8.1 Introduction

Research on the railway passenger service quality was stimulated by new interest evinces due to the fact that passenger transport is the more visible face of the railways as it touches directly the lives of millions who avail of the passenger transport services. Increased attention on competition, loss of market share to roadways and low cost airlines and decreasing revenues in passenger segment and passengers increased expectations on service quality led to this study.

The scope of this study was to identify service quality attributes and dimensions relevant to railway passenger services. Based on different review of literature and focus group discussions and expert opinions an integrated theoretical framework was developed which has been empirically tested across South Central Railway. Alongside the theoretical framework, a set of hypotheses have been developed.

The study applied a positivist approach methodology in which a survey questionnaire was used to obtain quantitative data to test hypotheses. The data for this study was obtained from various train passengers over South Central Railway zone of Indian Railways in India. The sample consists of 1215 railway passengers from 47 trains across South Central Railway of both lower and upper classes with a mix of all demographic profiles. Structural equation modelling including analysis of moment structures (AMOS) software applied to test the hypothesised relationships. In this chapter, first the theoretical contribution of the thesis in terms of gaps in the field is discussed. Second, the practical or managerial implications of the study’s findings are described. This is followed by a discussion of the methodological and theoretical limitations of the research. Finally, some future research avenues suggested.

8.2 Qualitative Research

As stated earlier the attributes were identified through four focus groups, one from lower class passengers and one from upper class passengers with other two from railway officers of which one from subordinates and other from officers. This process allowed some clear identification of those elements found reflecting similarities in expectation between the
groups and those elements found reflecting differences. It is interesting to note that there are substantially more elements reflecting similarities than differences. Many of the elements reflecting similarities also reflect elements of difference. For example all respondents commented on the expectation that the toilets should be clean and well maintained. However there was also a difference evident in that the lower class passengers expected this to occur where as the upper class passengers assumed it would occur, as otherwise it would not be an upper class. Also of equal importance to both groups of passengers were good catering facilities, safety and security in the journey. Other elements included punctuality in train operations, friendly and courteous employees, handling of delays and unusual circumstances effectively, on demand ticket availability and value for money. When it becomes more viable to group them under a range of headings they turned out to be reservation and ticketing, employee service, platform amenities, safety and security, in train service and punctuality.

8.3 Conclusion about Focus Group Analysis

The principle objective of the focus groups was to identify items relating to railway passenger services quality that could be used in a survey instrument to be distributed to railway passengers in upper class and lower class trains in express as well as passenger train services. From the data collected it was evident there was a definite and clear distinction between the perceptions of upper class and lower class passengers. The lower class travellers mostly of the opinion that Indian Railways Passenger services offer the cheap and convenient mode of transport and there is no alternative to substitute it – in a sense where they felt they belonged. They did not want something that was out of ordinary as they, implicitly, saw themselves as normal people and did not want any luxury except the trains maintaining punctuality and availability of tickets on demand.

In contrast the upper class passengers expected that train services was exclusive, that treats them special that having good catering facilities, personal attention from staff throughout journey, some form of entertainment to make journey interesting, and by implication they are looking for something out of ordinary. These findings were translated into items for inclusion in the survey instrument. For all dimensions an approximately equivalent mix of items between upper class and lower class passengers’ opinion was included.
8.4 Research Contribution

The research reported in this thesis will make a number of contributions to advancing knowledge from both an industry perspective and a theoretical perspective. The research integrates, with in the quality Railway passenger services context, a number of additional attributes and dimensions derived from literature review and focus group discussions to the relationship between pre core railway passenger services, core passenger services and peripheral services with railway passenger service quality, railway passenger satisfaction and behaviour intentions as well as providing an extension and replication of previous research in the Indian Context. The research contribution is now briefly discussed in relation to the industry and conceptual contributions.

8.4.1 Contribution to Academic Theory (i.e., Service quality Management)

The research contributes to academic theory by developing the RAILQUAL model, which identified attributes and dimensions in Railway passenger service quality measurement and their impact on overall railway passenger quality and passenger satisfaction. The contribution to theory development falls mainly within the confines of Indian Railways passenger’s services research, the context of the specific research focus. The dimensions derived out of this research will contribute to a greater understanding at the generic level of the role played by these constructs in determining passenger service quality.

8.4.2 Contribution to Academic Practice

The research contributes methodologically to existing service quality measurement research. By testing and validating the RAILQUAL model with data from diversified samples through vigorous psychometric scale development procedures and methodologies in each phase, the study shows that the development of RAILQUAL instrument is robust across contexts.

8.4.3 Contribution to Transportation Industry Theory (i.e., Indian Railways)

The research is the first of its kind in Indian Railways which provides new understanding on railway passenger service quality. There are a number of industry related contributions that will derive from this research. The changing nature of the Railway passenger services and the resultant increase in competitive intensity necessitates higher performance levels in the Indian Railways. These can only be achieved through a better understanding of the expectations of railway passengers and the importance placed by them on aspects such as
reservation and ticketing, platform services, in train service, punctuality and reliability, employee service, safety and security. The research outcomes will inform managers through the establishment of an empirical relationship between service quality, satisfaction, loyalty and their antecedents

**8.4.4 Contribution to Transportation Industry Practice**

This research conceptualized, constructed, refined and tested a multiple item instrument RAILQUAL to measure railway passenger service quality which is very useful in the present day competitive environment.

**8.5 Research Findings:**

This section discusses the objectives pertaining to research questions presented in the Chapter one in detail. The aim of this section is to explore the extent to which the objectives were achieved in the study to comprehend the specific outcome of each objective.

Objective (i): to identify railway passenger service quality attributes and dimensions and to construct RAILQUAL instrument for measuring railway passenger service quality

The objective was investigated by conducting a review of literature, contextual research review, the results of which are discussed in Chapter two and Chapter Three. This investigation also involved an in-depth search of literature to ascertain attributes of service quality. Then the identified attributes were refined with focus group discussions pilot which yielded a final list of 45 attributes pertaining to railway passenger service quality which were further pruned to 36 attributes with expert opinions followed by pilot study which was presented in Chapter 4. This resulted in the conceptualization, construction and development of RAILQUAL instrument. The instrument is incorporated as Appendix I of the thesis.

Objective (ii): to develop RAILQUAL theoretical model to find service quality dimensions which are significant predictors of overall service quality in railway passenger services and to identify individual service quality attributes which are significant predictors of their respective service quality dimensions.

The method used to answer this objective was presented in chapter five of the thesis. The Exploratory Factor Analysis technique is used to examine the service quality attributes
among the passengers in South Central Railway in Indian Railways. As factor analysis is a multivariate analysis technique that determines underlying factors (domains) in a set of correlated attributes (Hair et al. 2003; Nannually & Bernstein 1994), EFA was the most appropriate method to identify the quality domains and pertinent correlated attributes. The process of EFA in this research involved five key steps, which are pre-analysis checks, sampling adequacy, factor extraction, factor rotation and factor interpretation. Finally a six factor 27 attributes RAILQUAL theoretical model emerged out of this objective.

Objective (iii): to confirm the identified railway passenger service quality attributes and railway passenger service quality dimensions by developing RAILQUAL measurement model

This objective was met by measuring all the service quality dimensions along with the service quality attributes though Confirmatory Factor Analysis (CFA). Chapter Six of this thesis demonstrated all the provisional models developed for analysis. First, CFA model is performed for all the six dimensions of railway passenger service quality, to determine the reliability and validity of the model’s constructs and to evaluate the fit between observed and estimated covariance matrices. Secondly three alternatives - RAILQUAL models of first order, second order and third order were developed and tested with fit indices to identify the best fitted model and the variables which have not loaded properly on to the dimensions are deleted which resulted in the evolvement of a Six Factor and 18 attributes RAILQUAL measurement model.

Objective (iv): to test the relationship between attributes and dimensions of railway passenger service quality through RAILQUAL Structural Model and to determine the role of each attribute and dimension in predicting service quality and passenger satisfaction.

The relationship between the six quality domains and overall satisfaction was examined by evaluating RAILQUAL Structural model which was presented in detail in Chapter Seven. All the hypothesised relationships are tested in general to the whole sample and also group wise category wise to test the robustness of the model. Except for the hypothesis H8 (i.e. the relationship between passenger satisfaction and behaviour intentions all the other hypotheses were accepted. The model fit also tested and found that the structural model is considered to fit the sample data reasonably and accepted as a fitting model. Reliability and validity of the
model were also tested and found accepted. The relationship between study variables and demographic variables were tested with MANOVA. The study proved that reservation ticketing, platform services, in train service, punctuality, employee service and safety and security are the six dimensions which have significant contribution towards Railway Passenger Service Quality (RPSQ) and RPSQ is the significant predictor of Passenger Satisfaction and Behaviour Intentions of the passengers.

8.6 Overall Implications of the Research

The new source of empirical evidence form this analysis offers some significant implications. The study contributes to the body of knowledge in three main areas – Theoretical, Practical and Methodological aspects as discussed below.

8.6.1 Theoretical Implications

After reviewing extant literature in the domain of service quality management, a conceptual frame work was developed on the basis of focus group discussions, expert opinions and pilot study. This study was conducted in South Central Railway zone of Indian Railways in India. In the frame work, the direct influence of railway pre core services (i.e., reservation ticketing and platform services), core services (i.e. in train service, punctuality) and peripheral services (i.e. employee service and safety security) on railway passenger service quality (RPSQ). This understanding was conceptualised on the basis of prior studies on service quality (Parasuraman, Zeithmal and Berry 1988; Groonors, 1984, Cronin and Taylor, 1992). A new set of 18 attributes were identified which are loaded on to six service quality dimensions which are significant predictors of railway passenger service quality and passenger satisfaction.

Statistical results showed that all hypotheses except two were accepted. Overall, all the service quality dimensions were to be found significantly and positively correlated to railway passenger service quality. The significance of railway passenger quality on passenger satisfaction was found to be positive. However, two hypotheses i.e. railway passenger service quality with behaviour intentions and passenger satisfaction with behaviour intentions were not found to be significant.
Chapter 8: Summary, Conclusion and Recommendations

The novelty of this research is based on the development of comprehensive model that examines the factors that influence the railway passenger service quality. Previous studies that have been conducted in the area of service quality did not focus much on railway passenger services quality. Thus it can be claimed that this is the first time that this theoretical framework tested empirically and theoretically. Several theoretical contributions emerge from this research.

First, to the knowledge of researcher this research is the first empirical work that synthesised concepts from three main theories of service quality such that Parasuraman's SERVQUAL, Cronin and Taylor’s SERVPERF and Grönroos service quality model to assess individual attributes of railway passenger service quality and in a more holistic manner, and in an Indian context. In the present study, an integrated model was developed that combines the factors associated with railway passenger service quality factors. SERVQUAL is much more service oriented. Those commonly used in public transport industry are more industry-based. SERVQUAL is much more humanistic, or customer related, while most of the measures used in public transport industry are much more mechanistic, or have a technical focus, or use more objective measures. This has led to the criticism that SERVQUAL could not tell the whole story. This study suggest an integrative model that combines the attributes used in SERVQUAL, the public transport industry, and the railway service sector to be grouped together to form a pool of items for measurement.

Second, another contribution to knowledge is that, it is the first study of its kind collecting valuable data across passengers dynamically while they were on their journey so that actual perceptions can be collected. In this regard, the researcher has addressed the question which is those factors that influence passenger service quality and passenger satisfaction in Indian Railway passenger services. The researcher combined all the key factors like pre core services, core services and peripheral services which take care of pre journey, at the time of journey and post journey attributes in relation to passenger service quality.

Third, this research was conducted in the sector of Railways which is another contribution to knowledge that, it is first study to report that has valuable insights from passengers. In addition the study contributed to knowledge on how railway passengers perceive various aspects regarding railway passenger services. Although studies have been found in various
other sectors in service quality the setting of this study was service quality in Indian Railways, which is significant because it’s the only major mode of transport in India catering to a huge population 100 billion and connecting all over India with a geography distribution of 23 states with different cultures with 65,000 kms route length.

Finally, a key contribution relates to the fact that it brings empirical evidence from a relatively new cultural and administrative context, taking into account that most of the prior studies have taken place in USA, UK, New Zealand, Canada which are operating railways in private sector whereas India is the only country apart from China which is operating Railways under the Government sector where social obligations takes priority over pricing and service to all the sections of people across India rather than profits takes centre stage in running trains to non-profitable routes or pricing tickets etc

8.5.2 Practical Implications

The examination of factors that influence railway passenger service quality is an important endeavour. Eventually improved service quality leads to passenger satisfaction which leads to continued patronage and to ultimately improved profitability. The findings of this study have several practical implications however, few important implications for managers and academics are followed.

First this study highlighted the importance of pre core services, core services and peripheral services. Each of the dimensions along with their respective attributes is studied in detail. Results assessed the relative influence of reservation and ticketing, platform amenities, in train service, punctuality, employee service and safety and security on the railway passenger service quality. Findings indicated a positive influence to the dependant variable such that railway passenger service quality (RPSQ). Moreover, these findings confirm and expand existing knowledge for service quality in general. The conceptualisation suggest that when the when these dimensions are improved only the overall service quality will improve.

Second, this study found that the core services like in train service and punctuality and reliability play an important role in improving the overall railway passenger service quality. This suggest that other things being equal, the more importance given to maintaining punctuality and reliability makes a difference on the perceptions of the passengers. Results
assessed that on the basis of improving the attributes of that dimension the respective score of the dimension will improve and there by overall RPSQ.

Third, the employee behavioural aspects with the passengers can lead to satisfaction or dissatisfaction among the passengers. Generally the results suggest that the railways are not maintaining personal rapport with the railway passengers as done in airways. The results advocate that attention must be given to all the passengers irrespective of the class they are travelling and irrespective of the train they are travelling.

Finally, regarding availability of ticket on demand, there is a general complaint from across all the sections of the passengers that the tickets availability is really a major problem all of them are facing. The results of the study suggest that attention must be given to top priority by the railway administration.

The major inference of the present research is that in train service and punctuality and reliability followed with employee service are the three significant predictors of railway passenger service quality.

8.5.3 Methodological Implications

The contribution of this study in terms of methodology is that this research is one of the few studies that test railway passenger service quality aspects in Indian Context. This research has filled gaps in railway passenger service quality domain by identifying the significant predictors of railway passenger service quality in Indian conditions. In addition, the conceptual framework explains the individual attributes which are strong predictors of respective service quality dimensions that may be used in management research in other countries as well.

Additionally, this study verifies existing measurement scales and develops its own scale to measure railway passenger service quality. The scale is validated and reliability is tested thoroughly. The central relationship between service qualities, customer satisfaction and consumer loyalty has been well established with in the service industry context. This research extends the understanding of those relationships with in the context of Railway passenger Services.
8.7 Research Limitations

This research has some limitations which fall into two major categories, the theoretical limitations and the practical limitations which are discussed below.

8.7.1 Theoretical Limitations

Despite the promising results, some limitations of the study should be noted that could be addressed in future research. Examining the service quality attributes which are the significant predictors of the railway passenger service quality—e.g., the case of situational attributes—are not taken care in this research. Thus these situational attributes need to be tested in the further study. Thus more tests are necessary to strengthen its generalizability.

The second limitation of this research is that the present research did not consider different cultural context of the passengers. In future research, the researcher could examine that aspect.

The third limitation is that, since this study is one of the few studies which developed an instrument to measure the railway passenger service quality in railways with sample taken from a single zone of Indian Railways (i.e., South Central Railway), whereas Indian Railways is a gigantic organisation with 17 zones across India. Hence a large sample with representation of all the zones would strengthen and support the research findings.

8.7.2 Methodological Limitations

The research design used in this study is not without methodological limitations. It did not allow examining the passengers’ perceptions of railway service quality over a period of time. Several limitations of the study should be noted. First, the fact that the data is reliant on using a single questionnaire at a single point of time is problematic. To avoid common method bias the same respondent should be administered with the questionnaire before the journey, at the time of the journey, and after the journey.

A second limitation is the cross-sectional design of the study. Because the data was collected at a single point of time, one is unable to establish cause-and-effect relationship among the variables of the interest. Future research that looks to develop a longitudinal design in order
to collect predictor and criterion variables before and after the journey would be much stronger.

Third, the research analyses were based on Indian Railway passenger services in India, which is government organisation therefore, limiting the generalizability of the research findings. Hence there is a limitation of the research for generalisation particularly for railways in other countries where most of them are in private sector.

The fourth limitation of this study is the contextual effect in the responses because this study was undertaken on a voluntary participation basis among the passengers and the respondents were given a choice of completing the questionnaire any time in their total journey. Thus, it is possible that respondents could have been affected by the environment or other factors when they complete the survey.

The fifth limitation may be that this study was based on the use of questionnaire method, which implies that common method bias might have occurred as in other research using the same method (Blau, 1985). Data obtaining from a single source may be problematic for casual prediction based on survey since the measures are taken on one occasion only. Thus multiple methods may be helpful to further clarify the plan of this research. This limitation proposes that in-depth interviews with passengers along with data would be more useful.

Finally, there might be reliability and validity issues with the information obtained from the questionnaires used in this study because they were self−reported by the respondents. According to (Park and Kim, 2009, p-34) self survey data may produce high correlations among measures. In part, because the data shared common method variance and thus errors in measurement are correlated with each other.
8.8 Scope for Future Research

The study findings contribute to literature on service quality, transportation and Railway passenger services. By providing an in depth account of individual attributes and dimensions which are significant predictors of railway passenger service quality which are very much helpful for railways to improve the passenger service quality and there by satisfaction.

There are so many avenues for future research. This study examined direct relationships between independent variables such that reservation ticketing, platform services, in train service, punctuality and reliability, employee service, safety and security to dependant variable railway passenger service quality. One of the key issues for the future researchers to address concerns the examination of the more sophisticated relationship between these variables. In this regard, future research could also develop a theoretical model concerning the role of situational attributes. This study investigated the direct relationship between railway passenger service quality and a variety of antecedent factors. How ever, it is reasonable to suggest that a variety of more complicated relationship may exist.

The conceptual framework developed for the study should be investigated across different zones of Indian Railways which may support it generalizability. Thus the predictor variables should be tested in other zones of Indian Railways in same culture may present confounding effects. Thus, more tests are necessary to strengthen its generalizability.

For future research, this study also suggests using indepth interviews alongside survey questionnaires which may infer more about individual perceptions about service quality attributes.

Future research beckons, since many questions are still unanswered. Longitudinal studies may help determine if the relationships studied here differ depending up on the time of the evaluation process. In future, researcher(s) could examine the difference in passengers’ perceptions of railway service quality before the journey, at the time of journey and after the journey.

And finally, a large sample including diverse cultures may provide more strength and support future findings. Therefore, more studies are required to better understand passengers’ perception of significant predictors of service quality attributes.
8.9 Conclusion

The various dimensions of service quality identified in this research should be viewed as levers of improving railway passenger service quality in the minds of passengers. However, the degree of emphasis placed on these dimensions depends on the objective of the Railways.

Apart from quantitative findings discussed above through qualitative study, the following observations were made during data collection and instrument development stage. From the data collected, it was evident there was a definite and clear distinction between the perceptions of upper class and lower class passengers. The lower class travellers were mostly of the opinion that the Indian Railways passenger services offers the cheapest and most convenient mode of transport and there is no alternative to substitute it – in a sense where they felt they belonged. They did not want something that was out of the ordinary as they, implicitly, saw themselves as normal people and did not want any luxury except the trains maintaining punctuality and availability of tickets on demand. In contrast, the upper class passengers expected that train services were exclusive that treats them special like having good catering facilities, personal attention from staff throughout journey, some form of entertainment to make journey interesting and thus by implication were looking for something out of the ordinary. The following is the list of 10 major areas in Railway passenger services quality which needs immediate attention from the Indian Railways.

- Punctuality and re-scheduling of trains.
- Congestion at station platforms/concourses/circulating areas/FOBs in spite of expansion/modernization of stations.
- Constraint of platform length and width particularly of the old stations.
- Slow progress of increasing platform height and cover over platforms.
- Unsatisfactory on-board catering services and lack of good quality bed-roll/linen
- Lack of cleanliness of trains, platforms and station racks and toilets.
- Availability of ticket on demand.
- Overcrowding of trains especially suburban.
- Security of Passengers on trains and nuisance beggars.
- Slow speed of trains and excess journey time.

Finally, the researcher feels that the Indian Railways is first and foremost a service and it ought to function like any other service sector facility was lost on them. The Railway
administration feels that the passenger is pleased with if a few new trains are announced at regular intervals and fares are kept low. But there must be at least be basic facilities at stations and trains. The chaos at our railway station is due to the lack of attention paid to their running. The platforms at major stations are arguably among the dirtiest in the world. They lack proper signage, seating facilities and communication mechanisms. Lifts and escalators are non existent in most stations though the Railways is the most preferred option for long distance travel in India. More personnel need to be deployed not just to manage crowds but also to help passengers with precise information. Proper communication between officials and passengers itself could streamline passenger flow and facilitate better patronage. But these are possible only if policies and priorities are set with the passenger in focus. A public utility like the Railways has to be judged not merely on the bottom line, but on the quality of service it provides. The unfortunate part is even when the Railways have claimed operational profits, its record on passenger amenities was nothing to crow about. The Railways has to revolve around the passenger. The passenger must be seen as consumer with privileges and not as a captive user with limited choices.

8.10 Chapter Review

This research conceptualized, constructed, refined and tested a multiple item instrument RAILQUAL to measure railway passenger service quality which is very useful in the present day competitive environment. RAILQUAL model was tested for reliability and validity. The Structural model was evaluated for testing the hypothesized relationships between the constructs. In this Chapter a full discussion was made regarding the research contribution of this study to academic theory and practices and how to apply them to Industry theory and Industry Practice. The theoretical, methodological and practical implications of the research were discussed. Then theoretical and methodological limitations were pointed out and after that future research avenue was highlighted. Finally in the conclusion the outcome of this research was highlighted.