Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/13096
DOI URL: http://dx.doi.org/10.21474/IJAR01/13096

RESEARCH ARTICLE

A SUSTAINABILITY OPTION: A META-ANALYTIC EVALUATION OF RAIL SERVICE QUALITY IN PUBLIC TRANSPORTATION STUDY AND PASSENGER SATISFACTION

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Manuscript Info

Manuscript History
Received: 05 May 2021
Final Accepted: 10 June 2021
Published: July 2021

Keywords:-
Service Quality, Satisfaction, Public, Passenger, Servqual, and Railqual

Abstract

These contradictory findings, as well as the increased emphasis among transport professionals on having satisfied passengers, highlight the important information on passenger pleasure to appraise existing data. And also evaluate the meta-analytical relationship of the reported passenger satisfaction findings. However, the equity and disconfirmation model are most significantly associated with passenger satisfaction, according to the document. Discovery shows that the analysis measures and procedure elements often alter the strength of the association between satisfaction and its experiences and outcomes. The authors examined the consequences of these impacts and suggest numerous research avenues for future study.

Introduction:-

Passenger satisfaction is a widely accepted primary performance measure of a company's or organization's activity. According to previous research, many citizens continue to use public transportation (e.g., Eboli &Mazula, 2007; Randheer, AL-Motawa, & Prince, 2011; Sharma & Yadav, 2013). Public transportation must expand its operations to meet the needs and demands of a diverse range of customers to retain existing riders. Hence, In this regard, transportation managers must be able to use a tool to measure the quality of the service they give to establish lucrative fundingplans that improve service performance by passenger needs.

For a long time, the passenger's view of public transportation (PT) has been based on the rated efficiency of PT services and operations (e.g., Hensher and Daniels, 1995; Pullen, 1993). Service Quality (SQ) has arisen as a major source of difficulties for practitioners, managers, and researchers in recent decades, as well as transportation experts who have concentrated on customer (passenger) awareness. In recent years, several academia has investigated SQ in the PT sector from a variety of views and techniques. Gaining a better understanding of the relationship between passenger satisfaction and service quality is critical for transport sectors to obtain core loyalty for services provided. The variety of existing approaches could be due to the complexity of the SQ concept, the number of attributes used to evaluate it, the imprecision and subjectivity of the data used to analyze it, which is typically based on customer (passenger) satisfaction surveys, and the heterogeneity of passenger satisfaction.

There is no consensus as to what passengers should expect. In the literature, passenger performance sensitivities are compared to ideal performance or quality (Mattsson, 1992), desirable quality, and adequate or tolerable quality (Gilbert and Wong, 2003); (2006) (Hu and Jen). Teas (1993) defines expectations as "service predictions," "an ideal norm," or "attribute importance." Although there is no theoretical justification for this, many scholars (e.g., Chen

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and Chang, 2005; Eboli and Mazzulla, 2010) have replaced importance metrics for expectancies while investigating SQ in the PT sector (Landrum and Prybutok, 2004).

Yet, it can be more valuable to transport experts to measure which provision features are imperative to passengers than expectations (Smith, 1995). As a result, public transport particularly the rail sectors must place a premium on program quality. According to Francis and Richard (2017), public transportation services must adhere to set timetables, be safe and timely, provide good service quality, efficiently employ resources, and meet the demands of users.

In today's competitive market, passenger happiness is highly dependent on a company's total service quality (SQ) and is regarded as a critical strategy. SERVQUAL and RAILQUAL models were employed by the researchers to assess service quality.

Though, the definition of quality and the methodology for measuring service quality, as well as the relationship between service quality and passenger pleasure, are still being debated. Without a doubt, the quality of public transportation service affects passenger happiness, but as Fadare and Adeniran (2018) point out, what defines quality service differs from one client to the next. Therefore, the widespread notion of PS and the many studies carried out from different perspectives, Passenger satisfaction, according to Hoffman and Bateson (2006), is a link between expectations and service experiences.

Literature Review: -

Rail service quality and passenger satisfaction

The existing literature on this subject demonstrates how various variable quantities are used to deliberate the effects of rail transport on passenger satisfaction. The discrepancy between PS expectations and perceived service can be characterized as service quality. When expectations exceed performance, perceived quality falls short of expectations, resulting in customer dissatisfaction (Parasuraman, Zeitham, & Berry, 1985). In the services industry, service quality is the key to attaining a competitive advantage. Customers' (passenger) pleasure is determined by their perceptions of service quality and their faith in the service provider.

According to Satpathy, Patnaik, and Kumar (2017), service quality is a fundamental part of the service advertising idea, and most service providers rely heavily on the service quality process as the final predictor of customer happiness and long-term loyalty. Rida et al. (2012) have highlighted Indian Railway's current challenges with a suggestion in its transportation industry by showing how service quality affects passenger satisfaction. Whether it is for a product or a service, PS is considered the main factor. If passenger research was not satisfied, certain factors have been taken into account. It also helps find the perception of people that were not pleased, which has contributed to these factors and problems over time.

Kumar and Jitin (2015) examined a similar study with relation to passenger satisfaction in the Indian railway service. The analysis reviewed that service quality is the fundamental factor in rail development and growth. Hence, with public mobility, the satisfaction of passenger needs is essential for better to gain their loyalty.

Tyrinopoulos and Antoniou (2018), claim that the distance traveled also has an impact on overall satisfaction with rail-based public transportation. The ease of transfer has been connected to overall satisfaction in numerous studies. Customer (passenger) satisfaction with rail-based public transit is also influenced by station accessibility and ease of transfer.

Even when statistical significance tests are used, similar studies can produce contradictory results.

The results of various studies are combined in a meta-analysis, and the findings of such studies are simply and systematically summarized (Hunter & Schmidt, 2004). The distribution of real correlations between variables is depicted in correlation meta-analysis (Nair, 2006). Measurement error, sampling error, and other study mistakes, which are the sources of disparities in study results, can be corrected via meta-analysis (Hunter & Schmidt, 2004).

Methodology:-

To merge preview data on passenger's interaction relationships, the study employed meta-analysis and moderator analysis methodologies Furthermore, authors of previous satisfaction studies were adopted and gathered on customer(passenger) satisfaction, and our focus shifted to identifying the measure of association (regression coefficient, etc.) that would allow the greatest number of effects to be included in the meta-analysis, namely the regression coefficient. The regression coefficient is the measure to which many satisfaction findings can be transformed, and it is used most frequently in the literature to report satisfaction correlations (Glass, McGaw, and Smith 1981). The author was able to supply the requested relationship in a few cases, and data from 24 of 75 empirical studies on customer(passenger) satisfaction were included in the meta-analysis in the end (see Table 1). A total of 24 published papers and dissertations containing satisfaction or satisfaction-related variables were included in the investigation.

Table 1:- Shows a summary of the paper that was included in the meta-analysis.

Paper	Methods	Variables	Findings
Francis, L & Richard J. (2017)	Regression analysis	Dimensions of service excellence and client satisfaction	According to the data, service providers successfully estimate customers' service quality standards in all service quality characteristics except reliability.
Adeniran AO, Fadare SO (2018)	Spearman rank correlation	Dimensions of service excellence and passenger satisfaction	While MMA2 respondents were satisfied with the reliability service characteristic, they were not satisfied with the other service aspects, according to the findings.
Erkan I et al (2017)	Factor analysis	Service quality factors and passenger's satisfaction	Overall, waiting time, crowdedness in cars, and fare are the SQ variables that best represent the public good, according to the findings.
Geetika, S N (2010)	Factor analysis	components of service quality and customer happiness among passengers	The data suggest that five criteria are crucial in determining happiness with train platforms, the most important of which are refreshments and behavioral aspects.
Puvaneswary T. et al (2019)	Multiple Regression Analysis	Passenger satisfaction and RAILQUAL	The dimensions of Assurance, Empathy, Comfort, Convenience, Connections, and Responsiveness were shown to be substantially related, while the Tangible and Reliability dimensions were not.
Rahaman, R. K. &Rahaman, Md. A (2010)	Factor analysis	Overall satisfaction and service quality features have a relationship.	According to the research, eight key service quality criteria impact overall customer happiness.
Perera RASA & Bandara ABDM (2016)	Multiple regression analysis, Karl Pearson correlation	According to the study, eight main service quality characteristics have an impact on overall customer satisfaction.	According to the data, the SQ dimensions have a beneficial impact on customer satisfaction among foreigners and local passengers. Empathy and assurance received the highest marks, while concrete and response received the lowest.
Ahmad et al (2019)	Delphi approach	Examining the SQ characteristics that have the greatest impact on user satisfaction	Nine aspects determine passenger satisfaction: service availability, accessibility, ticket or pass, information, time, customer service, comfort, protection, and image.
Bikramjit, S.H & Vikas, K. (2015)	Factor analysis	Service Quality has five dimensions. Passenger satisfaction and	The data suggest that the most important aspects influencing consumer satisfaction are basic facilities, safety and protection, punctuality, and employee attitudes toward

		SERVQUAL	passengers. The dimensions that affect good services were identified to be reliability and assurance.
Vencataya, L. et al (2019)	Factor analysis & Regression analysis	Customer satisfaction is influenced by reliability, responsiveness, certainty, empathy, and tangible features.	According to the findings, all five service quality characteristics had a substantial impact on customer satisfaction.
Norazah, M.S (2014)	(SEM) approach	Relationship between customer satisfaction and SQ dimensions	Customer satisfaction, airline service efficiency, and "word-of-mouth" recommendations are all linked, according to the studies. Customer happiness is heavily influenced by empathy, which is why providers place a premium on flight punctuality and efficient transit links between city venues and airports.
Rida, K. et al (2012)	Regression analysis	What role does SQ play in customer satisfaction?	The empirical study found a favorable association between service quality and customer happiness in the public transportation industry.
Agarwal, R. (2008)	Factor and regression analysis	Relationship between customer satisfaction and SQ dimensions	The key findings of the study demonstrate that of all the variables examined, employee conduct has the largest impact on overall consumer satisfaction with Indian Railways.
Muhammed, S.C et al (2015)	Pearson correlation and regression analysis.	Based on passenger perceptions and expectations, there is a link between railway service quality attributes and customer satisfaction.	Commuter satisfaction was significantly or moderately associated with all service quality parameters, and the findings were statistically significant.
Devi P. M.& Shekhar, B. R. (2010)	Fuzzy approach	RAILQUAL was used to assess the Indian Railways' passenger service quality.	According to the findings, RAILQUAL dimensions had a statistically significant impact on passenger satisfaction.
Devi P. M.& Shekhar, B. R. (2012)	Exploratory factor analysis and confirmatory factor analysis	Examining the primary aspects that influence the quality of railway passenger service	This discovery demonstrated that in-train service, employee service, train punctuality, platform facilities, reservation and ticketing, and safety and security all had a beneficial impact on total Railway passenger service quality.
Dipa, M. (2018)	Principal component analysis and Multiple Regression Analysis	Examining the most significant Railway Passenger Service Quality Factors and their impact on Railway Passenger Satisfaction.	The principal component analysis reveals two key service quality dimensions: reliability and tangibles, whereas the Multiple Regression Analysis reveals that punctuality and tangibles influence passenger happiness.
Agunloye O. O. &Oduwaye, L. (2011)	Pearson correlation	passenger pleasure and the quality of	The data demonstrated a significant link between the variables.

		rail transportation services	
Shikha, Ms and Shilpi D. (2018)	Exploratory method	Factors impacting rail passenger satisfaction in India.	Better facilities, according to the research, are crucial for the growth of railways around the world.
Geetika, S.N (2010)	Factor analysis	The most important influencing factor, as measured by SQ dimensions, is passenger happiness.	The data suggest that five criteria are crucial in determining happiness with train platforms, the most important of which are refreshments and behavioral aspects.

Source: Author,2021

Table 2: - Graph analysis of the articles used.

Methods Used	**Frequency**
Regression analysis	8
Spearman rank correlation	1
Factor Analysis	8
Karl Pearson correlation	1
Delphi Approach	1
(SEM) approach	1
Pearson correlation	2
Fuzzy approach	1
Exploratory approach	1
	24

The trend of the Meta-analysis

The table revealed several methods used by several authors for the meta-analysis. It was revealed that most of the studies made use of regression analysis and factor analysis. In addition, the majority of their findings revealed that rail service quality dimensions have a significant effect on passenger satisfaction, with empathy, tangibles, and responsiveness among the major factors influencing passengers' satisfaction. To summarize, most empirical studies agree that rail service quality has a significant effect on passenger satisfaction.

Conclusion: -

A meta-analysis of rail service efficiency and passenger satisfaction was analyzed in the report. Passenger satisfaction is a vital topic that is often overlooked. The rail sector as a mass carriage of public transport has based its efforts on ensuring passenger satisfaction globally. It has been noted that, given the ever-increasing volume of passenger traffic, adequate facilities at stations are needed to ensure passenger satisfaction. Furthermore, periodic upgrades to these facilities as well as proper maintenance of the facilities created are needed.

It is common knowledge that providing better services is critical for the growth of rail transport all over the world. However, rail mobility must continue to upgrade its services to increase quality and customer (passenger) satisfaction, and loyalty.

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