



INNOVARES

Journal of Innovative Research in Management

Available at <https://journal.unpas.ac.id/index.php/innovares>

Online Transportation User Loyalty: Empirical Evidence from Service Quality and Digital Satisfaction

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Abstract

This study examines the effect of E-Service Quality on E-Loyalty, with E-Satisfaction positioned as a mediating variable among Grab users in Bandung City. A quantitative approach was applied using descriptive and explanatory methods. Data were obtained through questionnaires distributed to 100 Grab users residing in Bandung and were analyzed using Structural Equation Modeling–Partial Least Squares with SmartPLS 4.1. The findings indicate that E-Service Quality has a positive and significant effect on E-Satisfaction. E-Service Quality also exerts a positive and significant influence on E-Loyalty. In addition, E-Satisfaction has a positive and significant effect on E-Loyalty and mediates the relationship between E-Service Quality and E-Loyalty. Descriptive results show that users' perceptions of electronic service quality, digital satisfaction, and loyalty remain below an optimal level. These findings suggest that loyalty toward online transportation services is shaped not merely by the availability of an application or promotional offers, but by the quality of the digital experience perceived by users. Accordingly, online transportation providers need to strengthen application reliability, service responsiveness, information clarity, transaction security, ease of use, and complaint resolution so that user satisfaction and loyalty can be sustained over time.

Keywords: digital satisfaction; electronic service quality; online transportation; SEM-PLS; user loyalty.

INTRODUCTION

Digital services have reshaped the way consumers access, assess, and maintain relationships with service providers. In online transportation, mobile applications no longer serve only as tools for booking rides; they have become the primary interface through which consumers judge service quality, experience satisfaction, and develop loyalty toward a platform. This shift places electronic service quality at the center of digital marketing management, particularly because consumer experience is shaped not only by physical

interaction with drivers, but also by system reliability, application responsiveness, information clarity, transaction security, ease of use, and interface design (Zeithaml et al., 2019; Kotler & Keller, 2022).

In application-based services, user loyalty carries strategic importance because competition among platforms is intense and consumer switching costs are relatively low. Online transportation users can easily move from one application to another when they find better prices, larger promotions, faster service responses, or a more satisfying user experience. For this reason, digital loyalty cannot be built solely through short-term promotional incentives. It requires a consistent and satisfying service experience. E-Loyalty reflects users' tendency to continue using, revisit, recommend, and maintain their preference for a particular digital platform even when competing alternatives are available (Li et al., 2021; Waruwu & Sahir, 2022; Rezeki et al., 2023).

Grab is one of the online transportation platforms that has operated in Indonesia for many years and has expanded into a digital service ecosystem offering transportation, food delivery, parcel delivery, and digital payment features. Yet, being a major market player does not automatically secure user loyalty. In a competitive online transportation market, users have become increasingly attentive to the quality of experience they receive. Several issues frequently reported in online transportation services include driver delays, unilateral cancellations, difficulty accessing complaint channels, slow customer service responses, and concerns over transaction safety. These issues indicate that digital service quality is not merely a technical matter; it also concerns a company's ability to build trust, satisfaction, and user attachment.

E-Service Quality is an important concept for explaining how users evaluate services delivered through digital platforms. Electronic service quality refers to an application's ability to facilitate information search, booking, transactions, communication, and problem resolution in an effective and efficient manner (Salmah et al., 2021). In online transportation services, service quality is not measured only by the platform's ability to connect users with drivers. It is also reflected in the platform's capacity to provide accurate information, protect privacy, present an understandable interface, and respond promptly when users encounter service problems. Prior studies have shown that E-Service Quality plays an important role in shaping customer satisfaction and loyalty in digital services, although the strength and pattern of this influence may vary depending on the sector, user characteristics, and type of platform examined (Rodríguez et al., 2020; Khan et al., 2023; Purba et al., 2024).

Beyond service quality, E-Satisfaction is another factor that cannot be overlooked in explaining digital loyalty. Digital satisfaction emerges when users' experience with an application meets, or even exceeds, their expectations. Such satisfaction may be shaped by ease of access, time efficiency, convenience in navigating the application, transaction security, service variety, and the company's ability to resolve user problems. Across several studies, E-Satisfaction has been shown to be an important predictor of E-Loyalty, as satisfied users tend to show a stronger intention to reuse a service and recommend it to others (Rodríguez et al., 2020; Dhruba & Gunja, 2023; Khan et al., 2023).

Nevertheless, the relationship among E-Service Quality, E-Satisfaction, and E-Loyalty has not always been consistent. Some studies report that E-Service Quality has a positive and

significant effect on E-Loyalty, either directly or through E-Satisfaction (Khan et al., 2023; Purba et al., 2024; Maola & Dewi, 2024). Other studies, however, suggest that electronic service quality does not always exert a direct influence on loyalty. In several contexts, E-Satisfaction has also failed to mediate this relationship (Roisah et al., 2022; Dewi & Ramli, 2023). These mixed findings indicate that the mechanism through which digital loyalty is formed still requires further examination, particularly in online transportation, whose service characteristics differ from e-commerce, e-wallet, or online banking platforms.

Drawing on this gap, the present study aims to analyze the effect of E-Service Quality on E-Loyalty, with E-Satisfaction serving as an intervening variable among Grab users in Bandung City. This study is relevant because Bandung represents an urban market with a relatively high level of online transportation use, while also facing mobility challenges, traffic congestion, and increasing public dependence on application-based services. Theoretically, this study is expected to enrich the digital marketing literature, particularly by explaining the role of satisfaction in linking electronic service quality and digital loyalty. Practically, the findings are expected to offer insights for online transportation providers in strengthening user loyalty through digital service improvements that are more reliable, responsive, secure, user-friendly, and oriented toward problem resolution..

LITERATURE REVIEW

Service quality, satisfaction, and loyalty are central concepts in digital service marketing. In online transportation, the relationship among these three concepts becomes increasingly important because user experience is shaped not only by the physical service delivered by drivers, but also by the quality of user interaction with the application. The application functions as the initial access point and the main service space through which consumers search for information, place orders, monitor trips, choose payment methods, submit complaints, and evaluate their overall service experience. Therefore, user loyalty in online transportation should be understood as an outcome of both digital service quality and user satisfaction formed throughout the application-use process.

E-Service Quality refers to the ability of an electronic-based service to facilitate users' needs effectively and efficiently. In digital services, quality is not only associated with the final service outcome, but also with the process experienced by users from the moment they open the application until the service is completed. Zeithaml et al. (2019) explain that service quality reflects customers' perceptions of the service components they receive and becomes one of the key determinants of customer satisfaction. Meanwhile, Chase et al., as cited in Salmah et al. (2021), define E-Service Quality as the ability of a website or application to facilitate search, transaction, purchase, and distribution activities effectively and efficiently. Kotler and Keller (2022) also emphasize that service quality concerns the extent to which a service is able to meet or surpass customer expectations. In the context of Grab, this concept is relevant because users evaluate the service through various aspects, including application reliability, response speed, information accuracy, data security, ease of use, and application interface.

The dimensions of E-Service Quality in this study include reliability, responsiveness, information quality, privacy, ease of use, and web design. These six dimensions reflect the

nature of digital services used in the source manuscript, referring to Chase's model as cited in Salmah et al. (2021). Reliability refers to the ability of the application to provide services accurately and consistently. Responsiveness describes the speed of the application and customer service in responding to users' requests or complaints. Information quality concerns the clarity, completeness, and accuracy of information presented in the application. Privacy refers to the protection of users' personal data and transaction security. Ease of use reflects the extent to which users can operate the application without difficulty, while web design concerns the quality of the application's visual display and interface structure. These dimensions are used to operationalize the research variable among Grab users in Bandung City.

Across digital service studies, E-Service Quality has been found to influence both satisfaction and loyalty. Rodríguez et al. (2020), for instance, found that electronic service quality affects user satisfaction in the context of e-retailers, with satisfaction becoming an important pathway through which loyalty is developed. Khan et al. (2023) also reported that E-Service Quality positively affects E-Loyalty in online banking services, with E-Satisfaction functioning as a mediating variable. A similar finding was presented by Purba et al. (2024), who showed that electronic service quality has a significant effect on both satisfaction and loyalty among QRIS users.

However, the empirical pattern is not entirely uniform. Pratama et al. (2023) and Dewi et al. (2023) indicated that E-Service Quality does not always have a strong effect on satisfaction or loyalty, particularly when other factors such as trust, promotion, usage habits, or perceived value become more dominant. These differences suggest that the effect of digital service quality on loyalty is highly context-dependent. It may vary according to the platform's characteristics, the nature of the service, and the way users evaluate the benefits and risks of continued use.

E-Satisfaction refers to the degree of satisfaction users experience after interacting with a digital service. This satisfaction is formed when users' actual experience is consistent with, or better than, their prior expectations. Rodríguez et al. (2020) define E-Satisfaction as customers' evaluation of online shopping experiences based on the comparison between pre-purchase expectations and post-purchase perceptions. Roisah et al. (2022) describe E-Satisfaction as customers' sense of fulfilment and pleasure during online experiences, including information search and transaction processes. They also position E-Satisfaction as an emotional state formed through repeated interactions with an online service provider.

In online transportation services, digital satisfaction arises when users perceive the application as easy to use, the service as available when needed, the information as clear, the transaction as secure, and complaints as handled properly. Satisfaction in this context is therefore not confined to the completion of a ride. It involves the entire digital journey, from opening the application, searching for a service, placing an order, communicating with the driver, completing payment, to receiving assistance when service problems occur.

The dimensions of E-Satisfaction in this study consist of convenience, merchandising, site design, security, and service ability. Convenience reflects how easily users can find and use the service. Merchandising refers to the variety of services, available features, and offers provided through the application. Site design concerns whether the application display is

comfortable, understandable, and easy to navigate. Security describes users' sense of safety regarding their account, transaction, and personal data. Service ability refers to the platform's capacity to provide assistance and resolve service-related problems.

These dimensions are important because Grab users' satisfaction is not shaped only by whether they successfully obtain transportation services. It is also formed through their broader experience within the application ecosystem. A user may complete a trip, but still feel dissatisfied if the fare information is unclear, the complaint feature is difficult to access, the menu structure is confusing, or the platform response is slow. For this reason, E-Satisfaction in online transportation must be understood as a cumulative evaluation of digital convenience, service reliability, safety, and problem-handling capacity.

E-Satisfaction is often positioned as an intervening variable that explains how digital service quality is transformed into loyalty. Satisfied users tend to have a stronger intention to reuse a service, recommend it to others, and remain with the same platform despite the availability of alternatives. Dhruba and Gunja (2023) showed that digital customer satisfaction has a significant effect on loyalty in online banking services. Khan et al. (2023) also found that E-Satisfaction fully mediates the relationship between E-Service Quality and E-Loyalty. In the e-commerce context, Melawati et al. (2023) reported that E-Satisfaction mediates the relationship between electronic service quality and user loyalty.

Even so, the mediating role of satisfaction cannot be assumed to work identically across all digital services. Ashiq and Hussain (2024), for example, found that E-Service Quality may directly affect E-Loyalty, but not always through satisfaction. This finding implies that satisfaction is indeed important, but its mediating strength may differ depending on the sector, user expectations, switching barriers, and the functional value users derive from a digital platform. In online transportation, this issue becomes particularly relevant because users can compare platforms rapidly and shift their choices with relatively little effort.

E-Loyalty represents customer loyalty in a digital environment. It is not expressed only through repeat purchases or repeated service use, but also through users' tendency to remain with a particular platform, recommend it to others, and resist switching to competitors. Li et al. (2021) define E-Loyalty as customers' commitment in a digital setting to continue using or interacting with a specific platform. Waruwu and Sahir (2022) explain that E-Loyalty reflects consumers' inclination to keep using, revisiting, or interacting with a digital platform, with or without an immediate transaction. Rezeki et al. (2023) further argue that E-Loyalty is marked by user attachment to digital services, repeated visits, recurring transactions, and willingness to recommend the service to others.

In this study, E-Loyalty is measured through four dimensions: cognitive, affective, conative, and action loyalty. Cognitive loyalty refers to users' rational belief that Grab is a better service option than its competitors. Affective loyalty reflects users' emotional attachment to the application after receiving positive service experiences. Conative loyalty indicates users' intention to continue using Grab in the future. Action loyalty represents the most concrete form of loyalty, shown through repeated use, recommendations to others, and resistance to competitors' offers. These four dimensions suggest that digital loyalty does not arise instantly. It develops progressively from rational evaluation, positive feelings, repeated intention, and finally actual loyal behavior.

The relationship among E-Service Quality, E-Satisfaction, and E-Loyalty can be understood through the logic of digital customer experience. When users receive an application service that is reliable, responsive, secure, informative, easy to operate, and supported by a well-designed interface, they are more likely to feel satisfied. This satisfaction then strengthens their belief, attachment, intention, and loyal behavior toward the platform. However, because online transportation users can move between applications with little difficulty, service quality alone may not be sufficient to create strong loyalty. Loyalty is more likely to emerge when service quality is translated into a satisfying user experience. In this sense, E-Satisfaction occupies an important psychological position in linking electronic service quality with digital loyalty.

Based on this literature review, the present study positions E-Service Quality as the independent variable, E-Satisfaction as the intervening variable, and E-Loyalty as the dependent variable. This structure is consistent with the study's aim to explain online transportation user loyalty through service quality and digital satisfaction. In the context of Grab users in Bandung City, the model is relevant because competition in online transportation requires firms not only to offer fast and affordable services, but also to provide a digital experience that is consistent, secure, simple, responsive, and satisfying. Thus, the literature review confirms that online transportation user loyalty is shaped by sound electronic service quality and digital satisfaction developed through users' overall experience with the application.

METHODOLOGY

This study employed a quantitative approach using descriptive and explanatory methods. The quantitative approach was selected because the study aimed to examine causal relationships among variables using numerical data collected from respondents. The descriptive method was used to portray users' responses to electronic service quality, digital satisfaction, and online transportation user loyalty. Meanwhile, the explanatory method was applied to test the direct and indirect effects among E-Service Quality, E-Satisfaction, and E-Loyalty. This approach is appropriate for digital marketing research, as relationships among consumer behavior variables can be empirically assessed through statistical models involving latent constructs (Hair et al., 2022; Iba & Wardhana, 2024).

The object of this study was Grab application users in Bandung City. Grab was selected because it is an online transportation service that has reached a relatively mature market stage, making user loyalty a critical issue for sustaining application use. Bandung City was chosen because it is one of Indonesia's major urban areas with a high level of online transportation use and complex mobility dynamics. This context is therefore relevant for examining how digital service quality shapes user satisfaction and loyalty in online transportation. In the source manuscript, the study was directed toward Grab users in Bandung City, focusing on the relationship among E-Service Quality, E-Satisfaction, and E-Loyalty.

The population consisted of Grab users residing in Bandung City. Since the exact number of active Grab users in Bandung is not publicly available, the population was treated as infinite. The sample size was determined using the Lemeshow formula with a 95% confidence level,

a maximum proportion of 0.5, and a 10% margin of error. This calculation produced a minimum sample size of 96.4 respondents, which was then rounded to 100 respondents. The sampling technique used was non-probability sampling with a purposive sampling approach. Respondents were required to have used Grab at least once and to reside in Bandung City. This technique is suitable when the researcher requires respondents who have direct experience with the service being examined (Sugiyono, 2020; Etikan & Bala, 2017).

Primary data were collected through an online questionnaire prepared in Google Forms and distributed to Grab users in Bandung City. The questionnaire was developed based on the indicators of each research variable and used a five-point Likert scale, ranging from strongly disagree to strongly agree. A Likert scale was considered appropriate because it allows respondents' perceptions, attitudes, and evaluations of digital service experience to be captured in a structured manner (Taherdoost, 2019; Sugiyono, 2020). In addition to primary data, this study also used secondary data drawn from scholarly literature, industry-related information, and supporting materials on online transportation services to strengthen the research argument.

This study consisted of three main variables. The independent variable was E-Service Quality, defined as Grab's ability to deliver digital services effectively, efficiently, securely, and in a user-friendly manner. This variable was measured through six dimensions: reliability, responsiveness, information quality, privacy, ease of use, and web design. The intervening variable was E-Satisfaction, referring to users' level of satisfaction with their digital experience while using the Grab application. It was measured through five dimensions: convenience, merchandising, site design, security, and service ability. The dependent variable was E-Loyalty, defined as users' commitment to continue using, reselecting, and recommending Grab. This variable was measured through four dimensions: cognitive, affective, conative, and action loyalty. The operational structure in the source manuscript consisted of 30 statement items, comprising 12 items for E-Service Quality, 10 items for E-Satisfaction, and 8 items for E-Loyalty.

Data were analyzed using Structural Equation Modeling–Partial Least Squares with SmartPLS. SEM-PLS was selected because it is suitable for research models involving latent constructs, reflective indicators, relatively small to moderate samples, and data that do not have to meet strict normality assumptions (Hair et al., 2022; Sarstedt et al., 2022). The analysis was carried out in two stages: assessment of the measurement model, or outer model, and assessment of the structural model, or inner model.

The outer model was evaluated to ensure that the research instrument met validity and reliability criteria. Convergent validity was assessed through outer loading and Average Variance Extracted values. An indicator is considered valid when its loading ideally exceeds 0.70 and the AVE value is above 0.50. Construct reliability was examined using Cronbach's Alpha and Composite Reliability, with a minimum recommended value of 0.70 (Hair et al., 2022; Garson, 2022). Once the measurement model met these requirements, the analysis proceeded to the inner model.

The inner model was evaluated to test relationships among latent variables through path coefficients, t-statistics, p-values, and R-square values. Hypothesis testing was performed using the bootstrapping procedure in SmartPLS. A hypothesis was considered significant

when the t-statistic exceeded 1.96 and the p-value was below 0.05. The mediating effect of E-Satisfaction was examined through the specific indirect effect, namely the path from E-Service Quality to E-Loyalty through E-Satisfaction. Through this procedure, the study was able to determine whether digital satisfaction merely functions as an outcome of service quality, or whether it also serves as a mechanism linking electronic service quality to online transportation user loyalty (Hair et al., 2022; Sarstedt et al., 2022; Iba & Wardhana, 2024)..

RESULT

This study involved 100 Grab users in Bandung City as respondents. The data were analyzed using SmartPLS 4.1 through two main stages: evaluation of the measurement model and evaluation of the structural model. In PLS-SEM, empirical findings should first be examined through the validity and reliability of the constructs before structural relationships are interpreted. This step is necessary because structural estimates are meaningful only when the indicators consistently represent the constructs being measured (Hair et al., 2022; Sarstedt et al., 2022). The research model consisted of three main constructs: E-Service Quality, E-Satisfaction, and E-Loyalty.

The descriptive analysis indicates that the three variables had not reached an optimal condition. Users' responses to E-Service Quality fell into the less satisfactory quality category. This suggests that users perceived Grab's electronic service quality as not yet fully meeting their expectations. Several aspects still require improvement, including service reliability, application and customer service responsiveness, information clarity, privacy protection, ease of use, and application design. In application-based services, these elements of digital experience provide the foundation for building user satisfaction and loyalty (Rodríguez et al., 2020; Khan et al., 2023).

Table 1. Summary of Descriptive Results of Research Variables

Variable	Main Dimensions	Result Tendency	Empirical Implication
E-Service Quality	Reliability, responsiveness, information quality, privacy, ease of use, web design	Less satisfactory service quality	Grab's digital service was not yet perceived as fully reliable, responsive, secure, easy to use, and informative
E-Satisfaction	Convenience, merchandising, site design, security, service ability	Less satisfied	Users' digital experience had not fully met expectations, particularly in service convenience, application design, customer service, and problem resolution
E-Loyalty	Cognitive, affective, conative, action	Less loyal	Users had not yet developed strong emotional attachment, reuse intention, or recommendation behavior

Source: Processed from research findings.

For E-Satisfaction, the results show that users were in the less satisfied category. This finding indicates that the digital experience delivered by Grab had not yet generated optimal satisfaction. The source manuscript emphasizes that lower satisfaction was mainly reflected in indicators related to ease of finding services, time efficiency, satisfaction with the

application's visual design, ease of menu navigation, availability of customer service, and satisfaction with solutions to service problems. Thus, user satisfaction is shaped not only by the successful completion of transportation services, but also by the broader digital process experienced by users from opening the application to resolving service-related issues.

For the E-Loyalty variable, the findings indicate that users were still in the less loyal category. This means that users had not yet developed a strong attachment to Grab. The source manuscript shows that this condition was related to indicators such as emotional attachment, emotional satisfaction after using Grab, intention to reuse the service, intention to recommend the application, routine usage frequency, and the habit of recommending Grab to others. This finding can be understood within the competitive nature of online transportation, where users can easily move to another application when they encounter lower prices, more attractive promotions, or a better service experience. Digital loyalty, therefore, needs to be nurtured through a service experience that is consistent, secure, responsive, and satisfying (Li et al., 2021; Waruwu & Sahir, 2022; Rezeki et al., 2023).

Before testing the structural relationships, this study assessed construct reliability. The results show that all variables had Cronbach's Alpha and Composite Reliability values above 0.70. Thus, all constructs were considered reliable. E-Service Quality had a Cronbach's Alpha value of 0.919 and a Composite Reliability value of 0.923. E-Satisfaction obtained a Cronbach's Alpha value of 0.905 and a Composite Reliability value of 0.908. Meanwhile, E-Loyalty recorded a Cronbach's Alpha value of 0.866 and a Composite Reliability value of 0.868. These values indicate that the measurement items had strong internal consistency. The source manuscript also confirms that all latent variables met the reliability criteria, as their values exceeded the recommended threshold of 0.70.

Table 2. Construct Reliability

Variable	Cronbach's Alpha	Composite Reliability	Description
E-Service Quality	0.919	0.923	Reliable
E-Satisfaction	0.905	0.908	Reliable
E-Loyalty	0.866	0.868	Reliable

Source: Processed from SmartPLS 4.1 output.

These results suggest that the research instrument was appropriate for structural model testing. In PLS-SEM, reliability values above 0.70 indicate that the indicators within a construct have sufficient internal consistency in measuring the same underlying concept (Hair et al., 2022; Garson, 2022). In addition, the discriminant validity test showed that each indicator had a stronger correlation with its own construct than with other constructs. This means that the indicators were able to distinguish the construct they were intended to measure from other constructs in the model. The source manuscript concludes that the measurement model satisfied the discriminant validity criteria and that the questionnaire was suitable for further statistical testing.

The structural model evaluation shows that the research model had strong explanatory power. The R-square value for E-Satisfaction was 0.785, while the R-square value for E-Loyalty was 0.861. In PLS-SEM, a high R-square value indicates that the exogenous constructs have a strong ability to explain variance in the endogenous constructs (Hair et al.,

2022; Iba & Wardhana, 2024). In this study, E-Service Quality was able to explain a large proportion of variance in E-Satisfaction. At the same time, E-Service Quality and E-Satisfaction jointly explained a substantial proportion of variance in E-Loyalty.

The hypothesis testing results indicate that all relationships among variables were significant. First, E-Service Quality had a positive and significant effect on E-Satisfaction, with an effect contribution of 43.1%. This means that better electronic service quality leads to higher user satisfaction with Grab's digital service. In online transportation, users are more likely to feel satisfied when the application is perceived as reliable, responsive, informative, secure, easy to use, and visually convenient. This finding is consistent with Rodríguez et al. (2020), Khan et al. (2023), and Purba et al. (2024), who demonstrated that electronic service quality is an important antecedent of digital customer satisfaction.

Second, E-Service Quality had a positive and significant effect on E-Loyalty, with an effect contribution of 35.5%. This finding indicates that digital service quality does not only shape user satisfaction, but can also directly encourage user loyalty. Users who experience better digital service are more likely to continue using the application, maintain their preference for the platform, and recommend it to others. This result supports the findings of Khan et al. (2023) and Maola and Dewi (2024), who showed that E-Service Quality can serve as a foundation for digital loyalty formation.

Third, E-Satisfaction had a positive and significant effect on E-Loyalty, with an effect contribution of 22.7%. The source manuscript explains that user satisfaction plays a role in shaping loyalty toward the Grab application. In other words, when users are satisfied with the digital experience provided, they tend to show stronger intentions to reuse the service, recommend it, and remain with the same platform. This finding supports Dhruba and Gunja (2023), Melawati et al. (2023), and Rezeki et al. (2023), who positioned satisfaction as an important predictor of digital customer loyalty.

Fourth, E-Satisfaction was found to mediate the effect of E-Service Quality on E-Loyalty. The mediating effect contributed 16.4%. The abstract of the source manuscript also states that E-Satisfaction mediates the relationship between E-Service Quality and E-Loyalty among Grab users in Bandung City. Since the direct effect of E-Service Quality on E-Loyalty was also significant, the mediation can be interpreted as partial mediation. This means that electronic service quality can enhance loyalty directly, while part of its influence also works through users' digital satisfaction.

Table 3. Summary of Hypothesis Testing Results

Hypothesis	Relationship	Effect Size	Description
H1	E-Service Quality → E-Satisfaction	43.1%	Positive and significant
H2	E-Service Quality → E-Loyalty	35.5%	Positive and significant
H3	E-Satisfaction → E-Loyalty	22.7%	Positive and significant
H4	E-Service Quality → E-Satisfaction → E-Loyalty	16.4%	Significant mediation

Source: Processed from SmartPLS 4.1 output

Overall, the findings indicate that user loyalty in online transportation is shaped simultaneously by digital service quality and digital satisfaction. Electronic service quality functions as the initial driver of both satisfaction and loyalty, while digital satisfaction becomes

the psychological mechanism that reinforces this relationship. These results suggest that strengthening Grab users' loyalty cannot rely solely on promotions or the expansion of service features. Instead, it requires a broader improvement in digital experience. Application reliability, service responsiveness, transaction security, information clarity, ease of use, interface design, and complaint handling are therefore crucial elements in enhancing satisfaction and loyalty among online transportation users.

DISCUSSION

The results of this study show that loyalty among online transportation users cannot be understood merely as a matter of habitual application use. Rather, it is shaped by users' repeated experience with digital service encounters. In the case of Grab users in Bandung City, the descriptive findings show that E-Service Quality was perceived as less satisfactory, E-Satisfaction remained at a low level, and E-Loyalty was also not yet strong. This finding is important because it reveals a gap between Grab's position as one of the major online transportation platforms and the actual experience perceived by some of its users. In other words, a strong brand presence does not automatically generate loyalty when the digital experience has not fully met user expectations.

This condition is consistent with the perspective in digital marketing that platform loyalty is built through service experiences that are reliable, secure, easy to use, responsive, and capable of delivering value over time (Rodríguez et al., 2020; Li et al., 2021; Khan et al., 2023). In a market where users can easily compare applications, brand familiarity alone is insufficient. Users continue to evaluate whether the application can reduce uncertainty, save time, provide accurate information, ensure transaction safety, and respond properly when problems occur. When these aspects are not consistently perceived, loyalty becomes fragile.

The first finding shows that E-Service Quality has a positive and significant effect on E-Satisfaction. In the source manuscript, the effect of E-Service Quality on E-Satisfaction is reported at 43.1%, meaning that nearly half of the variation in user satisfaction can be explained by the electronic service quality perceived by Grab users in Bandung City. This finding indicates that user satisfaction is strongly influenced by how the application performs, how information is presented, how complaints are handled, and how secure users feel when using the service. A good digital service experience makes users feel that the application is dependable and able to respond to their practical needs. Conversely, when the application is perceived as slow, the information is unclear, customer service is difficult to reach, or problem resolution is inadequate, user satisfaction tends to decline.

Theoretically, this finding strengthens the view that E-Service Quality is an important antecedent of satisfaction in digital services. Satisfaction does not emerge separately from service experience. It is formed through users' evaluation of the quality they receive. In online transportation, the user experience begins when the application is opened, continues when the service is searched and booked, develops further during driver confirmation and the trip itself, and ends with payment, rating, or complaint submission. Each stage contributes to users' perception of service quality. When the process runs smoothly, quickly, safely, and informatively, users are more likely to feel satisfied. This finding is in line with Rodríguez et al.

(2020), Khan et al. (2023), and Purba et al. (2024), who found that electronic service quality has a positive effect on digital customer satisfaction.

In the context of Grab, this finding also shows that user satisfaction cannot be sustained merely through promotions or service variety. Discounts, bonuses, or multiple service features may attract users, but more stable satisfaction is formed when the application's basic service functions work properly. Therefore, system reliability, response speed, fare and location accuracy, personal data protection, ease of navigation, and interface design should be managed seriously. When these elements are inconsistent, the user experience becomes fragmented and satisfaction becomes difficult to maintain. In a competitive platform industry, this type of experience becomes even more important because users have other applications that can be accessed with little effort (Dhruba & Gunja, 2023; Ashiq & Hussain, 2024).

The second finding indicates that E-Service Quality has a positive and significant effect on E-Loyalty. In the source manuscript, the effect of E-Service Quality on E-Loyalty is reported at 35.5%, suggesting that electronic service quality plays a substantial role in shaping loyalty among Grab users in Bandung City. This means that users who perceive Grab's digital service quality more favorably are more likely to continue using the service, choose Grab over competitors, and recommend it to others. Thus, digital service quality is not only a determinant of satisfaction, but also a direct driver of user loyalty.

The key implication of this finding is that digital loyalty has a rational foundation. Users may become loyal because they perceive an application as more reliable, easier to use, more informative, and safer than alternative platforms. At this level, loyalty does not necessarily emerge from deep emotional attachment. It may begin with a functional evaluation of service quality. When an application helps users move more efficiently, saves time, provides clear information, and reduces transaction risks, users have practical reasons to continue using it. This logic is consistent with the concepts of cognitive and conative loyalty, in which users remain with a platform because they hold a favorable evaluation and have an intention to reuse it (Li et al., 2021; Waruwu & Sahir, 2022; Rezeki et al., 2023).

However, the descriptive finding that user loyalty remains in the less loyal category should not be overlooked. Although E-Service Quality statistically affects loyalty, the quality currently perceived by users is not yet strong enough to produce optimal loyalty. This explains why statistical results and descriptive conditions need to be read together. Causally, service quality is important for loyalty. Factually, however, the quality of Grab's digital service as perceived by respondents still leaves room for improvement, and the resulting loyalty has not yet become robust. This condition points to a clear managerial agenda. Grab needs to improve its digital service quality not only to make users satisfied, but also to give them stronger reasons to stay despite competitors' offers.

The third finding shows that E-Satisfaction has a positive and significant effect on E-Loyalty. The source manuscript reports that the path coefficient from E-Satisfaction to E-Loyalty is 0.354, with a t-statistic of 3.370 and a p-value of 0.001, indicating a statistically significant relationship. This finding means that the higher users' satisfaction with Grab's digital experience, the greater their likelihood of becoming loyal to the application. Satisfied users do not merely feel that the service has met their expectations. They are also more likely to reuse the service, recommend it to others, and maintain their preference for the same platform. This

result is consistent with the SmartPLS testing in the source manuscript, which concludes that E-Satisfaction has a positive and significant effect on E-Loyalty.

Conceptually, digital satisfaction functions as a psychological bridge between service experience and the decision to continue using a platform. Loyalty depends not only on what the application provides, but also on how users evaluate the experience. Two users may receive a similar service, but their loyalty may differ if their satisfaction levels differ. Users who feel satisfied tend to form more positive perceptions, show a lower intention to switch, and become more tolerant of minor service disruptions. By contrast, dissatisfied users are more likely to move to another platform, particularly in an online transportation market where several alternatives are readily available. This finding is in line with Dhruva and Gunja (2023), Melawati et al. (2023), and Rezeki et al. (2023), who showed that digital customer satisfaction is an important predictor of loyalty.

Nevertheless, the reported effect of E-Satisfaction on E-Loyalty, at 22.7%, also suggests that satisfaction is not the only determinant of loyalty. Loyalty in online transportation may also be shaped by price, promotions, driver availability, perceived travel safety, usage habits, the quality of interaction with drivers, and users' comparison of competing platforms. This helps explain why some previous studies found that satisfaction does not always operate as the dominant mediator in every digital service context. Pratama et al. (2023) and Dewi et al. (2023), for example, indicated that E-Satisfaction does not always strongly mediate the relationship between service quality and loyalty, especially when other factors such as e-trust, promotion, and usage routines become more influential.

The fourth and most central finding of this study is that E-Satisfaction mediates the effect of E-Service Quality on E-Loyalty. The source manuscript reports that the indirect effect of E-Service Quality on E-Loyalty through E-Satisfaction has a coefficient of 0.314, with a t-statistic of 3.342 and a p-value of 0.001. Since the t-statistic exceeds the required threshold and the p-value is below 0.05, the mediating role of E-Satisfaction is statistically supported. This means that electronic service quality does not only influence loyalty directly, but also strengthens loyalty by first improving user satisfaction. The source manuscript further confirms that the direct effect of E-Service Quality on E-Loyalty remains significant; therefore, the mediation can be understood as partial mediation.

This partial mediation carries an important meaning. First, users may become loyal because they directly evaluate Grab's service quality, for example when the application is easy to operate, the information is clear, or transactions feel secure. Second, users may also become loyal because service quality creates satisfaction before loyalty develops. In other words, loyalty is formed through two routes: a direct functional route and an experiential route through satisfaction. The functional route suggests that good service quality immediately gives users a practical reason to keep using the application. The satisfaction route suggests that good service quality creates a positive experience, and this positive experience strengthens user loyalty. This pattern is consistent with Maola and Dewi (2024) as well as Purba et al. (2024), who positioned E-Satisfaction as an important mediator in the relationship between electronic service quality and customer loyalty.

From a managerial standpoint, the partial mediation finding implies that improving loyalty should not be treated as a single-step process. Grab cannot rely only on technical application

improvements, nor can it depend only on customer satisfaction campaigns. Both aspects need to be managed together. Technical improvements are needed to make the application more reliable, responsive, secure, informative, and easier to use. At the same time, these improvements must be translated into a satisfying user experience. A technically improved application may not automatically increase loyalty if users do not feel that their service problems are resolved, their time is saved, and their interaction with the platform becomes more convenient.

The findings also show that loyalty in online transportation is more complex than loyalty in many other digital services. In online transportation, users interact not only with the application, but also with drivers, pricing systems, location accuracy, payment channels, customer service, and real-time service conditions. A weakness in one part of the service may reduce satisfaction even when other parts work well. For example, users may find the application easy to use but still feel dissatisfied if customer service is slow, if the driver cancels the order, or if information about fares and locations is inaccurate. Therefore, the development of E-Loyalty requires an integrated service strategy that connects application quality, operational reliability, complaint handling, and user trust.

The descriptive results of this study strengthen this interpretation. E-Service Quality, E-Satisfaction, and E-Loyalty were all found to be below the optimal category. This means that the statistical relationships are significant, but the actual condition of users' perceptions still requires improvement. The findings should therefore not be read only as evidence that service quality and satisfaction influence loyalty. They should also be read as a warning that the present level of digital service experience has not yet created strong loyalty among users. For Grab, this indicates that user loyalty in Bandung City still needs to be reinforced through improvements in both digital infrastructure and user-oriented service management.

Theoretically, this study contributes to digital marketing literature by confirming that E-Service Quality, E-Satisfaction, and E-Loyalty are closely connected in the context of online transportation. The study supports the view that digital loyalty is not only the result of promotional attraction or platform familiarity. It is also shaped by users' evaluation of service reliability, application responsiveness, perceived security, interface convenience, and problem-solving capacity. In addition, the finding of partial mediation enriches the understanding that E-Satisfaction is not the only pathway through which service quality affects loyalty, but it remains a meaningful mechanism in strengthening the relationship.

Practically, the findings suggest that Grab and similar online transportation providers should prioritize improvements that directly affect users' day-to-day experience. Application reliability needs to be strengthened so that users do not experience service interruptions during booking, payment, or trip monitoring. Service responsiveness should be improved, especially in customer service and complaint handling. Information quality must be maintained so that users receive accurate details regarding fares, driver location, estimated arrival time, payment status, and service procedures. Privacy and transaction security should also remain central concerns, since users increasingly expect digital platforms to protect their personal and financial data.

In addition, ease of use and interface design should not be treated merely as technical or aesthetic matters. A simple, clear, and well-organized interface can reduce user effort and

make the service experience more comfortable. This is particularly important in online transportation, where users often need quick decisions in real-time situations. When the application is difficult to navigate, the menu is unclear, or the complaint feature is hidden, users may feel frustrated even if the core transportation service is available. Thus, user-centered design becomes part of the broader strategy for building satisfaction and loyalty.

Overall, the discussion confirms that user loyalty in online transportation is built through a combination of service quality and digital satisfaction. Electronic service quality creates the functional basis for loyalty, while E-Satisfaction converts service experience into a stronger psychological attachment to the platform. In a competitive market where users can easily switch applications, loyalty must be earned through consistent, secure, responsive, and satisfying digital experiences.

CONCLUSION

This study concludes that user loyalty toward Grab's online transportation service in Bandung City is shaped by electronic service quality and digital satisfaction. The findings show that E-Service Quality has a positive and significant effect on E-Satisfaction, E-Service Quality also has a positive and significant effect on E-Loyalty, and E-Satisfaction positively and significantly affects E-Loyalty. In addition, E-Satisfaction is proven to mediate the effect of E-Service Quality on E-Loyalty. These results indicate that digital service quality is not merely a technical aspect of application use. It also forms the basis of a satisfying user experience, which in turn encourages loyalty.

Empirically, the study shows that Grab's electronic service quality is still perceived as less than optimal by users. This is reflected in respondents' assessments, where E-Service Quality was categorized as less satisfactory, E-Satisfaction as relatively low, and E-Loyalty as not yet strong. Thus, although Grab is one of the major online transportation platforms, the digital experience perceived by users in Bandung City still requires improvement, particularly in service reliability, response speed, information clarity, data security, ease of use, application design, and complaint resolution.

A key finding of this study is that E-Satisfaction serves as a partial mediator in the relationship between E-Service Quality and E-Loyalty. This means that electronic service quality can increase user loyalty directly, while part of its effect also works through digital satisfaction. Users who experience an application that is more reliable, responsive, secure, easy to use, and informative are more likely to feel satisfied. This satisfaction then strengthens their intention to continue using Grab, recommend it to others, and maintain their preference for the platform. Therefore, user loyalty cannot be built merely through the existence of an application or promotional strategies; it must be developed through a consistent and satisfying digital service experience.

Theoretically, this study contributes to digital marketing literature by confirming the importance of E-Satisfaction as a mechanism linking E-Service Quality and E-Loyalty in online transportation services. The findings also reinforce the view that digital loyalty is formed through a combination of functional evaluation and psychological experience. Users may

remain loyal because the application is practically useful, but stronger loyalty emerges when the service experience also produces satisfaction.

Practically, the findings suggest that online transportation providers need to focus on improving the quality of digital service encounters. Application reliability should be strengthened to reduce service disruption during booking, payment, and trip monitoring. Customer service responsiveness must be improved so that user complaints are addressed quickly and properly. Information provided in the application should be accurate, complete, and easy to understand. At the same time, transaction security, privacy protection, ease of navigation, and user-centered interface design should remain central priorities in service development.

This study has several limitations. First, the research was conducted only among Grab users in Bandung City, so the findings may not fully represent online transportation users in other cities with different mobility patterns, competitive conditions, or user characteristics. Second, the study focused only on E-Service Quality, E-Satisfaction, and E-Loyalty. Future studies may include other relevant variables, such as e-trust, perceived value, price fairness, promotion attractiveness, driver service quality, perceived safety, and switching intention. Third, future research may compare several online transportation platforms to obtain a broader understanding of digital loyalty in a competitive platform-based service market.

Overall, this study concludes that strengthening user loyalty in online transportation requires more than service availability and promotional incentives. Loyalty is more likely to emerge when users repeatedly experience a digital service that is reliable, responsive, secure, clear, easy to use, and capable of resolving their problems. In this sense, E-Service Quality and E-Satisfaction are not separate managerial concerns, but two connected elements that jointly determine whether users will remain with a digital transportation platform over time.

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