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Impact of On-Board Service Quality on Passengers' Satisfaction: Mediating Role of Safety and Security at Konkan Railway

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Abstract

The study examines the influence of on-board service quality on passenger satisfaction, particularly emphasising the mediating effect of safety & security in the context of Konkan Railway. A systematic survey conducted at Madgaon station (NSG-2) resulted in 690 valid responses from passengers, employing a 35-item questionnaire to assess critical service dimensions such as basic amenities, cleanliness, safety & security, staff behaviour, food & beverages, and other services. Structural Equation Modelling (SEM) was utilised to evaluate hypotheses and examine the interrelationships among these constructs. This research offers practical insights for Konkan Railway, highlighting the necessity for a comprehensive, integrated approach to enhance both direct and mediated routes to satisfaction. By emphasising safety & security, the railway can enhance the beneficial impacts of service improvement, thereby providing an improved travel experience that meets passenger expectations. The results provide a source for improving service quality and developing customer-focused policies within the railway industry. Further, it will indicate that every dimension of service quality significantly impacts passenger satisfaction, with safety & security acting as an essential mediator. The presence of basic amenities and a high standard of cleanliness significantly contribute to overall satisfaction while fostering enhanced perceptions of safety. The conduct of staff and the provision of food and beverage services play significant roles, both independently and through their influence on intermediary factors. Further highlight the interrelated aspects of service quality, indicating that improvements in a particular service domain can lead to enhancements in others, thereby improving overall satisfaction.

Keywords: Amenities, Cleanliness, Konkan Railway, Passenger Satisfaction, Safety & Security.

Introduction

The Konkan Railway, spanning approximately 740 kilometres through the Western Ghats, is a vital transportation link connecting Mumbai and Mangalore, traversing the states of Goa, Karnataka, and Maharashtra. With its rugged topography, this impressive railway network was built with significant engineering advances in the early 1990s. The Konkan Railway was initiated to meet passenger demand and improve West Coast connectivity. Konkan Railway has taken several steps to improve passenger amenities to meet the latest challenging and demanding desires for passenger like as escalators at Non-Suburban Group (NSG)- 2 and NSG-3 Stations are notable improvements, and further enhancements include platform shelters & surface enhancement, accessible restrooms, renovated waiting rooms with new benches, video walls, free Wi-Fi at stations, and other amenities. E-catering and local food vendors have been introduced to accommodate different local tastes on the platform. As part of its commitment to sustainable energy, the Konkan Railway Corporation built solar power plants at Non-Suburban Group stations- 2, 3 & 4. To promote tourism and related activities, the Railway has introduced specialised train services for festivals like the Ganapati festival, Onam and many more. These efforts demonstrate the company's dedication to passenger satisfaction and regional development.

Review of Literature:

In the realm of transportation, rail transport plays a vibrant role in economic progress, although there are various modes of transportation in the country. Rail transport is the most convenient, cost-effective, economical and safe option (Mageshwarii & Vasanthi, 2020). To effectively compete with alternative transportation modes, the railway industry must gain insights into passengers' perspectives on service quality, which is crucial for enhancing passengers' satisfaction levels (Margaret Divya & Devi, 2020). The enhancement of safety and security, along with the optimisation of basic amenities, sanitation, catering, healthcare, and timeliness, determines the overall service quality of the Railway system (Sheeba & Kumuthadevi, 2013). For sustainability, distinction and market competitiveness, a critical need exists to improve service quality, passenger pleasure, and loyalty within the railway sector (Rahim, 2016). As per Principal Component Analysis, security and safety,

comfort, infrastructure quality, and ticket procuring services significantly influence the Metro station and train passenger satisfaction (Saw et al., 2020). The Importance Performance Analysis classifies these indicators with the indicators for nationwide enhancement in intercity train service quality to encourage productivity (Jomnonkwao et al., 2020). Railqual, introduced (Prasad & Shekhar, 2010), serves as an assessment tool for improving railway passenger services, aiding management in identifying areas for business development. (C.G., 2017) says that a long-term commitment to intentional performance and vital service governs passenger-pleasing facilities, thereby improving services and benefiting passengers and the economy (Thanaraju et al., 2019). Recognising the influence of passenger satisfaction on loyalty (Oktavia & Dwiatmoko, 2022), the role of service excellence in boosting passenger happiness, eventually fostering customer loyalty, is prominent.

Theoretical, Contextual and Hypothesis Development:
To fully understand the service quality attributes that affect passenger satisfaction on the Konkan Railway, the researcher conducted qualitative interviews with thirty respondents who have travelled on the Konkan Railway for more than four trips in their lifetime and ten experts who are working in the domain area of Konkan Railway department. The respondents' satisfaction with railway services were influenced by their perceptions of on-board and off-board service quality and specific preferences and perceptions regarding safety & security measures. This study will identify and examine on-board attributes like basic amenities, cleanliness, safety & security, food & beverages, staff behaviour and other services using service quality and passenger satisfaction theory called SERVPERF. The SERVPERF model assesses service quality based on tangibles, reliability, responsiveness, assurance, and empathy. Additionally, the study examines how perceived safety and security mediate the relationship between on-board service quality attributes and satisfaction. Given the importance of public transportation safety, understanding how passenger perceptions of safety and security affect satisfaction is crucial.

$H0_a$- There is no statistical relationship between Basic Amenities and Passenger Satisfaction.

$H0_b$-There is no statistical relationship between Cleanliness and Passenger Satisfaction.

$H0_c$-There is no statistical relationship between Safety & Security and Passenger Satisfaction.

$H0_d$-There is no statistical relationship between Staff Behaviour and Passenger Satisfaction.

$H0_e$- There is no statistical relationship between Food & Beverages and Passenger Satisfaction.

$H0_f$- There is no statistical relationship between Other Services and Passenger satisfaction.

Mediating Hypotheses:
Safety and Security mediate passenger satisfaction, according to research that shows safety concerns can overshadow other service features if not addressed in Rail transportation (Lai & Chen, 2011). Proper safety and security protocols improve passengers' comfort and other services on railways. Studies reveal that passengers prioritise safety and security, which increases their satisfaction and service ratings (Koo et al., 2015). Adequate safety and security regulations make passengers comfortable, improving Konkan Railway service quality. The passengers feel protected when on-board staff shows genuine interest in assisting them with their difficulties; it fosters a sense of security and trust (Transport Focus, 2016). Effective communication and disciplined behaviour by the staff, further enhance this trust, encouraging passengers to interact without fear. Positive staff behaviour significantly boosts passenger's confidence and satisfaction, which makes their needs and expectations easier. Food and beverage and other onboard services are more enjoyable in a secure environment. Safety and security's mediating role emphasises its fundamental importance in passengers' pleasure, underlining that a safe travel experience maximises all other service benefits (Lasarudin et al., 2022). The above insight leads us to propose the following hypothesis and further sub-classify:

$H0_g$- There is no significant indirect relationship between onboard services and Passenger Satisfaction mediated by safety and Securities.
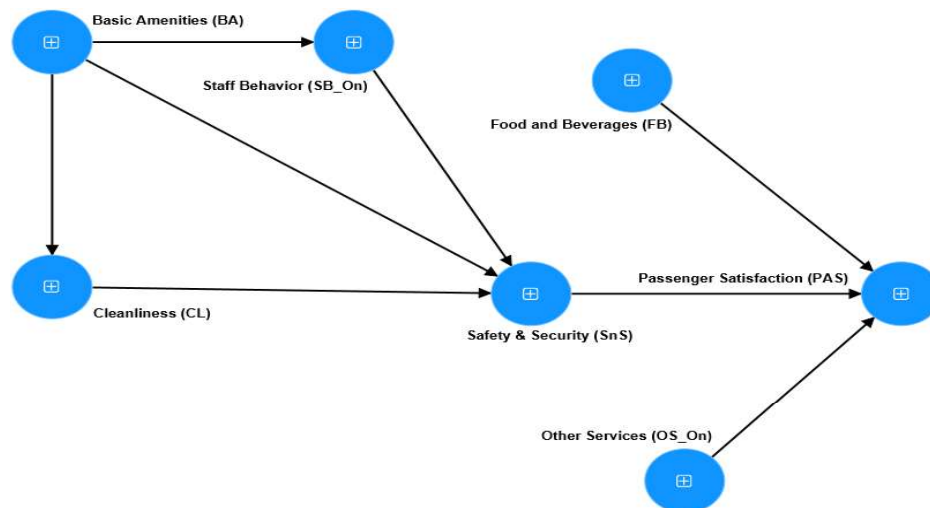
Fig. 1: Conceptual Model

The Konkan Railway conceptual model of passenger satisfaction (Fig. 1) examines how service attributes affect passenger satisfaction. The exogenous variables in this model are basic amenities, cleanliness, staff behaviour, safety & security, food & beverages, and other on-board services that reflect the endogenous variable i.e. passenger satisfaction. In this model, passenger satisfaction measures overall satisfaction with the railway service. The study examines the correlation between these exogenous variables and the endogenous variable of passenger satisfaction to pinpoint opportunities for strategic enhancement in the quality of Konkan Railway services. Railway management can improve passenger satisfaction by prioritising their basic needs and ensuring safety & security by integrating these elements into the service framework.

Objectives of The Study:
Research objectives are crucial in guiding the studies and ensuring that the researcher can achieve meaningful results. The objectives for this paper are as follows:
1. To assess the impact of On-board service quality attributes on rail passenger satisfaction.
2. To explore the mediating effect of Safety & Security on passenger satisfaction.

Research Methodology:
The research methodology involves a quantitative approach, utilising surveys to collect data from rail passengers travelling via the Konkan Railway. Structural Equation Modelling (SEM) was employed to assess the complex relationship between observed and latent variables, and simultaneously, it will test multiple hypotheses and provide a comprehensive understanding of the underlying data structure of on-board service quality and the mediating role of safety & security on passenger satisfaction.

Data Analysis:
This analysis provides insights into the direct and indirect relationships between factors. Table 1 shows the statements related to on-board service quality with their codes.

Table No. 1 : Details of items with their codes

Codes	Items
BA1	A sufficient number of berths are available in the coach.
BA2	A sufficient number of functional lights, fans, and charging points are provided in the coach.
BA3	The coaches are equipped with comfortable seats.
BA4	The coaches are equipped with adequate legroom.
BA5	Enough space in the coach for passenger mobility.
CL1	Cleanliness is maintained in the train.
CL2	Sufficient water supply in the bathrooms' washbasins and toilets is available.
CL3	Regular cleaning and sanitisation of the toilet, bathroom, and wash basins is undertaken.
CL4	Cleanliness and hygiene are maintained by the Pantry Services.
CL5	Garbage bags and regular collection of waste in the coach are provided.
SnS1	There is provision for the safety of Passenger (s) while travelling.
SnS2	The Railway Protection Force is deployed in the coach.
SnS3	There is a provision for CCTV surveillance in the coach to monitor passenger safety.

SnS4	Safety measures are taken by the staff in case of emergency during travel.
SnS5	There is security for the luggage and belongings in the coach.
SB1	The Travelling Ticket Examiner's (TTE) conduct is courteous.
SB2	The Travelling Ticket Examiner's (TTE) conduct is helpful.
SB3	The Travelling Ticket Examiner (TTE) is knowledgeable.
SB4	The behaviour of the pantry staff is friendly and courteous.
SB5	The staff are alert and helpful in case of emergency.
FB1	Food and beverage facilities are available and accessible.
FB2	Food and beverages are reasonably priced.
FB3	Sufficient quantities of food and beverages are available at a reasonable price.
FB4	There are various choices in varieties of food and beverages.
FB5	Hygiene and cleanliness of the food and beverage facilities are standard.
OS1	Steps are taken to control the hawker's menace in the coach.
OS2	A sufficient number of on-board shopping facilities are available.
OS3	Space for baby care facilities is provided in the coach.
OS4	Free Wi-Fi connectivity is available.
OS5	Entertainment facilities are available in the coaches.
PAS1	How pleased are you with the safety and security measures executed on board?
PAS2	How content are you with the punctuality and timeliness of the train's departure and arrival?
PAS3	To what extent are you satisfied with the courtesy and assistance when asked for? Is it provided by the on-board staff?
PAS4	How satisfied are you with the quality, hygiene and variety of food and beverages service provided on-board?
PAS5	How satisfied are you with the availability and cleanliness of restrooms on board?

Source: Primary Data

Sampling and Data Collection:
The study examines Madgaon Konkan Railway (KR) station, i.e. NSG-2 passengers' preferences and satisfaction. The embarked and disembarked respondents were surveyed on a 5-point Likert Scale from Strongly Disagree to Strongly Agree. Surveys were conducted from Feb.- Aug. 2024. At the station, 740 passengers' feedback was collected using a non-probability convenient sampling technique to access a diverse and readily available pool of respondents (Kumuthadevi, 2019; Mageshwarii & Vasanthi, 2020; Margaret Divya & Devi, 2020; Saw et al., 2020). To ensure the statistical robustness of the sample (Faizan et al., 2018; J. F. Hair et al., 2017; Kwong-Kay, 2013; Magno et al., 2022) recommends a minimum of 5 to a maximum of 20 cases per observed variable. Applying this guideline to the 35-item model comparison shows that 175-700 respondents are needed. This range is necessary to represent the variable in the model and ensure the reliability and validity of the data; further, the following sample size improves research credibility and data interpretation. The scale was validated by five experienced researchers, three Konkan Railway personnel and two passengers (Denise F. Polit, Cheryl Tatano Beck, 2005; Yusoff, 2019), and the preliminary study was conducted on 185 passengers and analysed. The Cronbach alpha results are basic amenities were 0.804 reliable with six items: cleanliness.0908 with six elements; Safety & Security 0.873 with six items and staff behaviour 0.892 with six items; food and beverages 0.891 with six items, and other services 0.807 with six items. Kaiser Meyer Olkin and Bartlett's tests were 8.43 (Ayuni & Sari, 2018; Reddy & Kulshrestha, 2019). The major data collection was collected from 92 trains that operate on the Konkan railway route, including daily Passenger Trains, Express, Rajdhani, Sampark, Duronto, and Tejas Express trains.

Data Screening:
Preparing for data analysis involves thorough screening of the data. A total of 740 respondents filled out the questionnaire, but few were rejected due to incompleteness and outliers. The final sample size considered for analysis was 690. This process included evaluating normality, outliers, missing values, and demographics. Further data analysis and research findings briefly describe respondents' gender, age, marital status, educational qualification, occupation, annual income, and rail trip spending. Out of 690 responses, 57% were male and 43% female. The majority of the respondents were aged 31-40 (65%), followed by 18-30 (15%), 41-50 (9%), 51-60 (8%), and above 60 (4%). Also, 58% were unmarried and 42% married. The education qualifications are 3.9%, 5.1%, 16.4%, 14.9%, 41.1%, 17.5%, and 1.1%: SSC, HSSC, Diploma, Graduation degree, and Postgraduate degree respectively. The Salaried persons and self-employed contributed 38.4% and 30.7%, respectively, followed by professionals (10%), students (9%), business persons (5.8%), unemployed (3.4%), and others

(2.7%). Annual income below Rs. 3 lakh was 56.8%, 20.5% to Rs. 5 lakh, 8.3% to Rs. 7 lakh, and 14.4% above Rs. 7 lakh. Up to Rs. 5,000- 49.1%, Rs. 10,000- 27.4%, Rs. 15,000- 11.9%, and above Rs. 15,000- 11.6% were spent on railway transport annually.

Common-Method Variance Bias:
To determine the possible presence of common-method variance bias among variables, the study has employed (Maxwell & Harman, 1968) a one-factor test. The researcher followed the principles and methodology outlined (Podsakoff et al., 2003) to conduct a one-factor test, as described by (Maxwell & Harman, 1968). To conduct this test, all the measurement scale items were subjected to a Principal Component Analysis with varimax rotation. This facilitated the identification of indicators of a single factor via factor analysis. The outcome derived from seven distinct components obtained from six measurement constructs (Basic Amenities, Cleanliness, Safety & Securities, Food & Beverages, Staff Behaviour, and Other Services) converged over six iterations of rotation. The results indicate that this study does not exhibit any issues related to common method variance bias.

Measurement Model:
The measurement model was reviewed through several key criteria to ensure its consistency and stability, as outlined by (J. Hair et al., 2014). This study employed composite reliability to assess the model's dependability, also known as internal consistency, alongside convergent and discriminant validity to test the measurement model (J. F. Hair et al., 2019; Ibrahim et al., 2023). Internal consistency was evaluated using composite reliability (rho_c), which measures the internal consistency and reliability of the construct, with Cronbach's Alpha and composite reliability values exceeding 0.70, specifically ranging from 0.764 to 0.874 for Cronbach's Alpha and 0.835 to 0.909 for composite stability. The assessment of convergent validity, utilizing Average Variance Extracted (AVE), revealed that all constructs achieved AVE values exceeding 0.50, with a range from 0.505 to 0.667, indicating a robust representation of the constructs. The assessment of discriminant validity was conducted through the application of the Fornell-Larcker criterion alongside the Heterotrait-Monotrait ratio (HTMT). The Fornell-Larcker criterion entails an evaluation of the square root of the AVE values across all constructs in relation to their highest squared correlation with other constructs. In contrast, the Heterotrait-Monotrait ratio focuses on the assessment of correlation ratios. The findings laid out in Table 2 indicate that the square root of each construct's AVE exceeded the highest correlation with other constructs, while the HTMT ratios remained below the 0.85 threshold. The results of these evaluations substantiated that the discriminant validity of all constructs within the proposed model was successfully attained (Ibrahim et al., 2023). Table 2 represents the Fornell-Larcker criterion and HTMT ratio.

Table No. 2. Fornell-Larcker criterion and HTMT Ratio

	BA	CL	FB	OS	PAS	SB	SnS
BA	*0.711*	0.812	0.595	0.486	0.539	0.558	0.81
CL	0.711	*0.816*	0.542	0.548	0.538	0.44	0.784
FB	0.492	0.464	*0.761*	0.532	0.58	0.807	0.846
OS	0.411	0.46	0.431	*0.743*	0.674	0.412	0.715
PAS	0.459	0.467	0.491	0.566	*0.802*	0.532	0.679
SB	0.447	0.384	0.69	0.345	0.461	*0.816*	0.712
SnS	0.659	0.659	0.678	0.566	0.558	0.58	*0.725*

Source: Primary Data   Note: The square roots of the AVE are diagonal and italicised. Below the diagonal elements is the correlation between the construct's value, and above the diagonal elements are the HTMT values.

Structural Model:
The structural model in Smart PLS represents the hypothesised relationship between latent variables, depicted through path diagrams where the arrow shows causal influences. This model is constructed after ensuring a robust measurement model with constructs operationalised by specific indicators. Path coefficients, generated by regression analysis, indicating the strength and direction of relationships, are assessed statistically via bootstrapping to determine significance levels, i.e. p-value. Fig 2 shows the structural model.
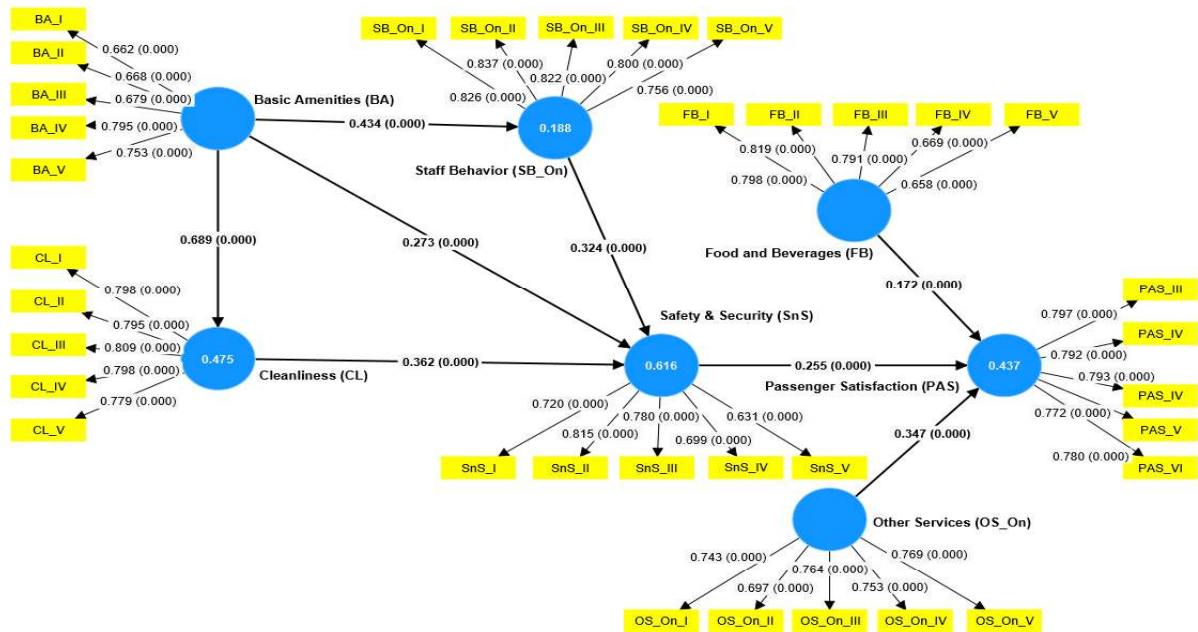
Fig. 2 Structural Model

Table 3 presents the Smart PLS model's hypothesis testing analysis of construct relationships' strength and significance. The study tests hypotheses about how Basic Amenities (BA), Cleanliness (CL), Staff Behaviour (SB), Safety and Security (SnS), Food and Beverages (FB), and Other Services (OS) affect Passenger Satisfaction.

$H0_a$ shows a strong positive effect between basic amenities and passenger satisfaction, with a beta value of 0.169 and a very high t-value of 4.966. This suggests that improving basic amenities significantly boosts on-board passenger satisfaction. With a beta value of 0.092 and a t-value of 4.713, $H0_b$ shows that cleanliness is crucial to passenger satisfaction. $H0_c$ shows a positive coefficient of 0.255 and a t-value of 5.161, indicating that effective safety and security measures moderately improve passenger satisfaction. A beta value of 0.083 and a t-value of 5.823 show that superior amenities positively affect staff behaviour ($H0_d$), indicating a statistically significant effect. Better amenities may improve staff behaviour and satisfaction. $H0_e$ shows that high-quality food and beverage services significantly improve passenger satisfaction with a beta value of 0.172 and a t-value of 3.832. $H0_f$ shows a stronger positive effect of other services on passenger satisfaction with a coefficient of 0.347 and a t-value of 8.412. This shows the importance of miscellaneous services in improving travel and passenger satisfaction. The analysis shows that basic amenities, cleanliness, safety and security, staff behaviour, food and beverages, and other services significantly affect Konkan Railway passenger satisfaction. The findings emphasize the importance of a holistic approach to service quality, where improvements in each area improve passenger satisfaction.

Table 3: **Structural Analysis**

Hypotheses	Relationship	Original sample (O)	T statistics	P values	Result
$H0_a$	BA -> PAS	0.169	4.966	0*	Reject
$H0_b$	CL -> PAS	0.092	4.713	0*	Reject
$H0_c$	SnS -> PAS	0.255	5.161	0*	Reject
$H0_d$	SB_On -> PAS	0.083	5.823	0*	Reject
$H0_e$	FB -> PAS	0.172	3.823	0*	Reject
$H0_f$	OS_On -> PAS	0.347	8.412	0*	Reject

Source: Primary Data   Note: * indicates the value is significant at the 5% level.

Mediation Analysis:
Table 4 outlines the results of a mediation analysis where multiple service factors are examined for their indirect effects on passenger satisfaction through intermediate variables like cleanliness, safety & security, and staff behaviour. Each pathway in the analysis demonstrates how the initial service aspects influence passenger satisfaction by impacting other related service qualities.

In the above analysis, all paths show significant effects, with the t-value indicating strong statistical significance and a p-value of zero across all tested relationships. This suggests that the mediated relationships are strong and reliably impact passenger satisfaction. The indirect effects associated with basic amenities, cleanliness, and staff behaviour underline the significance of these foundational service elements in fostering a secure and satisfactory passenger experience through the enhancement of intermediary service qualities. The notable indirect pathways indicate that cleanliness not only has a direct impact on passenger satisfaction but also serves as a vital mediation factor, improving protection and security and thereby improving levels of passenger satisfaction. In a comparable manner, basic amenities and the conduct of staff have a consequential, crucial impact on passenger satisfaction as they enhance perceptions of safety and security among travellers. The mediated pathways highlight the intricate relationships among service factors within the railway sector, illustrating how advancement in a particular area can reverberate across various service dimensions, ultimately leading to a rise in overall passenger satisfaction.

Table 4: **Mediation Analysis**

Hypotheses	Relationship	Original sample (O)	T statistics	P values	Result
H0$_1$	Basic Amenities -> Cleanliness -> Safety and Security -> Passenger Satisfaction	0.064	4.587	0*	Reject
H0$_2$	Cleanliness -> Safety and Security -> Passenger Satisfaction	0.092	4.713	0*	Reject
H0$_3$	Basic Amenities -> Staff Behaviour -> Safety and Security -> Passenger Satisfaction	0.036	4.39	0*	Reject
H0$_4$	Staff Behaviour -> Safety and Security -> Passenger Satisfaction	0.083	4.643	0*	Reject
H0$_5$	Basic Amenities -> Safety and Security -> Passenger Satisfaction	0.07	3.838	0*	Reject

Source: Primary Data Note: * indicates the value is significant at the 5% level.

Findings:
This study presents important insights regarding the factors that affect passenger satisfaction on the Konkan Railway, highlighting the interrelation of service dimensions. The structural model analysis demonstrates that all evaluated service constructs significantly influence passenger satisfaction, with path coefficients reflecting positive and statistically significant relationships. Basic Amenities, with a beta value of 0.169, significantly contribute to passenger satisfaction, indicating that improving essential services like seating, lighting, and sanitation enhances the travel experience. Cleanliness, with a beta value of 0.092, is a key factor that directly influences satisfaction and mediates the perception of safety & security. Safety & Security measures (beta = 0.255) enhance satisfaction, highlighting their role in ensuring a secure travel environment. Staff behaviour, indirectly tied to satisfaction via better amenities and safety perceptions, highlights the importance of service personnel in influencing passenger experiences. High-quality food and beverages (beta = 0.172) and other services (beta = 0.347) significantly enhance satisfaction and highlight the importance of comprehensive service offerings. Mediation analysis shows how service improvements lead to increased passenger satisfaction through enhanced cleanliness and staff behaviour, which boost perceptions of safety and security. Essential facilities indirectly influence factors such as cleanliness and staff behaviour. Cleanliness influences various aspects, highlighting its essential role in service quality. The result demonstrates the interrelation of service enhancement, indicating that advancements in one domain beneficially influence others, thereby enhancing the passenger experience. This highlights the importance of railway service providers adopting a holistic approach, concentrating on both direct service elements and their interrelations to improve passenger satisfaction.

Discussion:
The examination reveals that multiple essential factors play a significant role in influencing passenger satisfaction within the circumstances under investigation. Particularly, variables like basic amenities, cleanliness, safety & security, staff behaviour and other services have been acknowledged as crucial factors, each exerting a positive influence on overall passenger satisfaction levels. Including amenities, like comfortable seating and adequate space for passenger movement within the coach, enhances the overall experience for passengers (Geetika et al., 2016; Ghosh et al., 2017). Similarly, a commitment to maintaining high standards of cleanliness within the travel, setting positively influences satisfaction levels, highlighting the importance of hygienic facilities and well-kept environments (Vos & Hagen, 2019). Furthermore, efforts aimed at ensuring safety and security measures, both in transit and within terminal facilities, positively influence passenger

satisfaction, fostering a sense of trust and comfort among travellers (Gajendran, 2013; Suman et al., 2018). Furthermore, the behaviour and degree of professionalism demonstrated by personnel play a crucial role in shaping passengers' perceptions and overall satisfaction with their travel experience. The finding emphasises the complex and varied dimensions of passenger satisfaction, illustrating the significance of numerous operational and service-related factors in shaping the overall quality of the travel experience.

Conclusion:
In conclusion, the analysis highlights the complex dimensions of passenger satisfaction, which is shaped by various essential services such as basic amenities, cleanliness, safety & security protocols, staff behaviour and other services. The provision of basic amenities, like comfortable seating, adequate legroom, mobility for passengers, and advanced facilities, improves passenger pleasure (Dr.S.Kanthimathinathan, 2019). The significance of cleanliness and sanitation in the coaches cannot be overstated when considering the overall passenger experience and hygiene standards (Anbupriya & Subadra, 2017). Implement a systematic waste management protocol by regularly collecting garbage from coaches and supplying passengers with garbage bags for proper disposal. Prioritize enhanced safety and security measures, such as increased surveillance, patrolling, and emergency response systems, to ensure a secure travel environment. Additionally, maintain a high standard of cleanliness through frequent cleaning schedules, timely water refills and sanitation management to improve the overall passenger experience and comfort. Across journey and terminal facilities fosters passenger trust and a sense of protection. Thorough safety measures and recognised security precautions enhance travellers' conceptions of safety and overall enjoyment of their trips (Abdul et al., 2015; Collart-dutilleul et al., 2018; Coppola & Silvestri, 2020). The conduct of staff significantly influences passenger satisfaction levels. The professionalism, helpful nature, kindness, and punctuality significantly impact the quality ratings of passenger service and overall satisfaction levels (Antwi et al., 2020; P, 2019; Souca, 2011; Zangmo et al., 2014). Constructive interactions among staff can enhance the well-being and comfort of passengers. The result indicates that it is essential for railway authorities to enhance facilities, hygiene, safety, and security measures, as well as staff training cum behaviours, in order to elevate passenger satisfaction and overall travel experiences. By emphasising these variables, service providers can surpass passengers' expectations and foster loyalty along with favourable endorsements within the travel industry.

Limitation of the Study:
The research delineates certain limitations that must be acknowledged when evaluating the findings. Reliance on data supplied by participants may result in response bias, thus undermining the impartiality of the results. The investigation is limited to the Konkan Railway passengers, restricting the application of the results to other railway systems or regions working within or outside the country. The model eliminated external factors such as weather-related delays or socio-economic variables that might influence passenger pleasure. Furthermore, the cross-sectional form of the data restricts the ability to detect variations in satisfaction over time or assess the long-term impacts of the service. Certain variables, like additional services, may not be clearly operationalised, leading to potential ambiguity in interpretation. Furthermore, SERVPERF emphasises performance solely, neglecting the essential influence of passenger expectations on the formation of satisfaction. It may overlook service dimensions' dynamic and interdependent characteristics, thereby constraining its relevance in intricate environments such as railways.

Suggestions for Future Direction:
Enhancing passenger satisfaction in the Konkan Railway can be approached through various strategies. Primarily, enhancing on-board services, including cleanliness, water refills, and effective garbage management, is essential for ensuring passenger comfort. It is important for staff to undergo professional and customer service training to enhance the passengers' relations and foster trust. Consistent monitoring, patrols and surveillance are essential for ensuring passenger safety, which in turn influences overall satisfaction. Service providers should also consider the importance of Wi-Fi, entertainment options and improved food quality. Ultimately, consistent feedback, both online and offline, can effectively address the needs of passengers and yield actionable insights for ongoing enhancement. These elements are crucial for Konkan Railway to refine the overall experience and align with passenger expectations.

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