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## THE EFFECT OF DEMOGRAPHIC CHARACTERISTICS ON THE RELATIONSHIP BETWEEN PERCEIVED SERVICE QUALITY AND CUSTOMER LOYALTY AMONG PASSENGERS OF RAILWAY TRANSPORT SERVICES IN KENYA

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### Abstract

*The purpose of this study was to find the effect of demographic characteristics on the relationship between perceived service quality and customer loyalty among passengers of railway transport services in Kenya. The study employed pragmatism paradigm and descriptive, convergent mixed methods research design. Proportional stratified random sampling procedure was employed in picking samples from each railway service provider. Stratified sampling ensured all the subgroups were represented in the sample. A sample size of 357 respondents was realized through the use of simple random sampling. The study population comprised all railway customers who had frequently used passenger services in Kenya. A self-administered questionnaire was employed to gather data. Pilot study was carried out to test questionnaire reliability and validity. Descriptive and inferential statistics was employed to analyze quantitative data. Thematic analysis was used to analyze qualitative data. Factor analysis tested convergent validity, divergent validity and construct validity. The study findings hypothesized that there was no significant moderating effect of demographic characteristics on the relationship between perceived service quality and customer loyalty ( $p\text{-value} > 0.05$ ,  $\Delta R^2 = 0\%$ ). The study concluded that Demographic characteristics have no significant moderating influence on the relationship between perceived service quality and customer loyalty. The relationship did not improve upon the introduction of interaction term and it was not positively and statistically significant ( $P\text{-value} \geq 0.05$ ).*

**Keywords:** Perceived Service Quality, Demographic Characteristics, Customer Loyalty, Railway Transport Services, Kenya

## Introduction

Service organization have realized that over and above offering service quality, enhancing customer loyalty is significant to the firm's success and survival. Companies should understand how customers evaluate their actual purchase service experiences to meet the customers' pre-consumption expectations Oliver (1980).

This study was based on theories of expectancy disconfirmation (Oliver, 1980), cue utilization (Olson & Jacoby, 1972), cognitive dissonance (Festinger, 1957), and social exchange (Homans et al., 1962). The SERVQUAL model, widely acknowledged as a measure for service quality in service-oriented companies, encompasses five dimensions: responsiveness, tangibility, empathy, reliability, and assurance (Parasuraman et al., 1988). The current study described perceived service quality as the customers' evaluation of the overall superiority of a service based on difference between their pre-service expectations and their actual experiences throughout the service interaction.

This study was based on theories of expectancy disconfirmation (Oliver, 1980), cue utilization (Olson & Jacoby, 1972), cognitive dissonance (Festinger, 1957), and social exchange (Homans et al., 1962). Expectancy disconfirmation theory (EDT) which is the study's anchoring theory, suggests that satisfaction is resultant of a contrast linking expected with perceived performance. Cognitive dissonance theory (CDT) describes customer's disappointment regarding the differences between the actual service encounter and expectation. Social exchange theory (SET) indicates that the association linking the customer and company is a key indicator of satisfaction and a good reason for repurchase intentions. In cue utilization theory (CUT) customers employ combination of cues to make

estimated judgments on the likely performance of a service to simplify their decision-making processes.

## Perceived Service Quality

Perceived service quality has been defined as an approach applied by customers to distinguish between service delivery perceptions and expectations (Grönroos, 2007). This study described perceived service quality as the customers' assessment of the overall superiority of a service based on discrepancies between their pre-expectations and actual experiences throughout the service interaction. The concept of perceived service quality has sparked scholarly discussion, with the literature demonstrating a lack of agreement regarding its conceptualization and measurement, particularly in relation to the unique nature of services (Kotler & Armstrong, 2018; Medberg & Gronroos, 2020).

The unique service characteristics such as intangibility, heterogeneity, inseparability and perishability significantly contribute to the complex nature of assessing service quality. These integral faces of services pose challenges for customers in judging service quality and for service providers in successfully managing it (Zeithaml, Bitner & Gremler, 2018). SERVQUAL is the predominant research tool for measuring perceived service quality (Parasuraman et al., 1988). The SERVQUAL tool originally recognized ten aspects of perceived service quality (Mahapatra & Khan, 2006; Parasuraman et al., 1985). Thereafter, these ten aspects were consolidated into five elements namely tangibility, reliability, empathy, assurance and responsiveness (Lai et al., 2018).

Tangibility is defined as the service physical features such as equipment

physical facilities and staff appearance. Responsiveness describes the willingness to help customers and offer timely service. Reliability is defined as the company's ability to consistently and dependably provide the service. Empathy denotes the individualized attention the firm provides to its the customers. Assurance is described as staff courteous and understanding and their ability to instill confidence and trust (Wilson et al., 2020).

### **Demographic Characteristics**

Demographic characteristic is defined as the components of a person's attributes (Fassett et al., 2022). Morgeson et al. (2023) stated that according to the ACSI model, demographic characteristics concept is evaluated by indicators such as age, gender, income and education level. Gender refers to the attributes of men and women which differ in their service assessment and purchasing behavior (Fassett et al., 2022). Income relates to the earnings received, whereas education level denotes the highest level of schooling completed. Occupation is described as the work in which a customer is involved in, while marital status is the situation of being married or unmarried (Morgeson et al., 2023).

Kevrekidis, Mináriková & Markos (2022) asserted that educational level, occupation and age of customers had a noticeable influence in the selection of service provider, in addition to monthly income and gender. Demographics, significantly affecting service providers' marketing campaigns (Chawla & Joshi, 2020). Old and young customers, because of variations in information processing, show varying ways to assessing services quality (Nawaz, Jiang, Alam & Nawa, 2020). Age aid marketers to comprehend how needs change as customers mature over time. In gender, male customers show an inclination to use less information and rely on salespeople for

help in their buying decisions while female ones depend on the service tangible cues.

### **Customer Loyalty**

Customer loyalty remains a matter of debate among researchers. Castaldo (2024) defined customer loyalty as a certain type of customer behavior in which systematic form of repurchase is driven by the existence, in the customers cognitive system, of a significant trust in the service provider's ability to provide quality services. Chen and Ching (2007) defined customer loyalty as a deeply held commitment to re-buy or re-patronize a desired service regularly in the future, despite situational influences and marketing efforts having the potential to cause brand switching behavior.

Fornell et al. (2023)'s ACSI model and Bourdeau, Cronin and Voorhees (2024) and argued that customer loyalty is operationalized through repurchase likelihood, word of mouth communications, complaint behavior and price tolerance. Additionally, Zeithaml et al. (1996) suggested that loyal customers have high repurchase likelihood, less sensitivity to prices and positive word of mouth. It is postulated that a positive word of mouth enables customers to give recommendations to prospective customers about consumptions of same services.

Phuong and Dat (2017) described repurchase intention as a customer's decision to engage in future activities with a service provider. Chen and Chen (2011) defined price tolerance as the degree to which customers are willing to accept changes in prices. King et al. (2014) defined customer complaint behavior as the expression of dissatisfaction which involves any negative explanations or complaints voiced by customers regarding a service. Word-of-mouth communication is defined

as the post-purchase intentions of customers that develop when they share their experiences during the consumption of a service (Zeithaml et al., 2018).

### **Passengers of Railway Transport Services in Kenya**

Passengers of railway transport services are customers traveling from one railway station to another by train. Passengers prefer rail transport services because of improved travel safety, reduced accident occurrences and it is faster particularly over long distances, contrary to road transport (Ortiz et al., 2008). As customers' numbers increases, expectations increase hence pressurizing the service provider to offer quality services. The Kenya's railways sector comprises four passenger transport services, namely the Madaraka Express, Nairobi Commuter Rail, Nairobi-Nanyuki Train and Kisumu Safari Train (KRC, 2021). Fu, Eboli, Mazzulla and Zhang (2017) noted that railway operators need to understand whether the commuters are satisfied with service quality attributes and how they can enhance the service quality and satisfaction levels. In this study, the focus was customers who had frequently used railways passenger services in Kenya, specifically the customers at the departure lounges in the Nairobi central railway station, as they wait to travel.

### **Problem of Research**

Service quality can match, exceed, or fall short of expectations, leading to satisfaction, delight, or dissatisfaction. Literature identifies indicators influencing customer loyalty, such as perceived service quality, demographic characteristics, as well as customer satisfaction. Despite various theories, substantial gaps in addition to inconsistencies persist, contradicting the relationships between these factors on customer loyalty. Theoretical gaps persist in understanding

the correlation between perceived service quality and customer loyalty, as evidenced in inconsistent findings across studies (Parasuraman et al., 1985; Cronin & Taylor, 1992; Buttle, 1996). The lack of consensus underscores the need for a deeper exploration into the precise nature of this relationship and the factors influencing it.

There is an outstanding scarcity of studies that evaluate the impact of perceived service quality on customer loyalty through a moderating variable. Specifically, the influence of demographics on service quality and loyalty remains unclear and contested. Empirical studies in Kenya by Macharia (2017) and Mbugua (2015), along with a literature review by Seiler, Rudolf, and Krume (2013) in Germany, suggest that demographics have a moderating influence on the link between service quality and customer loyalty. Additionally, Mutende et al. (2017) in Kenya and Pitchayadejanant and Nakpathom (2016) in Thailand found a negative influence.

Conceptually, there is limited understanding of how and why demographic characteristics namely gender, age, monthly income and level of education influence the relationship between perceived service quality and customer loyalty. Present studies have found a direct relationship between service quality and customer loyalty but have not clearly conceptualized the moderating role in which demographic characteristics affect this relationship. The concepts of perceived service quality, customer loyalty, and demographic characteristics have been studied separately in numerous contexts, so far, few models integrate them into a single analytical framework. This creates a conceptual gap in explaining the nature, direction, and strength of the moderating role demographic characteristics in this relationship.

The theoretical frameworks commonly applied namely Expectancy Disconfirmation Theory, Cue utilization theory, social exchange theory and cognitive dissonance theory have not adequately accounted for demographic characteristics as a moderating variable. Most theories explain how perceived service quality influences customer satisfaction and loyalty directly, but they do not extend to show how demographic characteristics moderate these relationships. Subsequently, there is a theoretical gap in encompassing prevailing models to embrace and empirically corroborate the moderating effect of demographic characteristics within perceived service quality and customer loyalty link.

There exists lack of research contextualized within Kenya's railway passenger transport sector. While previous studies have examined similar relationships in other industries such as hospitality, banking and retail and in developed countries such as Saudi Arabia (Sheikhoon & Husain, 2025), Germany (Seiler et al., 2013) and Thailand (Pitchayadejanant & Nakpathom, 2016), very few have focused on railway passenger transport services in Kenya. Given Kenya's distinct cultural, economic, and service delivery environment, findings from other contexts cannot be directly generalized. This underscores the need for a localized empirical investigation to determine whether demographic characteristics significantly moderate the relationship between perceived service quality and customer loyalty among railway passengers in Kenya.

These inconsistencies suggest gaps in understanding how demographic factors influence the perceived service quality and customer loyalty relationship, necessitating further analysis. Thus, there was a need for

this study to determine the significance of moderating role of demographic characteristics on the relationship between perceived service quality and customer loyalty contextualized in the Kenya's railways passenger transport services.

### **Research Objective**

The objective of this study was to evaluate the influence of demographic characteristics on the relationship between perceived service quality and customer loyalty among passengers of railway transport services in Kenya.

### **Literature Review and Research Focus**

This study is grounded in Expectancy Disconfirmation Theory (Santos & Boote, 2003), which posits that satisfaction levels are shaped by the gap between expected and actual service experiences (Diehl & Poynor, 2010; Santos & Boote, 2003). Other theories that support the relationships between perceived service quality, customer satisfaction, demographics, and loyalty include Cognitive Dissonance Theory, Cue Utilization Theory, and Social Exchange Theory.

Various studies have explored the relationship between perceived service quality, demographic characteristics, and customer loyalty across different regions, including Thailand (Pitchayadejanant & Nakpathom, 2016), Malaysia (Akbar, 2013), the Netherlands (Druta, Berg & Wesemael, 2021), and Australia (Ganesan-Lim et al., 2008). However, there remains a scarcity of research that specifically examines the relationship between perceived service quality, demographic characteristics, and passenger loyalty. Furthermore, the role of demographic characteristics has been largely underexplored. Existing studies are often context-specific and have utilized varying

sampling methods, which limits the generalizability of their findings.

In the Netherlands, Druta et al. (2021) examined how demographic characteristics influence travelers' perceptions of service quality at transport terminals, finding that gender and age significantly affect these perceptions. Similarly, Ganesan-Lim et al. (2008) investigated the impact of service interaction type and demographics on perceived service quality among railway customers in Australia. Using confirmatory factor analysis (CFA) to validate the measurement scales, the study revealed that older customers reported significantly higher levels of perceived service quality compared to younger customers.

Pitchayadejanant and Nakpathom (2016) explored how passenger demographics moderated the relationship between perceived service quality and loyalty among low-cost airline travelers in Thailand. Their findings suggested that demographic characteristics, such as education level, play a moderating role in customer loyalty, with higher-educated travelers being less likely to display loyalty. Similarly, Akbar (2013) conducted a study in Malaysia, examining the relationship between customers' perceptions of service quality and their loyalty to hotels. Demographic factors, including occupation, education, income, gender, purpose of visit, age, length of stay, and frequency of visits, were analyzed. Customer loyalty was measured through repurchase behavior, positive word-of-mouth, and price tolerance, using the Modified Customer Loyalty Model (MCLM). The study concluded that demographics significantly influenced the relationship between perceived service quality and customer loyalty.

## **Methodology of the Research: General Background of Research Methodology**

### **Research Philosophy**

The study adopted Pragmatism paradigm. This kind of research philosophy does not advocate any specific approach of philosophy and reality. It relates to mixed methods research design which asserts that it is practical to employ both positivism and phenomenology paradigms during research (Saunders et al., 2021). The use of a pragmatism research philosophy was deemed suitable for this study due to its implementation of mixed methods research in data collection and analysis pertaining to social and natural subjects (Creswell, 2009).

### **Research Design**

The inquiry employed descriptive, convergent mixed methods research design. By using a mixed methods approach, researchers are able to overcome the weaknesses and leverage the strengths of both qualitative and quantitative methodologies through integration (Johnson et al., 2007). The mixed methods design combines quantitative and qualitative research methods, approaches, techniques and concepts concurrently in a study (Creswell, 2009). In the current study data was collected concurrently in order to examine the perceptions of respondents through a self-administered questionnaire that incorporates both open-ended questions for qualitative interviews and closed-ended questions for quantitative analysis. The collected data was then integrated and analyzed (Johnson et al., 2007).

The study's population comprised railway customers who had frequently used the railway service providers. The unit of analysis was customers to railway passenger services provided in Kenya. The

study was conducted at the Nairobi railway stations' departure lounges as passengers waited to travel. A proportional stratified sampling approach was employed to ensure adequate representation based on the total number of railway passengers within each passenger service provider. Subsequently, stratified random sampling was used to divide the study population into homogenous subgroups. Screening questions were used to identify respondents with prior rail travel experiences. Simple random sampling method was employed in choosing respondents within the stratum.

**Sample of Research**

A representative sample size of 357 respondents was selected. Krejcie and

Morgan (1970)'s suggestion was used to find a representative sample size, with a target population of 4660. Bowley (1926) formula determined sample sizes in each stratum through a proportional allocation. The method proposed by Bowley (1926) determined sample sizes in each stratum through a proportional allocation procedure as follows:

$$n_i = n \frac{N_i}{N}$$

$$i=1, 2, 3, 4.$$

From the formula,  $N$  presents the population size,  $N_i$  indicates the population size of the  $i^{th}$  stratum while  $n$  indicates sample size. In the study,  $n = 357$ ;  $N = 4660$

**Distribution of Sampled Customers**

Categories of the railway passenger services	$N_i$	%	$n_i$ (Proportional)
Madaraka Express (ME)	1260	27%	97
Nairobi Commuter Rail (NCR)	800	17%	61
Nairobi-Nanyuki (NN)	1600	34%	122
Nairobi-Kisumu (NK)	1000	22%	77
Total	4660	100%	357

Source: [www.krc.ac.ke](http://www.krc.ac.ke) (2022)

**Instrument and Procedures**

A semi-structured questionnaire developed from previous related studies was utilized to gather primary data. The self-administered questionnaire was designed with open ended question for qualitative probing and closed-ended questions for quantitative analysis. The passengers were requested to fill the questionnaires then the research tools were gathered and counted to confirm if each of them was handed back.

A pilot test was done to determine questionnaire reliability. The pilot study comprised 20 customers picked conveniently from the sample and pre-

tested through face-to-face interviews to test reliability test. Considering the substantial duration that passengers spend in waiting lounges, there was abundant time to satisfactorily complete the questionnaires. Approval to collect data was obtained from the University of Nairobi.

**Data Analysis**

Collected quantitative data was analyzed by applying descriptive along with inferential statistics and reported according to the research objectives. Statistical Package for the Social Sciences (SPSS) version 26 analyzed the data. To conduct an analysis of

qualitative data, thematic analysis was used for exploring the data set in order to identify, analyze and report recurring patterns (themes) of meaning (Braun & Clarke, 2006). An inductive approach was employed, focusing on the development of themes grounded in the data rather than predetermined themes (Heath & Cowley, 2004).

**Results of Research**

The study assessed demographic characteristics influence on the relationship linking perceived service quality and customer loyalty. Demographic

characteristics was operationalized as moderating variable in the relationship between perceived service quality and customer loyalty among passengers of railway transport services in Kenya. The hypothesis was that there was no significant moderating influence of demographic characteristics on the relationship between perceived service quality and customer loyalty among passengers of railway transport services in Kenya. Moderation is hypothesized to exist when the impact of interaction linking perceived service quality and demographic characteristics on customer loyalty test is significant.

**Table 1: Regression Coefficient for the Relationship Between Perceived Service Quality, Demographic Characteristics and Customer Loyalty**

Table 1a Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.613 <sup>a</sup>	.376	.373	3.54086	.376	142.737	1	237	.000	1.590
2	.660 <sup>b</sup>	.435	.431	3.37488	.060	24.884	1	236	.000	
3	.660 <sup>c</sup>	.436	.428	3.38168	.000	.053	1	235	.818	

- a. Predictors: (Constant), Perceived service quality
- b. Predictors: (Constant), Perceived service quality, Demographics
- c. Predictors: (Constant), Perceived service quality, demographics, Interaction term
- d. Dependent Variable: Customer loyalty

Table 1a stipulated that in model 1, perceived service quality explained 37.6% change in customer loyalty and with 62.4% change stayed undetermined. In model 2, demographic characteristics explained an additional 6% variation in customer loyalty.

Hence, in model 2, both perceived service quality and demographic characteristics described 43.1% change in customer loyalty. However, with the introduction of the interaction term, the increased change in explained variation was 0% ( $\Delta R^2 = 0\%$ ).

**Table 1b ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1789.587	1	1789.587	142.737	.000 <sup>b</sup>
Residual	2971.424	237	12.538		
Total	4761.011	238			
2 Regression	2073.010	2	1036.505	91.003	.000 <sup>c</sup>
Residual	2688.001	236	11.390		
Total	4761.011	238			
3 Regression	2073.614	3	691.205	60.443	.000 <sup>d</sup>
Residual	2687.397	235	11.436		
Total	4761.011	238			

- a. Dependent Variable: Customer loyalty
- b. Predictors: (Constant), Perceived service quality
- c. Predictors: (Constant), Perceived service quality, demographics
- d. Predictors: (Constant), Perceived service quality, demographics, interaction term

Table 1b demonstrate that the three models were robust in determining the moderating effect of demographic characteristics in the interrelationship linking perceived service quality and customer loyalty. In model 1 for

instance, F-statistic was 142.737 and it was significant. In model 2, F-statistics was 91.003 and it was significant. It was noted that F- statistics dropped in model 3 to 60.443. Table 4.23c summarized the regression coefficients' results of the moderation test.

**Table 1c Regression Coefficients**

U Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	3.483	1.222		2.850	.005		
PSQ	.879	.074	.613	11.947	.000	1.000	1.000
2 (Constant)	1.064	1.262		.843	.400		
PSQ	.801	.072	.559	11.149	.000	.953	1.050
demographics	.089	.018	.250	4.988	.000	.953	1.050
3 (Constant)	1.882	3.779		.498	.619		
PSQ	.750	.232	.523	3.238	.001	.092	10.875
demographics	.069	.091	.192	.752	.453	.037	27.209
Interaction term	.001	.005	.075	.230	.818	.023	43.963

a. Dependent Variable: Customer loyalty

Table 1c demonstrated that perceived service quality had positive and significant influence in illustrating the variation in customer loyalty (p-value≤0.05). Demographic characteristics positively and significantly affected on customer loyalty when included in the model. The coefficient of 0.001 suggest that the effect of the interaction between perceived service quality and demographic characteristics on customer loyalty is minimal. The t-value is .230 with a p-value of .818, indicating that the interaction effect is not statistically significant.

The conclusion was that the interaction term between perceived service quality and demographic characteristics is not significant, signifying that the moderating effect of demographics on the relationship between perceived service quality and customer loyalty is not statistically

significant. Hence, the null hypothesis was accepted. The fitted model was:

$$CL=1.882+0.750PSQ+0.069DC+0.001(PSQ*DC)$$

### Discussion

The study objective was to evaluate the influence of demographic characteristics on the association linking perceived service quality and customer loyalty. It was hypothesized that there was no significant moderating effect of demographic characteristics on the relationship between perceived service quality and customer loyalty. Moderation was tested by applying three-step approach advanced by Baron and Kenny (1986). Moderation is hypothesized to exist when the impact of interaction linking perceived service quality and demographic characteristics on customer loyalty test is significant. Moderation was tested by

applying three-step approach advanced by Baron and Kenny (1986).

The moderation test involved the effect of independent variable (perceived service quality) and moderating variable (demographic characteristics) on dependent variable (customer loyalty) and the effect of the interaction term linking perceived service quality and demographic characteristics on customer loyalty. Moderation exists whenever interaction term linking perceived service quality and demographic characteristics on customer loyalty is statistically significant (Baron & Kenny, 1986). The correlation of perceived service quality and customer loyalty was positive and statistically significant. However, with introduction of the interaction term, the outcomes were not statistically significant. The hypothesis that no significant moderating effect of demographics on the relationship between perceived service quality and loyalty was not rejected. Therefore, there was no significant moderating effect of demographics in the relationship linking perceived service quality and loyalty among passengers of railway transport services in Kenya

The current study results concurred with previous studies findings (Chikazhe, Makanyeza & Chigunhah, 2021; Pitchayadejanant & Nakpathom, 2016; Kandampully & Suhartant, 2000). However, the results of current analysis contradict extant literature, which asserts that demographics have a moderating effect on the relationship between perceived service quality and loyalty (Kerre, 2018; Macharia, 2017; Mbugua, 2015; Akbar, 2013).

### **Conclusions and Recommendations**

Demographics have no significant moderating influence on the relationship between perceived service quality and customer loyalty among passengers of

railway transport services in Kenya. The relationship did not improve upon the interaction term's introduction, and it was not positively and statistically significant ( $P\text{-value} \geq 0.05$ ). These findings suggest that while customers form perceptions of service quality, their loyalty relationships with the service provider are not influenced by demographic factors such as age, gender, income or education level. This is in tandem with the theories of expectancy disconfirmation, cue utilization, cognitive dissonance and social exchange.

### **Implication for Theory and Practice**

This study concurs with theories of expectancy disconfirmation, cognitive dissonance cue utilization, and social exchange which collectively emphasize that customer satisfaction and loyalty are influenced by perceived service quality rather than demographic attributes. Thus, customers assess service quality based on experience and perceived benefits rather than personal characteristics. The study findings hypothesized that there was no significant moderating effect of demographic characteristics on the relationship between perceived service quality and customer loyalty ( $p\text{-value} > 0.05$ ,  $\Delta R^2 = 0\%$ ).

The findings will benefit policymakers, government ministries and agencies to develop and implement suitable railway transport policies, impose service delivery standards and act as a gauge to monitor the performances of railways passengers transport industry. Moreover, the findings assist managers of railway passenger transport in prioritizing the implementation of service quality practices that positively impact on customer loyalty, while also considering passenger demographics.

Moreover, for practitioners the findings assist managers of railway passenger transport in prioritizing the implementation of service

quality practices that positively impact on customer loyalty regardless of the demographic characteristics.

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