

## The Role of Consumer Satisfaction in Mediating the Effect of Service Quality and Information Technology Systems on Consumer Loyalty in Transportation Services

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**ABSTRACT:** This study aims to analyze the role of consumer satisfaction in mediating the influence of service quality and information technology systems on consumer loyalty in transportation services within the Mojokerto City government, East Java, Indonesia. The research method used was a quantitative approach using a survey technique among passengers of the free school transportation (ASG) in Mojokerto City, East Java, Indonesia. The study recruited 161 respondents, determined based on the Hair Formula, i.e.,  $7 \times 23$  (number of indicators). The sampling method used was random sampling. A structured questionnaire was used for data collection and analyzed using path analysis to examine the direct and indirect effects between variables. The results of the study indicate that service quality and information technology systems have a positive and significant effect on consumer satisfaction. Furthermore, consumer satisfaction has a positive and significant effect on consumer loyalty. Furthermore, the results of the mediation test indicate that consumer satisfaction significantly mediates the effect of service quality and information technology systems on consumer loyalty. These findings indicate that increasing customer loyalty depends not only on service quality and the direct implementation of information technology systems, but also on the level of customer satisfaction. Therefore, transportation services are advised to continuously improve service quality and optimize information technology systems to create customer satisfaction, which ultimately drives long-term loyalty.

**KEYWORDS:** Service Quality; Information Technology; Consumer Loyalty, and Consumer Satisfaction.

### I. INTRODUCTION

The development of the passenger transportation industry in recent decades has demonstrated highly competitive dynamics, in line with increasing public mobility, technological advances, and changing user expectations (Lovelock & Wirtz, 2016; Kotler et al., 2017). Transportation is no longer viewed simply as a means of getting from one place to another, but has become a crucial part of the service experience, influencing passenger perceptions, satisfaction, and loyalty (Pine & Gilmore, 2011; Grönroos, 2018). In this context, transportation service providers are required to deliver high-quality services and optimally utilize information technology systems to meet increasingly complex passenger needs and expectations (Parasuraman et al., 1988; Buhalis & Law, 2008).

Service quality is a key factor in determining the success of service organizations, including in the passenger transportation sector (Zeithaml et al., 2018). Service quality reflects a service provider's ability to deliver reliable, responsive, safe, empathetic service, supported by adequate facilities (Parasuraman et al., 1988). Passengers tend to assess service quality not only based on physical aspects, such as the comfort of facilities and infrastructure, but also on the attitude and competence of staff, punctuality, clarity of information, and ease of access to service (Brady & Cronin, 2001). If the service quality meets or exceeds passenger expectations, a positive perception will be formed, leading to satisfaction and a desire to continue using the service in the future (Kotler & Keller, 2016).

In addition to service quality, the use of information technology systems is also a strategic factor that increasingly determines the competitiveness of transportation service providers (Laudon & Laudon, 2020). The application of information technology, such as online ticket booking systems, mobile applications, departure schedule information systems, digital payments, and real-time information services, has transformed the way passengers interact with service providers (Venkatesh et al., 2003). Information technology serves not only as an operational support tool but also as a means to improve efficiency, accuracy, transparency, and ease of access to services (DeLone & McLean, 2003). Passengers accustomed to technology tend to expect fast,

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easy, and integrated services, so the quality of the information technology system used also influences their perception of the overall service (Tam & Oliveira, 2016).

In a context of increasingly fierce competition, passenger loyalty is a crucial asset for the sustainability of transportation service organizations. Passenger loyalty is reflected in service reuse behavior, willingness to recommend to others, and resistance to competitors' offerings (Griffin, 2005). Loyal passengers not only contribute to stable revenue but also act as indirect promotional agents through positive word of mouth (Reichheld & Sasser, 1990). However, loyalty is not formed instantly, but rather through a psychological process influenced by service experiences, perceived value, and passenger satisfaction levels (Oliver, 1999).

Passenger satisfaction is a crucial variable bridging the relationship between service quality and the use of information technology systems and passenger loyalty (Anderson & Srinivasan, 2003). Satisfaction arises when passengers perceive service performance to meet or exceed their initial expectations (Kotler & Keller, 2016). In the context of transportation services, satisfaction can be influenced by the consistency of service quality, ease of use of information technology, and the service provider's ability to handle complaints and issues (Zeithaml et al., 2018). Satisfied passengers tend to develop stronger emotional bonds with service providers, increasing the likelihood of long-term loyalty.

Although the theoretical relationship between service quality, information technology, satisfaction, and loyalty has been widely discussed in the service management literature, empirical research has yielded mixed results, particularly in the context of passenger transportation services (Cronin et al., 2000). Differences in user characteristics, levels of technology adoption, and service operational conditions can influence the strength and direction of the relationships between these variables (Venkatesh et al., 2003). Furthermore, there remains a gap in research that comprehensively examines the role of passenger satisfaction as an intervening variable in explaining the influence of service quality and the use of information technology systems on passenger loyalty (Tam & Oliveira, 2016).

On the other hand, field observations indicate that improvements in physical facilities and the implementation of information technology do not necessarily automatically increase passenger loyalty. In some cases, passengers still complain about inconsistent service quality, lack of staff responsiveness, information technology system disruptions, and inaccurate service information (Buhalis & Law, 2008). These conditions have the potential to reduce passenger satisfaction levels, ultimately negatively impacting their loyalty (Oliver, 1999). This suggests that service quality and information technology must be managed in an integrated manner and oriented toward passenger satisfaction to foster sustainable loyalty.

This research is expected to provide an empirical understanding of how service quality and the use of information technology systems influence passenger satisfaction and its implications for loyalty. Furthermore, the results are expected to serve as a basis for transportation service managers in formulating strategies to improve service quality and develop information technology that is oriented toward sustainable passenger satisfaction and loyalty.

## **II. LITERATURE REVIEW AND HYPOTHESIS**

### **Service Quality Influences Customer Satisfaction**

Service quality is a key determinant of customer satisfaction, particularly in service organizations. Service quality is generally understood as the level of service excellence perceived by consumers compared to their expectations prior to receiving the service (Parasuraman et al., 1988). If the service performance exceeds or at least meets expectations, consumers will be satisfied; conversely, a discrepancy between expectations and reality will lead to dissatisfaction (Kotler & Keller, 2016).

The SERVQUAL model developed by Parasuraman et al. (1988) explains that service quality consists of five main dimensions: tangibles, reliability, responsiveness, assurance, and empathy. These five dimensions have been empirically proven to significantly influence levels of customer satisfaction in various service industry contexts. Research by Cronin and Taylor (1992) confirms that consumer perceptions of service quality have a positive and direct relationship with satisfaction, even stronger than the influence of satisfaction on consumer behavioral intentions.

Various empirical studies also show that improving service quality will impact customer satisfaction, loyalty, and organizational image. Caruana's (2002) research found that service quality acts as a primary antecedent of customer satisfaction, which subsequently influences loyalty. Therefore, organizations need to consistently maintain and improve their service quality through human resource development, service process improvements, and a focus on customer needs and expectations. These efforts are crucial strategies for creating sustainable customer satisfaction and long-term competitive advantage. Based on this explanation, the following hypothesis is formulated:

H1: Service quality has a positive effect on consumer satisfaction.

### **Information technology systems influence customer satisfaction**

Information technology systems (ITS) play a strategic role in improving customer satisfaction, particularly in the digital era, which demands speed, accuracy, and ease of access to services. IT systems encompass integrated hardware, software, databases, and procedures to effectively manage and present information to users. The implementation of reliable IT systems enables

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organizations to provide more responsive, transparent, and consistent services, positively impacting customer perceptions and experiences (Laudon & Laudon, 2020).

Customer satisfaction arises when perceived service performance meets or exceeds customer expectations. In this context, IT systems serve as a primary means of improving the quality of interactions between service providers and customers. For example, information systems that are easy to use, fast, and error-free can reduce wait times, improve service accuracy, and provide a sense of security in transactions, ultimately increasing customer satisfaction (DeLone & McLean, 2003).

Furthermore, the information systems success model states that system quality, information quality, and service quality are key determinants of user satisfaction. Systems with high reliability, good flexibility, and relevant and timely information will drive higher levels of customer satisfaction (Petter et al., 2008). In the service sector, including public services and digital businesses, information technology systems also enable service personalization, customer needs tracking, and real-time feedback delivery. Based on this explanation, the following hypothesis is formulated:

H2: Information technology systems have a positive effect on customer satisfaction.

### **Service quality influences consumer loyalty**

Service quality is a key determinant of consumer loyalty. Service quality is defined as the level of service excellence perceived by consumers based on a comparison between their expectations prior to receiving the service and their perceptions of the service performance (Parasuraman et al., 1988). When service quality meets or even exceeds consumer expectations, sustained satisfaction results, ultimately driving consumer loyalty.

Consumer loyalty is reflected in a commitment to repeat purchases, positive recommendations, and resilience to the influence of competitors' offerings (Oliver, 1999). Consistent service quality—through the dimensions of reliability, responsiveness, assurance, empathy, and tangibles—creates a positive experience that strengthens the emotional bond between consumers and service providers. This relationship fosters trust and a sense of security, which are the foundations of long-term loyalty.

Various empirical studies have shown that improving service quality significantly impacts consumer loyalty, both directly and through satisfaction as a mediating variable (Zeithaml et al., 2018). Consumers who experience high-quality service tend to have a better perception of value, making them reluctant to switch to another provider even when there is a price difference. Therefore, customer-oriented organizations need to make service quality a primary strategy to maintain customer loyalty and sustainably increase competitiveness. Based on this explanation, the following hypothesis is formulated:

H3: Service quality has a positive effect on customer loyalty.

### **Information technology systems influence consumer loyalty**

Information technology systems (ITS) play a strategic role in building and maintaining consumer loyalty in the digital era. ITS not only serves as an operational support tool but also serves as a key tool in creating a fast, accurate, and personalized service experience for consumers. Reliable systems enable companies to effectively manage customer data, provide real-time information, and improve the quality of interactions between companies and consumers (Laudon & Laudon, 2020).

The implementation of integrated IT systems, such as customer relationship management (CRM), e-services, and digital platforms, has been proven to increase customer satisfaction through ease of service access, speed of response, and consistent service quality. This satisfaction then drives customer loyalty in the form of repeat purchases, positive recommendations, and long-term commitment to the company (Kotler & Keller, 2016). In other words, IT acts as an enabler linking service quality with customer loyalty.

Several empirical studies have shown that a quality information technology system, in terms of ease of use, system reliability, data security, and information quality, significantly influences consumer loyalty (DeLone et al., 2003). Consumers tend to be loyal to companies that provide stable and reliable digital systems, as this increases trust and reduces perceived risk in transactions. Based on this explanation, the following hypothesis is formulated:

H4: Information technology systems have a positive effect on consumer loyalty.

### **Consumer satisfaction influences consumer loyalty**

Consumer satisfaction is a key determinant of consumer loyalty to a product or service. Satisfaction arises when the perceived performance meets or exceeds their initial expectations. According to Kotler and Keller, satisfied consumers tend to have positive attitudes, make repeat purchases, and recommend products or services to others (Kotler & Keller, 2016). Thus, satisfaction not only impacts short-term relationships but also forms the foundation for long-term relationships between companies and consumers.

Various studies show that high levels of satisfaction significantly increase consumer loyalty. Oliver explains that loyalty is a deep commitment to repurchase or reuse a preferred product or service consistently in the future, despite situational influences and competitors' marketing efforts (Oliver, 1999). Repeated satisfaction strengthens consumers' trust and emotional attachment, making them more likely to resist alternative offers from competitors.

Furthermore, consumer satisfaction also contributes to lower price sensitivity and increased tolerance for service errors. Loyal customers are generally more forgiving of minor shortcomings due to their previous positive experiences (Zeithaml et al., 2018).

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Therefore, companies that are able to consistently manage and improve customer satisfaction will have a greater opportunity to build sustainable loyalty, which ultimately has a positive impact on business performance and sustainability. Based on this explanation, the following hypothesis is formulated:

H5: Customer satisfaction has a positive effect on customer loyalty.

### **The Role of Customer Satisfaction as a Mediating Variable in the Effect of Service Quality on Customer Loyalty**

Service quality is a key determinant in shaping customer loyalty, but the relationship is generally indirect. In many service marketing studies, customer satisfaction is viewed as a mediating variable that bridges the influence of service quality on customer loyalty. Parasuraman et al. (1988) explain that service quality is reflected in the gap between customer expectations and perceptions of the service received. When service quality is perceived as high, customers tend to experience greater levels of satisfaction.

Customer satisfaction is defined as an affective response that arises after comparing service performance with initial expectations (Kotler & Keller, 2016). Satisfied customers will have a positive attitude toward the service provider, which in turn drives their intention to reuse the service. In this context, satisfaction acts as a psychological mechanism that transforms perceptions of service quality into loyal behavior. Oliver (1999) asserts that loyalty is a deep commitment to consistently repurchase or reuse a service in the future, despite situational pressures or marketing efforts from competitors.

Various empirical studies have shown that service quality has a significant influence on customer loyalty through customer satisfaction. Cronin and Taylor (1992) found that service quality has an indirect effect on loyalty through satisfaction, meaning that customer satisfaction strengthens and explains this relationship. In other words, good service quality does not necessarily result in loyalty if it is not accompanied by an adequate level of satisfaction. Therefore, customer satisfaction is a crucial mediating variable in explaining how service quality translates into long-term loyalty. The practical implication is that organizations need to focus their service quality improvement strategies on creating service experiences that consistently satisfy customers. Based on this explanation, the following hypothesis is formulated:

H6: Customer satisfaction as a mediating variable influences the effect of service quality on customer loyalty.

### **The Role of Consumer Satisfaction as a Mediating Variable in the Influence of Information Technology Systems on Consumer Loyalty**

The development of information technology systems (ITS) has transformed the way companies interact with consumers, particularly in improving service quality, speed of information access, and ease of transactions. Effective ITS is characterized by reliable system quality, information quality, and service quality, thus providing a positive user experience. According to the DeLone and McLean (2003) information systems success model, system and information quality significantly influence user satisfaction, which in turn impacts individual and organizational benefits.

Consumer satisfaction is an emotional evaluation that arises after consumers compare expectations with the actual performance of a system or service (Oliver, 1997). In the context of technology use, consumer satisfaction is formed when an information system is easy to use, responsive, and capable of providing accurate and relevant information. Various empirical studies have shown that high-quality IT does not directly guarantee consumer loyalty without satisfaction as a psychological response (Wixom & Todd, 2005).

Consumer loyalty reflects a commitment to repeat purchases, maintain long-term relationships, and provide positive recommendations to others (Kotler & Keller, 2016). Consumer satisfaction acts as a mediating variable that bridges the influence of IT systems on loyalty, as a satisfying technological experience will increase consumer trust and engagement with the company. Therefore, the influence of IT systems on consumer loyalty is stronger when optimal customer satisfaction is achieved. Based on this explanation, the following hypothesis is formulated:

H7: Consumer satisfaction as a mediating variable for the influence of IT systems on consumer loyalty.

## **III. RESEARCH METHODS**

The population in this study was free school transportation (ASG) passengers in Mojokerto City, with an unknown population size. Therefore, the sample size was calculated using the following formula (Hair et al. 2010):  $N = (5 \text{ to } 10 \times \text{number of indicators used})$ . The sampling method used accidental sampling, which is a sampling method conducted by randomly meeting passengers of free school transportation.

To obtain relevant and valid data, the data collection method used a questionnaire distributed to respondents. The research instrument used a Likert scale, a psychometric scale commonly used in survey research. The response variations for the four research variables: service quality (X1), information technology systems (X2), customer loyalty (Y), and customer satisfaction (Z) were measured using a Likert scale with five categories: strongly agree, agree, somewhat agree, disagree, and strongly disagree.

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## Data Analysis

The data analysis technique in this study used a quantitative approach to test the research hypotheses and determine the direct and indirect effects between service quality and the use of information technology systems on passenger loyalty through passenger satisfaction.

The initial stage of data analysis began with testing the research instrument, which included validity and reliability tests. Instrument validity was tested using Pearson correlation between item scores and the total variable score. If the test results show that all items have a Pearson correlation value greater than the table  $r$  at  $\alpha = 0.05$ , then all statements are declared valid. Reliability was tested using Cronbach's Alpha coefficient. If the Cronbach's Alpha coefficient is  $> 0.70$ , the instrument is considered reliable.

Next, inferential analysis was conducted using path analysis. Path analysis is used to examine causal relationships between variables and determine the magnitude of the direct and indirect influence of independent variables on dependent variables through intervening variables.

## Hypothesis Testing

To test the hypotheses in this study, the t-test and the Sobel test were used using SPSS version 26. The t-test accepted the hypothesis if the significance value was  $< 0.05$  or the calculated t-test  $>$  the t-table value, and rejected if the significance value was  $\geq 0.05$  or the calculated t-test  $\leq$  the t-table value. Variables with a significance value  $< 0.05$  were considered to have a significant effect. The Sobel test was used to test the significance of the indirect (mediation) effect of an intervening variable in path analysis.

Sobel Test Formula:

$$Z = \frac{a \times b}{\sqrt{(b^2 \times Sa^2) + (a^2 \times Sb^2)}}$$

Description:

$a$  = path coefficient from the independent variable (X) to the intervening variable (Z)

$b$  = path coefficient from the intervening variable (Z) to the dependent variable (Y)

$Sa$  = standard error of coefficient  $a$

$Sb$  = standard error of coefficient  $b$

Decision Criteria:

- If  $|Z| > 1.96$  ( $\alpha = 0.05$ ), then the mediation effect is significant
- If  $|Z| \leq 1.96$ , then the mediation effect is not significant

The Sobel test is generally used after the path coefficient is obtained from the regression results (for example, using SPSS).

## IV.RESULTS

### Instrument Test Results

Instrument validity is a measure that indicates the level of validity of an instrument. The results of the instrument validity testing are as follows.

Table 1. Validity Test Results

| Question Items | Pearson Correlation | R -Table | Decision |
|----------------|---------------------|----------|----------|
| X1.1           | 0.498               | 0.15     | Valid    |
| X1.2           | 0.712               | 0.15     | Valid    |
| X1.3           | 0.585               | 0.15     | Valid    |
| X1.4           | 0.753               | 0.15     | Valid    |
| X1.5           | 0.697               | 0.15     | Valid    |
| X1.6           | 0.790               | 0.15     | Valid    |
| X1.7           | 0.745               | 0.15     | Valid    |
| X1.8           | 0.687               | 0.15     | Valid    |
| X2.1           | 0.843               | 0.15     | Valid    |
| X2.2           | 0.809               | 0.15     | Valid    |
| X2.3           | 0.799               | 0.15     | Valid    |
| Z1             | 0.786               | 0.15     | Valid    |
| Z2             | 0.773               | 0.15     | Valid    |
| Z3             | 0.798               | 0.15     | Valid    |
| Z4             | 0.755               | 0.15     | Valid    |
| Z5             | 0.716               | 0.15     | Valid    |

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|    |       |      |       |
|----|-------|------|-------|
| Z6 | 0.598 | 0.15 | Valid |
| Z7 | 0.555 | 0.15 | Valid |
| Z8 | 0.486 | 0.15 | Valid |
| Z9 | 0.476 | 0.15 | Valid |
| Y1 | 0.725 | 0.15 | Valid |
| Y2 | 0.800 | 0.15 | Valid |
| Y3 | 0.809 | 0.15 | Valid |
| Y4 | 0.748 | 0.15 | Valid |
| Y5 | 0.741 | 0.15 | Valid |

Based on the validity test results in Table 1, each question item demonstrated a Pearson correlation value greater than the table's  $r$  value of 0.15, thus all statements were declared valid and suitable for use in this research. The results of the reliability test, conducted using Cronbach's Alpha coefficient, are as follows.

**Table 2. Reliability Test Result**

| Variables                     | Nilai Cronbach's Alpha | Decision |
|-------------------------------|------------------------|----------|
| Service Quality               | 0.835                  | Reliable |
| Information Technology System | 0.751                  | Reliable |
| Customer Satisfaction         | 0.841                  | Reliable |
| Customer Loyalty              | 0.823                  | Reliable |

The reliability test results in Table 2 indicate that all statement items from the five variables studied are reliable, as they have a Cronbach's Alpha value  $> 0.60$ . Therefore, the questionnaire used in this study can be considered reliable.

### Hypothesis Testing Results

Hypothesis testing was conducted to determine the direct and moderated effects of Service Quality (X1) and Information Technology Systems (X2) on Passenger Loyalty (Y). The following table presents the results of the hypothesis testing.

**Table 3. Hypothesis Test Results**

| Hypothesis                                              | T-statistics | T-table | Sig.  | Decision |
|---------------------------------------------------------|--------------|---------|-------|----------|
| Service Quality ---> Customer Satisfaction              | 5.287        | 1.975.  | 0.000 | Accepted |
| Information Technology System --> Customer Satisfaction | 4.236        | 1.975.  | 0.000 | Accepted |
| Service Quality ---> Customer Loyalty                   | 3.665        | 1.975.  | 0.000 | Accepted |
| Information Technology System ---> Customer Loyalty     | 4.850        | 1.975.  | 0.000 | Accepted |
| Customer Satisfaction ---> Customer Loyalty             | 5.813        | 1.975.  | 0.000 | Accepted |

Based on Table 3, the results of the hypothesis test show that the t-statistic value is greater than the t-table (1.975) and the significance value is  $0.000 < 0.05$ , thus all hypotheses are accepted.

**Table 4. Hypothesis Test Results**

| Hypothesis                                                                 | Z Value | Parameter | Sig.  | Decision |
|----------------------------------------------------------------------------|---------|-----------|-------|----------|
| Service Quality * Customer Satisfaction --> Customer Loyalty               | 3.66    | 1.96      | 0.000 | Accepted |
| Information Technology System * Customer Satisfaction --> Customer Loyalty | 3.619   | 1.96      | 0.000 | Accepted |

Based on table 4, it is known that the results of the Sobel test show that the Z value  $> 1.96$  and the significance value  $0.000 < 0.05$ , this means that the role of the mediating variable is very significant.

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## **V. DISCUSSION**

### **The Effect of Service Quality on Customer Satisfaction**

Based on table 3, service quality has a positive and significant effect on customer satisfaction in transportation services. This is demonstrated by the t-statistic test result of  $5.287 > t\text{-table} (1.975)$  and a significance value of  $0.000 < 0.05$ . Conceptually, service quality is defined as the level of service excellence that meets or exceeds customer expectations (Parasuraman, Zeithaml, & Berry, 1988). In the transportation context, service quality is reflected in schedule reliability, comfort, safety, staff responsiveness, and ease of access. When these aspects are well managed, consumers will perceive a match between their expectations and the actual performance of the service they receive.

Various empirical studies have shown that service quality has a positive and significant effect on customer satisfaction in transportation services. This aligns with customer satisfaction theory, which states that satisfaction arises from consumers' evaluation of the service experience compared to their initial expectations (Oliver, 1997). Consistent, timely, and user-focused service will increase perceived value, ultimately strengthening customer satisfaction. Conversely, low service quality tends to lead to customer dissatisfaction and complaints.

From a service marketing management perspective, improving service quality is a key strategy for maintaining and enhancing customer satisfaction (Kotler & Keller, 2016). In the competitive transportation industry, customer satisfaction impacts not only loyalty but also company image and service sustainability. Therefore, it can be concluded that service quality has a positive and significant influence on customer satisfaction in transportation services, making it a key focus in the management and development of modern transportation services.

### **The Influence of Information Technology Systems on Consumer Satisfaction**

Table 3 shows that information technology systems have a positive and significant impact on consumer satisfaction with transportation services. This is demonstrated by the t-statistical test result of  $4.236 > t\text{-table} (1.975)$  and a significance value of  $0.000 < 0.05$ . The implementation of information technology systems such as online reservation systems, mobile applications, trip tracking systems, digital payments, and the provision of real-time schedule information facilitates consumers' access to transportation services quickly, accurately, and efficiently. This convenience reduces consumer uncertainty and increases perceptions of the professionalism and reliability of transportation service providers.

From a consumer behavior perspective, information technology functions as a means of value creation because it can increase convenience, speed of service, and transparency of information. According to Davis (1989), perceived usefulness and ease of use of technology will influence users' attitudes and decisions regarding the system's adoption. In the transportation context, consumers who experience direct benefits from technology—such as ease of ticket booking and certainty of travel times—tend to demonstrate higher levels of satisfaction.

Furthermore, research shows that good information system quality contributes significantly to customer satisfaction and loyalty (DeLone & McLean, 2003). Satisfied customers are more likely to make repeat purchases and recommend services to others. Therefore, investing in the development of information technology systems is a crucial strategy for transportation companies to increase competitiveness, strengthen customer relationships, and create a sustainable competitive advantage amidst increasingly fierce competition in the transportation industry.

### **The Influence of Service Quality on Consumer Loyalty**

Based on table 3, service quality has a positive and significant effect on consumer loyalty in transportation services. This is demonstrated by the t-statistic test result of  $3.665 > t\text{-table} (1.975)$  and a significance value of  $0.000 < 0.05$ . In the transportation industry, which is intangible, high-risk, and involves direct interaction between service providers and users, service quality is a key factor in shaping consumer perceptions and experiences. Service quality encompasses the dimensions of reliability, responsiveness, assurance, empathy, and tangibles, which collectively determine the level of consumer satisfaction and trust in transportation providers (Parasuraman et al., 1988).

Consistent, timely, and safe service, supported by a professional attitude from transportation staff, will increase consumer satisfaction. This satisfaction, in turn, encourages repeat purchases, recommends services to others, and demonstrates long-term commitment to the transportation company in question. This aligns with consumer loyalty theory, which states that a positive service experience is a primary antecedent of loyalty (Oliver, 1999).

In the context of transportation services, service quality also plays a role in reducing perceived risk and increasing consumers' sense of security and comfort. When consumers perceive that a service provider consistently meets or exceeds their expectations, strong and stable loyalty is formed. Therefore, improving service quality not only impacts short-term satisfaction but also serves as a crucial strategy for building sustainable customer loyalty and a competitive advantage for transportation service companies (Kotler & Keller, 2016).

### **The Influence of Information Technology Systems on Consumer Loyalty**

Table 3 shows that information technology systems have a positive and significant impact on consumer loyalty in transportation services. This is demonstrated by the t-statistical test result of  $4.850 > t\text{-table} (1.975)$  and a significance value of  $0.000 < 0.05$ . The

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use of information technology enables transportation companies to improve service quality through easy access to information, speed of transactions, schedule accuracy, and reliability of booking and payment systems. Consumers tend to be more loyal to service providers that provide a practical, safe, and consistent service experience through integrated technology support (Parasuraman, Zeithaml, & Berry, 2005).

In the modern transportation context, online booking applications, real-time trip tracking systems, and digital-based customer service play a crucial role in building consumer trust and satisfaction. This trust is the primary foundation for loyalty, which is reflected in repeat purchase intentions and a willingness to recommend services to others (Kotler & Keller, 2016). A reliable information technology system can also minimize operational errors and increase a company's responsiveness to customer complaints, thereby strengthening long-term relationships between the company and its customers.

Empirical research results show that the better consumers perceive the ease of use and benefits of an information technology system, the higher the level of customer loyalty to transportation services (Davis, 1989). Therefore, continued investment in the development of information technology systems is a crucial strategy for transportation companies to maintain competitiveness and foster sustainable customer loyalty amidst increasingly fierce industry competition.

### **The Influence of Customer Satisfaction on Customer Loyalty**

Based on table 3, it is known that customer satisfaction has a positive and significant effect on customer loyalty in transportation services. This is demonstrated by the t-statistic test result of  $5.813 > t\text{-table} (1.975)$  and a significance value of  $0.000 < 0.05$ . Customer satisfaction is a comprehensive evaluation of the service experience, comparing initial expectations with perceived actual performance. When consumers are satisfied with aspects of a transportation service, such as punctuality, comfort, safety, ease of access, and the quality of interactions with staff, their tendency to reuse the service increases. Consumer loyalty is reflected in repeat purchase behavior, positive recommendations to others, and resistance to competing transportation service offerings.

Theoretically, the relationship between satisfaction and loyalty is explained in the consumer behavior model, which states that satisfaction is a primary prerequisite for long-term loyalty (Oliver, 1999). In the transportation service industry, which is highly competitive and relatively homogeneous in service characteristics, satisfaction plays a key role as a differentiating factor influencing consumer choice. Empirical research shows that satisfied transportation customers tend to have a stronger emotional commitment and trust in the service provider, resulting in increased loyalty (Zeithaml et al., 1996).

Furthermore, consistent satisfaction strengthens long-term relationships between customers and transportation service providers, ultimately contributing to revenue stability and business sustainability. Therefore, improving customer satisfaction is a key strategy for transportation service providers in building sustainable customer loyalty (Kotler & Keller, 2016).

### **Customer satisfaction mediates the effect of service quality on customer loyalty.**

Based on table 3, it is known that customer satisfaction plays a significant role in mediating the positive and significant influence of service quality on customer loyalty in transportation services. This is demonstrated by the Z-value of  $3.66 > 1.96$  and a significance value of  $0.000 < 0.05$ . This indicates that customer satisfaction plays a strategic role as a mediating variable in the relationship between service quality and customer loyalty. Good service quality—reflected through reliability, responsiveness, assurance, empathy, and tangibles—can shape positive consumer perceptions of a company's performance. This perception subsequently influences customer satisfaction, an emotional state that arises when customer expectations are met or exceeded by the service performance received (Parasuraman et al., 1988; Oliver, 2010).

In the context of consumer behavior, satisfaction is not only a direct result of service quality but also serves as a psychological mechanism that bridges the influence of service quality on loyalty. Satisfied customers tend to have repeat purchase intentions, demonstrate consistent preferences, and recommend products or services to others. Conversely, good service quality without perceived satisfaction does not necessarily foster long-term loyalty (Kotler & Keller, 2016).

Thus, customer satisfaction serves as a mediator that strengthens the relationship between service quality and customer loyalty. Superior service quality increases satisfaction, and this satisfaction ultimately drives ongoing loyalty. This emphasizes that company efforts to increase customer loyalty must focus not only on improving service standards but also on managing the overall customer experience to achieve optimal satisfaction (Zeithaml et al., 2018).

### **Consumer satisfaction mediates the influence of information technology systems on consumer loyalty.**

Based on table 3, it is known that consumer satisfaction plays a significant role in mediating the positive and significant influence of information technology systems on consumer loyalty in transportation services. This is demonstrated by the Z-value of  $3.619 > 1.96$  and a significance value of  $0.000 < 0.05$ . This indicates that consumer satisfaction plays a significant role as a mediating variable in the relationship between information technology systems and consumer loyalty. Reliable, easy-to-use, secure, and responsive information technology systems can improve the quality of interactions between companies and consumers. When consumers perceive that information technology systems—such as digital applications, electronic payment systems, or web-based services—provide convenience, speed, and accuracy, positive perceptions of the service will develop. This perception then drives consumer satisfaction as an affective evaluation of the experience of using the system (DeLone & McLean, 2003).

## The Role of Consumer Satisfaction in Mediating the Effect of Service Quality and Information Technology Systems on Consumer Loyalty in Transportation Services

Consumer satisfaction serves as a psychological mechanism that bridges the influence of information technology systems on loyalty. Satisfied consumers tend to have a desire to make repeat purchases, recommend products or services to others, and show resistance to competitors' offers. Thus, consumer loyalty is not only directly influenced by technological sophistication, but more strongly by the level of satisfaction resulting from using the system (Oliver, 1999).

Previous research also shows that a high-quality information technology system does not automatically create loyalty if it is not accompanied by customer satisfaction. Therefore, customer satisfaction serves as a mediator that strengthens and explains how information technology investments can translate into long-term loyal behavior (Kotler & Keller, 2016; Gefen et al., 2003). Therefore, companies need to ensure that the development of information technology systems is oriented towards customer experience and satisfaction to achieve sustainable loyalty.

### VI. CONCLUSION

Based on the analysis and discussion of the research, it can be concluded that service quality and the use of information technology systems have a significant influence on passenger loyalty, both directly and through passenger satisfaction as an intervening variable. Service quality, demonstrated through service reliability, punctuality, staff responsiveness, security assurance, empathy, and adequate supporting facilities, has been proven to increase passenger satisfaction levels. Consistent and passenger-oriented service creates a positive experience that fosters long-term relationships between passengers and transportation service providers.

Conversely, the use of information technology systems also plays a crucial role in increasing passenger satisfaction. Reliable, easily accessible, and integrated information technology systems, such as online ticket booking, accurate and real-time travel information, and ease of payment and complaint processing, provide added value for passengers. The use of this technology can improve service efficiency, reduce uncertainty, and strengthen passenger trust in transportation service providers.

Furthermore, passenger satisfaction has been shown to have a positive and significant influence on passenger loyalty. Satisfied passengers are more likely to make repeat purchases, show a preference for certain services, and recommend transportation services to others. The results of this study confirm the role of passenger satisfaction as an intervening variable that strengthens the influence of service quality and information technology systems on loyalty. Therefore, sustainable improvements in passenger loyalty can only be achieved if companies consistently improve service quality and optimize the use of information technology systems oriented towards passenger satisfaction.

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