residuals (SRESID) against standardized predicted values (ZPRED). The scatterplot shows that the data points are randomly distributed above and below zero on the Y-axis and do not form a specific pattern. This result indicates that heteroscedasticity does not occur in the regression model.

Multiple Regression Analysis

Multiple linear regression analysis as shown at table 3 was conducted to examine the effect of system quality, information quality, and service quality on user satisfaction.

Table 3. Coefficient of Determination (R^2)

Model	R	R^2	Adjusted R^2	Std. Error	Durbin-Watson
1	0.794	0.631	0.621	2.471	0.934

Source: Authors' calculations

The coefficient of determination (R^2) value of 0.631 indicates that 63.1% of the variation in user satisfaction can be explained by system quality, information quality, and service quality. The remaining 36.9% is influenced by other factors not included in the model.

Simultaneous Significance Test (F-Test)

The F-test as shown at table 4 was conducted to examine the simultaneous effect of all independent variables on user satisfaction.

Table 4. F-Test Results

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	1147.961	3	382.654	62.685	0.000
Residual	671.478	110	6.104		
Total	1819.439	113			

Source: Authors' calculations

The results show a significance value of 0.000, which is lower than 0.05. This indicates that system quality, information quality, and service quality simultaneously have a significant effect on user satisfaction.

Partial Significance Test (t-Test)

The t-test as shown at table 5 was conducted to examine the partial effect of each independent variable on user satisfaction.

Table 5. t-Test Results

Variable	B	Std. Error	Beta	t	Sig.
Constant	9.613	1.695		5.672	0.000
System Quality (X ₁)	0.134	0.256	0.161	0.521	0.603
Information Quality (X ₂)	0.538	0.157	0.821	3.424	0.001
Service Quality (X ₃)	-0.210	2.320	-0.197	-0.905	0.367

Source: Authors' calculations

The results indicate that information quality has a significant positive effect on user satisfaction ($p < 0.05$), while system quality and service quality do not have a significant partial effect on user satisfaction.

5. Discussion

This study examines the effects of system quality, information quality, and service quality on driver satisfaction in the context of the Maxim ride-hailing application operating in Mimika Regency, Central Papua Province. The findings provide several important insights into the applicability of the DeLone and McLean Information Systems Success Model in a regional and infrastructure-constrained context.

The results indicate that system quality does not have a significant direct effect on driver satisfaction. Although drivers generally perceive the Maxim application as easy to use and functionally adequate, these technical aspects alone are insufficient to enhance satisfaction. This finding suggests that in the context of ride-hailing services, particularly in regions such as Mimika, technical system performance is not the primary determinant of satisfaction. Factors such as tariff efficiency, fuel costs, and geographical distance appear to play a more dominant role in shaping drivers' perceptions of satisfaction. This result is consistent with the findings of Pujo Hari Saputro (2015), which indicate that system implementation quality does not always translate into user satisfaction when contextual constraints are present. However, this finding contrasts with studies that report a significant positive relationship between system quality and user satisfaction in organizational or urban settings (Istianingsih & Wijanto, 2008; Iranto & Januarti, 2012; Winarno, 2014), highlighting the importance of contextual differences.

In contrast, information quality is found to have a significant positive effect on driver satisfaction. This result confirms that accurate, complete, timely, and relevant information plays a crucial role in supporting drivers' daily operations. In the Maxim application, information related to routes, orders, and operational details directly affects drivers' ability to perform tasks efficiently. This finding aligns with previous research demonstrating that high-quality information enhances user satisfaction by reducing uncertainty and improving decision-making (DeLone & McLean, 2003; Jansen et al., 2018; Duwita Sigalingging & Indah Permatasari, 2021). In the regional context of Mimika, where road conditions and navigation challenges are common, the reliability of information becomes even more critical, explaining its dominant influence on satisfaction.

The results also show that service quality does not have a significant direct effect on driver satisfaction. Although drivers acknowledge the availability of technical support and service responsiveness, these factors do not substantially improve satisfaction levels. One possible explanation is that service quality indicators, such as order availability, are perceived as closely linked to system algorithms and regional demand rather than direct service support. This finding is consistent with Noviyanti (2016), who argues that inconsistent service quality may weaken its impact on satisfaction. In the context of Maxim drivers, satisfaction appears to be more strongly influenced by tangible operational outcomes than by perceived service support.

Despite the insignificant partial effects of system quality and service quality, the simultaneous analysis reveals that all three variables collectively have a significant effect on driver satisfaction, explaining 63.1% of the variance. This finding supports the integrated perspective of the DeLone and McLean model, which emphasizes that information system success should be evaluated holistically rather than through isolated dimensions (DeLone & McLean, 1992; 2003). The combined influence of system quality, information quality, and service quality suggests that improvements across multiple dimensions are necessary to enhance driver satisfaction, even if certain dimensions do not show a strong independent effect.

Overall, the findings highlight that the determinants of driver satisfaction in ride-hailing platforms differ from those observed in traditional organizational information systems. Regional characteristics, infrastructure limitations, and economic conditions shape how drivers perceive and evaluate system performance, information reliability, and service support. Therefore, applying established information system success models requires careful consideration of contextual factors, particularly in emerging and peripheral regions.

Policy Implications and Recommendations

Based on the findings of this study, several policy implications can be drawn for ride-hailing platform providers and local stakeholders. Platform providers should prioritize improving the accuracy, completeness, and timeliness of information delivered to drivers, particularly in relation to route management and order details, as high-quality information has been shown to significantly enhance driver satisfaction and operational effectiveness. In addition, system development efforts should be context-sensitive by considering regional characteristics such as geographical conditions, road infrastructure, and fuel costs, since system quality improvements that overlook these factors may not translate into higher satisfaction. Service support strategies should also be optimized by aligning technical assistance and system mechanisms with drivers' operational needs, including fair order distribution and transparent application processes.

Furthermore, policymakers and platform providers are encouraged to evaluate tariff structures and pickup distance policies to ensure alignment with local economic conditions, as discrepancies between operational costs and tariff efficiency may reduce satisfaction despite adequate system performance. Finally, collaboration between local governments and ride-hailing providers is essential to support digital infrastructure development and ensure that technology-based transportation services contribute effectively to regional economic activities.

6. Conclusion

This study investigates the effects of system quality, information quality, and service quality on driver satisfaction in the context of the Maxim ride-hailing application in Mimika Regency, Central Papua Province. The findings demonstrate that information quality plays a significant and positive role in enhancing driver satisfaction, while system quality and service quality do not exhibit significant direct effects. These results indicate that drivers' satisfaction is primarily shaped by the accuracy,

completeness, and timeliness of information provided by the application, which directly supports their operational activities and decision-making processes.

Although system quality and service quality were perceived positively by drivers, their limited influence on satisfaction suggests that technical performance and service support alone are insufficient to improve satisfaction when economic and regional constraints, such as fuel costs, geographical distance, and tariff efficiency, are more salient concerns. However, the simultaneous analysis confirms that system quality, information quality, and service quality collectively have a significant effect on driver satisfaction, explaining a substantial proportion of variance in satisfaction levels. This finding supports the holistic perspective of the DeLone and McLean Information Systems Success Model, emphasizing that information system success should be evaluated through the combined interaction of multiple quality dimensions.

Overall, this study contributes empirical evidence from a peripheral and emerging regional context, highlighting the importance of contextual factors in shaping driver satisfaction with ride-hailing platforms. The results suggest that improving information quality while aligning system design and service support with local economic and infrastructural conditions is essential for enhancing driver satisfaction. These insights provide a foundation for future research to further explore additional determinants of satisfaction and performance in digital platform-based transportation services.

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