Organizational Transformation of Indian Railways through Strategic Business Orientation

THESIS

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CERTIFICATE

This is to certify that the thesis entitled "**Organizational Transformation of Indian Railways through Strategic Business Orientation"** and submitted by Mr. Sunil Kumar Goyal, ID.No:2008PHXF013P for the award of Ph.D. degree of the institute embodies original work done by her under my supervision.

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ABSTRACT

Today Indian Railways (IR), an important mode of transportation in the country, is one of the largest and busiest rail networks in the world. It spans over 64460 route kilometers and served by 6909 railway stations. IR is divided into 16 zonal railways. Zonal railways are further divided into divisions totaling 68. There are five production units, Metro Railway Kolkata, construction organizations, electrification organization, research and development unit, training institutes, wholly owned public sector units and other railway establishments. It employs over fourteen lakhs regular employees. In the year 2010-11 total investment on IR stood at Rs.231615 crores, generated revenue of Rs.94525crores and a surplus of Rs.1405 crores, carried 7651 million passengers and 926.43 million tons of freight traffic. Although key business operations are freight and passenger, IR is also engaged in several allied services including parcel, catering and production units. IR as part of central government functions directly under the ministry of railways. Railway Board is the Apex body.

In India organizational systems have undergone drastic changes since the onset of the era of globalization. Very few studies have been conducted in India related to organizational transformation of public sector and government organizations. No specific study is available underlining perception variations on organizational issues based on factors like years of service, department to which one belongs, geographical area of working etc. The influence of these factors in terms of organizational transformation has not been evaluated so far. There is ample scope to study organizational transformation process on Indian Railways and evaluate the impact of various factors on it.

The subject area of organizational change management system is long established and contains a superfluity of theories, frameworks, models, and exploratory studies on organizational change and transformation, yet it seems that there is a disconnect between this body of knowledge and its implementation by practitioners, specially for the public or government organizations. Since the mainstream works in this area are based on empirical analyses of large industrial and manufacturing organizations, it could be argued that the

assumption that the concepts can be used to fit specific service oriented organizations framework looked invalid, as public or government organizations are well recognized as having distinguishing characteristics that necessitate specific research study. Therefore the thesis is focused on providing insights into the transformation activities of government organization like Indian Railways.

This research is an investigation of identifying the variables for the organizational transformation of Indian Railways. The transformation is viewed as a process of thoughtful and fundamental change that orients an organization in a new direction and takes it to completely different level of performance. It is noted that organizational transformation has not been widely studied in India, especially in government organizations. Not many prior research have examined Indian Railways organizational transformation issues by defining a measuring instrument through constructs for organizational transformation process and, much less the effects of these variables on their strategic business orientation. The major objective of the present research work is to develop an integrated and holistic framework for organizational transformation through strategic business orientation. The specific objectives of the study are: a) to identify the drivers or parameters of organisational transformation and dimensions critical to implementation of transformation model, b) Analysis of organization's perception with respect to these change drivers and c) Design of strategies and developing an integrated and holistic framework for management of organizational transformation through strategic business orientation

On the basis of theoretical and empirical literature, a strategic management framework was developed to guide the research. The framework links perceived factors which influence the organizational transformation of Indian railways. These factors were well tested initially by forming a fundamental hypothesis concerning the relationships between these factors in the context of Indian Railways. Survey method was used at three stages. Organizational expert survey was administered primarily in order to understand the transformation changes, efforts and dimensions. The content and contextual analysis of the data collected further strengthened the appropriateness of the thirteen variables identified through review of literature. The expert survey also provided useful information to validate the measuring

instrument. Finally, a well structured exhaustive questionnaire was developed to measure the variables. It was administrated on 318 officers at the facility level at Railway Staff College, Vadodara, Gujarat, where officers of all departments in railways from new recruits to the highest level of General Managers come for in-service training interventions. The statistical analysis proved the appropriateness of inclusion of these constructs. The analysis included the internal consistency using cronbach alpha reliability coefficient and item analysis, Kaiser-Meyer Olkin (KMO) Measure of sample adequacy and construct validity for checking the unidimensionality of the factors with the help of Principle Component Analysis. The Labeling of the sub factor emerging from the factor analysis was done using Delphi Technique. Further, the relationship between these thirteen variables was analyzed using Pearson bivariate correlation. Analysis of goodness-of-fit was conducted to test the explanatory power of the constructs. Pearson correlations were calculated to test the validity and reliability of each item and construct. Further analysis was conducted to test the hypotheses that "*The framework for Organizational transformation is a 13-construct structure consisting of the following: Leadership and Commitment; Strategic Planning; Human Resource Development; Service Delivery; Process Management; Service Culture; Servicescapes; Organizational Structure ; Information Systems; Technology Management; Customer Focus; Key Performance; and Un-remunerative obligations"*. Positive correlations among these variables have shown that the following thirteen variables are interrelated and can be combined in a holistic manner in order to propose an integrated framework of organizational transformation..

1. ***Leadership and Commitment***
2. ***Strategic Planning***
3. ***Human Resource Development***
4. ***Service Delivery***
5. ***Process Management***
6. ***Service Culture***
7. ***Servicescapes***

8. ***Organizational Structure***
9. ***Information Systems***
10. ***Technology Management***
11. ***Customer Focus***
12. ***Key Performance***
13. ***Unremunerative obligations***

Finally, using these constructs an integrated and holistic framework for organizational transformation for Indian railways was developed. The analysis of thesis was presented in six chapters. The thesis work also presents implications of this research and the future research directions.

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Acronyms

AUG	Administrative unit group
CONCOR	Container Corporation of India
COOIS	Central Organization for Operations Information Systems
CORE	Central Organization for Railway Electrification
COS	Central Office of Standards (predecessor of RDSO)
CRIS	Centre for Railway Information Systems
CSR:	Corporate Social Responsibility
EI:	Employee involvement
IS:	Information System
HRD	Human Resources Development
IR	Indian Railways
IRCA	Indian Railway Conference Association (body that issues inspection guidelines, allots wagon codes, inspects workshops)
IRCON	Indian Railways Construction Company, now IRCON International Ltd., which takes on contract work to build railways in other countries (Iraq, Nepal, Indonesia...).
IRCTC	Indian Railways Catering and Tourism Corporation
IRFC	Indian Railways Finance Corporation
IRPS	Indian Railway Personnel Services (human resources)
IRSE	Indian Railway Service of Engineers
IRSEE	Indian Railway Service of Electrical Engineers
IRSS	Indian Railway Stores Services (inventory control)
IRSSE	Indian Railway Service of Signal Engineers
IRSTE	Indian Railway Signal and Telecom Engineering
ISO:	International Organization of Standardization
KMO:	Kaiser-Meyer-Oklin
LAN	Local area network
MAV:	Maximum Allowable Variance
QoS	Quality of service
RI:	Regulatory Issues
SD	Service Design
TMN	Telecommunications management network
T & D:	Training and Development
TQM:	Total Quality Management
WB	World Bank
WDR	World Development Report

CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

Transport infrastructure is the backbone of a country's economy and forms one of the most important essentials of economic liberalization strategies all over the world. The most important modes of internal transportation in India are road and rail. In the case of rail, currently almost all activities are being handled by one single organization, namely the Indian Railways (IR). Although, IR is a Government department monopoly, there is a growing demand on it to realize the full potential of its assets through proper use of systems and technology and to address its lack of customer orientation. Railways started in India under the aegis of private companies, and passed through several stages of State and private ownership and brief spells of joint arrangements, before settling down as one of full state ownership and direct state management, as recommended by the Acworth Committee in 1924. Between December 31, 1924 and October 1, 1944, almost all principal railways were taken over for direct State management except for the lines what by princely states and few under private companies. After the independence all railways were merged to form Indian Railways, subsequently it was organized into zonal system.

Indian Railways (IR), an important mode of transportation in the country, is one of the largest and busiest rail networks in the world. It spans over 64460 route kilometers and served by 6909 railway stations. IR is divided into 16 zonal railways. Zonal railways are further divided into divisions totaling 68. There are five production units, Metro Railway Kolkata, construction organizations, electrification organization, research and development unit, training institutes, wholly owned public sector units and other railway establishments. It employs over fourteen lakhs regular employees. In 2010-11 total investment on IR stood at Rs.231615 crores, generated revenue of Rs.94525crores and a surplus of Rs.1405 crores, carried 7651 million passengers and 926.43 million tons of freight traffic. Although key business operations are freight and passenger, IR is also engaged in several allied services including parcel, catering and production units. IR as part of central government functions directly under the ministry of railways. Railway Board is the Apex body.

The challenges facing IR today are an increasing financial burden through salaries and pensions, which has gone up further with the implementation of sixth pay commission recommendations, a declining market share in freight traffic, increasing fuel bill, less of cleanliness in public areas and trains and non-fulfillment of ever increasing passengers expectations, increased competition from other modes of transport, declining government budgetary support, need for up gradation of old network, need for flexibility and responsiveness, change of organizational focus from operation to customer, reforming the accounting practices in line with GAAP, accountability amongst employees etc.

In this globalised era, Governments world over are downsizing to reduce expenditure on staff salary, as this money can be better utilized for social and welfare measures. Indian Railways (IR) needs to reduce the workforce further and improve the efficiency. Nearly 70 percent of IR's revenues come from the freight operations, which can be segmented into bulk and other cargo. Over the years, IR has predominantly become a bulk freight carrier, accounting for about 94 percent of the freight revenue. Coal alone accounts for nearly half of the bulk traffic carried. Passenger business accounts for nearly 60 percent of IR's total transport effort, in terms of train kilometers, but yield less than 30 percent of the total revenues. Suburban services account for 57 percent of the originating passengers, while contribute to only 8 percent of the passenger revenue. Thus there are vast disparities between effort and revenue generation leading to cross subsidization amongst various segments. Railways today are the engine of national integration, economic development and exploitation of natural resources, and above all strategic transport requirements. There is no other mode of transport that can substitute the railways. India railways is strategic need, transport for masses, bulk carrier and promotes regional development and hence it has to continue in healthy financial state. With dwindling budgetary support, the internal resource generation and to attracting private capital for capacity generation has assumed greater significance.

Innovative changes in improved product and processes, organizational forms, the application of existing technologies to new fields, the discovery of new resources, and expanding into

new markets are mandatory for survival in the 21st century for the IR. No one can withhold progress and technology. As an intelligent organization it must align with the market needs quickly. We have seen the discomfort of large government organizations in the telecom sector once the winds of liberalization started blowing. Let IR not be in a similar situation in the times to come. "Adopt and Adapt" should be the motto. The innovations and changes required are not uni-dimensional but require a mutli-pronged and well coordinated effort. Synergy of efforts in different areas will be a Critical Success Factor. We have all the ingredients in place in the shape of our asset base, technical expertise and infrastructure. The right strategy will deliver the goods quickly and Indian Railways will truly transform into an "India Shining" modern business organization. The ability to identify and respond to these changes is critical to the performance and even to the survival of the organization. In this chapter section 1.1 provides overview of literature on organizational change and transformation efforts. Section 1.2 presents the aim and objective of research. Section 1.3 provides the scheme of chapterisation.

1.1 OVERVIEW OF LITERATURE

Nowadays organizations operate in a complex world that is changing on multiple dimensions at an increasing rate. Trends in globalization and the implications of the post-industrial information age are driving fundamental changes in the "strategic context". In turn, this strategic context is driving changes in modern organizations that must operate ever more effectively within this context. High transaction rates, advances in cheaply available powerful information technology, and leveraging of speed as a competitive advantage affect all kinds of organization whether commercial or government agencies. Strategic orientations have been discussed in both marketing and strategic management. Strategic orientations are the strategic directions implemented by a firm to create proper behavior for the continuous superior performance of the business (Gatignon, H., Xuereb, J.M., 1997). These often reflect the beliefs and mental models of the senior executives (Hitt, M., Dacin, T., Tyler, B., Park, D., 1997). Previous research has suggested various typologies of strategic orientations. Two well-known typologies are (Miles, R., Snow, C., 1978) [e.g. prospectors vs defenders] and (Porter, M., 1980) [e.g. a differentiation strategy vs a low-cost one]. Others include, an

external orientation vs. an internal one, and an opportunity seeking orientation vs a problem avoiding one (Noble, C., Sinha, R., Kumar, A., 2002) (Wright, P., Kroll, M., Pray, B., Lado, A, 1995).

'Organizational transformation' is a term referring collectively to activities such as re-engineering, redesigning and redefining business systems. The traditional knowledge regarding business systems, originating from such areas as business administration, management science and logistics, fails to provide the right understanding for the purpose of redesigning them. In order to perform organizational transformation, appropriate knowledge of organizations is required. Many conceptual representations of organizations have been described in the literature like those identified by Morgan (Morgan, G., 1986) and Mintzberg (Mintzberg, H., 1979). Another popular perspective is to regard an organization as a system of regulated flows of documents and goods (Beer, S.,1972), (Porter, M.E.,1985). Business processes are considered to be managed and controlled by organizational structure and coordination mechanisms (Galbraith, J.R, 1977), (Mintzberg, H., J.A. Waters, 1985), (Mintzberg, H, 1990). Many business scientists, such as Chandler (Chandler, A.D. Jr.1962) and Porter (cf. Porter, M.E, 1980, 1980a, 1981, 1985). Hamel and Prahalad (1989, 1990, 1993, 1994), have suggested strategy-making or restructuring the organizational structure to achieve competitive advantage. Since the publications of McFarlan (McFarlan, W, 1984), Cash and Konsynski (Cash J.I., B.R. Konsynski, Porter and Millar, 1985) and notably Hammer (Hammer, M, 1990) the awareness, that information technology may be a powerful means to achieve higher performance and other desirable attributes, like flexibility, has grown. At the same time it has also become clear that in order to achieve this, a thorough and appropriate understanding of the organization itself is essential. The business process redesign approach ‘Don’t automate, obliterate’ demands a different way of thinking about organizations. This line of thought is further developed by Medina-Mora, Flores (Medina-Mora R., T. Winograd, R. Flores, F. Flores. 1992), Keen (Keen, P.G.W.,1992) and Dietz (Dietz, J.L.G., 1994)

The term “transformation” has been used frequently to describe substantial organizational changes resulting from the presence of a radical IT innovation (Cross, J., and Earl, M. J., 1997; Crowston, K., and Myers, M. D., 2004; Daniel, E. M., and Wilson, H. N. 2003; Jarvenpaa, S., and Ives, B., 1996; King, J. L , 1996; Robey, D., and Sahay, S., 1996; Scott Morton, M. S. (ed.) 1991; Uhlenbruck, K. M., Klaus E. Hitt, Michael A., 2003; Yates, J., and VanMaanen, J., 1996). Although IT is an important initiator of organizational transformation, the stream of research examining organizational transformation is much broader. It draws from the fields of economics, strategy, and sociology (Pettigrew, A. M., 1985). Two frequently cited theoretical foundations addressing transformation include creative destruction (Shumpeter, J. A., 1942) and punctuated equilibrium (Gersick, C., 1991), (Tushman, M.L., Romanelli, E., 1985). Creative destruction refers to the process through which organizations attempt to gain competitive advantage through innovation. This competitive advantage, however, is necessarily temporary as imitation by competitors and new entrants erode (destroy) profits and force the firm to continuously innovate. The paradigm of punctuated equilibrium provides a separate though closely related perspective of change. It suggests that there are longer periods of incremental changes that are punctuated with periods of radical change (Gersick, C.J.G., 1994), (Tushman, M.L., Newman, W.H., Romanelli, E., 1986). These periods of radical change may alter the nature of competition, the domain of direct competitors, the value of firm assets, or the nature of interactions between customers and suppliers. Thus, the emergence of new technology and the radical changes, associated with it, have important implications for organizations. A third view of transformation has emerged directly from the IS literature. The situated change perspective (Orlikowski, W.J. and Tyre, M.J., 1993) provides an alternative lens for transformation that stresses the ongoing and incremental nature of organizational change. In addition, this perspective identifies the joint role of both social actors and technology in determining the organizational outcomes from transformation. Another characteristic of this perspective is that substantial transformations may actually be composed of a series of smaller changes—suggesting that several incremental IT innovations and social actors may interact over a period of time to lead to a more discernible transformation.

In order to further our understanding of the characteristics which enable organizations to thrive during transformation, we do not have to adopt a specific perspective on transformation which is exclusive of any one of the three perspectives reviewed above. Organizational responses to these transformations are likely to be concentrated in particular periods of more and less change (as in the creative destruction and punctuated equilibrium models) and also involve ongoing change (as in the situated change perspective). We do, however, need to argue that the specific context of transformation meets the basic criteria for a transformation set forth in prior research. Prior research has defined transformation in different ways. In their discussion of general organizational transformation, Romanelli and Tushman (Romanelli, E. and Tushman, M.L., 1994) argued that a transformation occurred when firms had substantial changes in strategy, structure, and power over a period of two years. The ability to identify and respond to changes initiated by technology is critical to the performance and often even to the survival of firms.

A descriptive and analytical model of organizational transformation (Frances M. Hill and Lee K. Collins, 2000) presents a model of organizational transformation drawing on case study research and a review of relevant literature. It draws the findings based on the work of a number of authors (Tushman, M.L., Romanelli, E., 1985), (Tapscott, D., Caston, A.,1993), (Schein, E.H., 1996), (Venkatraman, N., 1994), (Burdett, J.O., 1994), (Gould, R.M., 1996), (Raghuram, G. 2007).However, it synthesizes and extends this work in an innovative way. It discusses the possibility of assessing the appropriateness of organizational change management strategies and activities, using the model. It describes that it is important for change managers to understand how both the internal and external environments can influence organizational change strategies and activities. The model suggests that one potential contribution of the model of organizational transformation is that it may provide guidance and insight for managers attempting such reconstruction. Organizational transformation is a change between significantly different states in relation to strategy and structure (Wischnevsky and Damanpour, 2006). It aims to change structures and behavioural systems from one form to another. Newman (2000) observed that transformation is a change that leaves organizations better able to compete effectively in the marketplace.

Transformation is a deliberate planned process of transition focusing primarily on the formation and establishment of new organizational vision (French et al. 2000). A number of recent studies (Lee and Yi, 2012; Zietsma and Lawrence, 2010; Stebbings and Braganza, 2009) which supports this view.

The Indian Railways network is the largest in Asia and stands fourth in the world. It is the biggest Government organization in the country and occupies a premier place in the transport system. Indian Railways (IR), which was declared to be heading towards bankruptcy as per the Expert Group on Indian Railways in 2001, is today one of the profit making organization. Analysis of factors that led to the turnaround of the Indian Railways from a low performing organization to a high performing one reveals that environmental factors (good luck) contributed in a substantial way to the success of Indian Railways (L Krishna Veni and Sangita Ghosh, 2005). The development of physical infrastructure of Indian Railways is highly expansive and expensive. The financial performance of railways in terms of gross traffic receipts, surplus generated, etc has been positive Total working expenses and plan expenditure have also been increasing immensely since the 1990s. This shows the expanding activities of railways in terms of physical infrastructure and financial matters. Safety, security, sincerity, and punctuality are the fundamental prerequisites for successful functioning of railways and for gaining customer satisfaction (Ravi S. Kochak and Anil K Sinha 2004). Innovative changes for progress of Indian Railways in the 21st century cover different areas such as modern business vision, market orientation, new technology and materials, development of alternate fuels, strategies for managerial competency, development of individual and the organization and managing for the future etc. Implementation of the suggestions will drive the revenues, cut costs and improve the operating ratio of Indian Railways (Raghuram, G., 2007), (Raghuram G., Sanjay Verma, KL Dixit, and Sanjeevan Kapshe, 2004), (Raghuram G. and Niraj Shukla, 2007). Raghuram G. and Gangwar (Rachna Raghuram G. and Gangwar Rachna,2008) to understand the development process of Indian Railways over the past twenty years did a study which covers issues and strategies related to financial and physical aspects of revenue generating freight and passenger traffic from 1987-2007. It also covers the developments in the parcel, catering and advertising sector.

All organizations change but few are transformed. Organizations typically change as a result of external stimuli such as take-overs, mergers, loss of market share, increasing competition or, in the case of the public sector, changes in government's policies and modernization agenda. Organizational transformation too can be triggered by external stimuli but, with organizational transformation, the key is how the leaders of the organizations respond to the stimuli – do they decide to transform the organization or simply cope with the changes. In other words, a proactive, transforming organization will positively embrace change and use it to the organization's advantage rather than simply reacting to it. Organizational transformation is the declared process of continually improving both the passion and the systems of an organization so that the organization makes the transformation from where it currently 'is' to where it wants to 'be'. Passion includes the culture, style and philosophy of an organization. Systems relate to the processes, procedures, policies and methods used to affect the passion or culture. The word continual rather than continuous was used for the fundamental reason that the transformation process is not a series of uninterrupted or steady steps (continuous) but a variety of small, incremental steps with radical change occurring from time to time.

Evolving into a value-managed enterprise marking a sustainable growth and commanding market position requires transforming into a highly competitive, agile, responsive and resilient business unit. To gain such renewed capabilities and realize transformation, innovative strategies and practices are essential, in which, the processes, people and technology have to be revisited and improved from an integrated perspective. Organizations cannot achieve a lasting impact without a deep and genuine change in the way has been positive it conducts business. In the process organizational transformation for long-term results need not necessarily be an overwhelming endeavor, but can be a simplified and reliable approach with considerate focus on addressing the political or other self-inflicted barriers to transformation.

In India organizational systems have undergone drastic changes since the onset of the era of globalization. Very few studies have been conducted in India related to organizational transformation of public sector and government organizations. No specific study is available underlining perception variations on organizational issues based on factors like years of service, department to which one belongs, geographical area of working etc. The influence of these factors in terms of organizational transformation has not been evaluated so far. There is ample scope to study organizational transformation process on Indian Railways and evaluate the impact of various factors on it. Identification of transformation drivers and existence of causal relationship if any, and Integration of all these drivers and their impact on organization transformation issues in context of Indian railways has not been studied so far.

1.2. AIM AND OBJECTIVE OF RESEARCH

Organizational transformation is a process of profound and radical change that orients an organization in a new direction and takes it to an entirely different level of effectiveness. It has not been widely studied in Indi, especially for government organizations. The scope of the present research work is to develop a holistic framework for organizational transformation through strategic business orientation. It is proposed to take up the study of critical success factors for organizational transformation in Indian Railways which is facing increased competition from many other transport sources and has to respond to the changing economic environment. Therefore, a study is planned to understand the factors that may enable a successful implementation of organization transformation through business orientation.

1.2.1. Objectives

The specific objectives of the study are:

- To identify the drivers or parameters of organisational transformation and dimensions critical to implementation of transformation model

- Analysis of organisation's perception with respect to these change drivers
- Design of strategies and developing an integrated and holistic framework for management of organizational transformation through strategic business orientation

Indian Railways needs to change in order to survive. But given its history, how can a beginning be made for successful implementation of change in Indian Railways. One option is to make an ambitious change program, so ambitious, that it fundamentally alters the social system of Indian Railways. But can the Indian Railways accommodate such a change programme? If the change is going to fundamentally alter its functional system, are the different stakeholders of Indian Railways – the government, the railway personnel and indeed, the customers of Indian Railways- the Indian people - going to allow the implementation of such a radical change? It is worthwhile to point out in this connection that the Government of India has appointed various committees like the Tandon Committee, Rakesh Mohan committee, Hasar Iqbal committee and many other from time to time to suggest ways for changing the Indian Railways. However, hardly any one of the findings of those studies has been implemented primarily because of the interest of section of the stake holders were perceived to be adversely getting affected. This is a pointer to the fact that while the malaise of Indian Railways and its solutions from a purely large scale organizational transformation angle are well known, the different stake holders of Indian Railways have ensured that such solutions remain unimplemented.

The other option for change is to keep it at the level of window dressing. In this case, the old systems remain untouched and they continue to generate the same behaviours. However, the researcher believes that it is possible to bring about a change in a manner and in such areas of Indian Railways which is acceptable to different stakeholders and therefore implementable.

In the context of Indian Railways, action choices emanating from changes in such factors as ownership and structure have the risk of antagonizing the three important stake holders – the government, the railway personnel and even the customers – who would to see the Indian Railways more as a not-for-profit organization. Thus it can make them withdraw from or

oppose the proposed change. However a change in such factors as system, culture, leadership and industrial relations are not necessarily threatening to them and a beginning can be made to initiate change in these areas.

1.2.2. Research Approach & Methodology – Brief Review

The basic purpose of this research was to acquire the deep understanding of why the organizational transformation system has been successful in some organizations and the predictions in the literature regarding such successes are encouraging to implement them or not. The main objective of this work is that to enable holistic framework of organization transformation which requires identification of key constructs.

Indian Railways is one of the largest organizations worldwide both in terms of scale of operations and revenues. Rarely Government organizations of this size have been studied. Multidisciplinary research setting was established incorporating both inductive and deductive research and an empirically driven and application oriented study was conducted on Indian Railways.

In the first part an extensive review of literature in the area of Organizational transformation in government organizations was done. The study and analysis of this literature on strategic management of organizations was carried out to gain an understanding of organizational transformation issues in context of government organizations in India and in general. Empirical evidences from Indian railways setting were collected with multiple methods: Participants Observation, Secondary Sources of Data, Qualitative data from semi-structured interviews and quantitative data by administering questionnaire in order to draw a rich and detailed organizational transformation description. The results of the study include rich explanations, the construction of the conceptual model and determination of reasons for movement to the transformation trajectory. The organizational transformation model has captured the strengths of the existing models from various sectors. Elements of the model and their related variables were identified through a thorough literature and also from the

experts' survey. The selected instrument was designed and tested for its simplicity and specificity with inputs from Indian railway professionals/managers.

Based on the above framework, Data was collected from the target sample through questionnaire survey as well as personal interviews. Statistical analysis of the data was conducted to validate the findings from the literature. Finally the development of a holistic model for organizational transformation on Indian Railways was developed.

The research on development of a holistic model of organizational transformation for Indian Railways utilized the following methodology:

- Identification and selection of constructs for the organizational transformation through strategic business orientation was carried out from extensive review of literature on organization change and transformation.
- An exploratory study was conducted in order to pilot test the constructs identified. The results of this study also formed the basis for developing and improving the instrument for measurement of drivers/parameters of organizational transformation. The pilot survey among senior managers was conducted to study best management practices in Indian Railways.

The above-mentioned study was supplemented with an experts-opinion survey and interviews.

- The main study included the empirical research using cross-sectional survey of railway managers in multi-facility and operations locations in order to validate the measurement instrument. The managers rated the railways management practice implementation levels on various important factors on a Likert's scale. The data was analyzed using SPSS package. Confirmatory Factor Analysis was applied, which seeks to determine if the number of factors and the loadings of measured (indicator) variables on them conform to what is expected on the basis of pre-established theory. Inferences are drawn based on the study results and an integrative framework of holistic model of organizational transformation for Indian Railways is arrived at.

1.3. CHAPTERISATION SCHEME

Following this introduction chapter where introduction, broad review of literature, aim and objectives of the research are presented, the thesis includes five chapters. The brief description of the next five chapters is given here.

Chapter 2 discusses the organizational and operational issues of Indian Railways and examines the issues and challenges in Indian Railways. It included study of Indian Railways on various parameters such as infrastructure, technology; turn around, changing demographic trends, growth of private transport sector, tourism, and lack of appropriate regulatory mechanisms and growing voice of the customer. In the final part of the chapter a need for research in the area of organizational transformation issues in the context of Indian Railways is identified.

Chapter 3 consists of an extensive review of literature. The review includes the definitions, the elements, attributes and relationships of the organizational transformation strategies, frameworks, and models, traditional and nontraditional management methods and their applicability in the context of the different organizations. The focus of the chapter is three fold: One, an in depth analysis of the context and need for organizational transformation initiates and core issues in these transformations; two, to explore and analyze these transformations through strategic intents in organizations; and three, to study the emergence of change parameters or drivers, its applications and advantages. At the end research gaps from literature in the area of critical factors for organizational transformation are identified.

Chapter 4 presents the research methodology for the identification and selection of constructs for organizational transformation. The studies on research on critical factors for successful implementation of organizational transformation models were analyzed and the strengths of the existing models from various sectors and the elements of the model and their related variables are identified through a thorough literature search and from experts' inputs. Finally, thirteen constructs for Organizational transformation in Indian Railways are identified through the analysis and synthesis of research in the area and the explanation of the constructs are presented. The details of research methodology, research questionnaire design,

and sampling plan and scale validation methods are also discussed. Methodological issues of testing for reliability and validity of the constructs (critical factors) are presented in detail. Finally, a 13-construct Organizational Transformation framework with 118 items to measure the business orientation dimensions of Indian Railways was arrived at.

Chapter 5 includes the empirical results and analysis of study carried out to verify the organizational transformation constructs identified through the literature review. The study explored the major management practices in Indian Railways through checklists survey and interviews of senior managers. A pilot study was executed. The details and results of the study, the rationale, objectives, and inferences are described.

This chapter also presents the results and discussion of the testing and analysis of the measuring instrument with different items grouped appropriately under 13 organizational transformation constructs. A detailed analysis of the results of the cross-sectional survey conducted to validate the constructs is carried out and an integrated framework for organizational transformation through strategic business orientation in Indian Railways is proposed after examining the relationships among the constructs. The analysis is presented under Sample Characteristics, Reliability Analysis, Item Analysis, and Factor Analysis (Construct Validity and Scale unidimensionality) sections. An organizational transformation holistic framework for Indian Railways is proposed based on the analysis of the results of the study.

Chapter 6 concludes the thesis by revisiting the main findings of the theoretical, development, survey and analysis stages of research. It summarizes the research, draws conclusions, and discusses implications of the findings and limitations of the study. The chapter also provides suggestions for future research.

References are presented at the end.

CHAPTER 2

INDIAN RAILWAYS – ORGANISATION, PERFORMANCE AND ISSUES

2.0. INTRODUCTION

In an emerging economy like India, transport sector play a crucial role in boosting economic growth and facilitating trade. An efficient transport sector reduces the cost of product or service and thereby contributes directly to a country's international competitiveness. This sector acts as an economic catalyst by opening up new market opportunities, moving products and services with speed and efficiency. India is developing as a global outsourcing hub and the quality of the transport network not only has direct implications on the inflow of foreign direct investment but also on prompt just-in-time deliveries. It increases welfare of the population through increased accessibility and connectivity. Lower transport cost enhances labour mobility and people-to-people contact. Improvements in transportation facilitate geographical specialization that increases productivity and spatial interactions and encourages competition by widening the potential market for a given product or service and promote quality and innovation. Investments in transport infrastructure contribute to poverty reduction through increased access to economic opportunities in the form of job creations and by making goods consumed by poor people more affordable.

Service sector plays a vital role in the process of economic development. It is a well documented observation in economic history that the share of services in national product tends to dominate once the economy reaches a certain stage of development (Fisher (1935, 1939), Clark (1957).

Prior to 1991, government was the main provider of transport services in India due to the requirement of large-scale investment, long gestation periods, uncertain returns, and public good nature of such services (consumer protection, welfare and equity). Although there was investment in transport infrastructure during that period, the prolonged government monopoly led to monopoly-induced inefficiency and low productivity.

In the 1990s, when India embarked upon an ambitious reform programme, trade volumes increased and the existing transport infrastructure was not adequate to handle it. The

government funding could no longer support the growing need for transport and the sector was gradually liberalized to attract private/foreign investment. Thus, liberalization and reforms in transport services became an integral part of the overall reform programme. Increase in trade volumes also led to considerable pressure on the operating environment of the existing transport infrastructure forcing it to adopt new, improved and more reliable technology. The objectives of liberalization were to reduce the demand-supply gap, improve efficiency and productivity, modernize the transport infrastructure by upgrading technological and skills and enhance connectivity and access for poor. Various measures have been taken by successive governments to encourage private participation. These include different public private partnership models, allowing private sector to collect user charges, tax concessions and other fiscal incentives, etc.

Analysis of services such as defense and public administration is extremely difficult, as these are considered to be pure public goods. In case of certain other services like insurance, communications, health, trade etc., there are difficulties in conceptualization and measurement of price. However, for some services like transport, the conceptual and measurement problems can be overcome. These services also form a vital component of the economy's infrastructure (Sailaja, 1988) and railways are one such organization.

The Indian Railways (IR) is more than 150 years old organization and one of the oldest railway systems in the world. IR is principal mode of transportation for long haul freight movement in bulk, long distance passenger traffic, and mass rapid transit in suburban areas. It occupies a unique position in the socio-economic map of the country and is considered as a vehicle and a barometer of growth. The Indian Railways' contribution to national integration has been unparalleled. It has knit India together by connecting all the regions, and almost all the states, in a single transport network. It has always played a unique role in meeting the transportation needs of the common man, while simultaneously serving as a critical infrastructure facilitator for the carriage of goods. In the coming decade, it will continue to keep its service focus on the underprivileged and the poor, even as it expands its services for the more fortunate. It is also the biggest state owned enterprise in India, and contributes

about 1% of India's GNP. According to the UIC 2007, the IR is one of the top four railway systems in the world; others being the United States, Russia and China in terms of length of network (Table 2.1). "Indian Railways's size, and its mode of operation as a government department, present special challenges for the management of railways as a commercial enterprise. These also add to the difficulty of responding to both short and long-term changes in transport market conditions' (ADB, 2002:1). India's large land mass and population exceeding one billion adds to the challenge.

Table 2.1.: Comparison of Indian Railways with World Railways

S.No	Country	Network Length	Number of Employees	Passengers Carried millions	Passengers kms Millions	Freight Carried Million Tonnes	Tonne Kms millions	Number of Locos	Number of Coaches	Number Of Wagons
1	France	29488	166000	1097	83299	106	42435	4289	15973	33238
2	Germany	33897	231000	1835	74740	273	91013	4128	17537	95595
3	Russia	84158	1128000	1280	173411	1344	2090337	12063	33955	566802
4	USA**	226706	187000	26	9059	1775	2820061	23990	1186	475416
5	Canada	57042	34000	4	1451	313	353227	2947	595	97836
6	South Africa	24487	36000	533	14856	181	108513	3301	1723	112417
7	Australia	9639	13000	54	1309	177	46036	509	663	10889
8	India	63327	1406000	6219	694764	728	480993	8110	43124	207719
9	China	63637	2067000	1287	689618	2624	2211246	17222	42471	571078
10	Japan	20050	132000	8907	252579	36	23145	1170	25114	9067

Source: UIC 2007 ** AAR Class I and Amtrack

In this chapter the strategic assessment of Indian Railways up to the year 2009-10 will be presented. It focuses on the Historical background, performances, key cost components, transformation efforts so far and issues facing IR.

2.1. INDIAN RAILWAYS - HISTORICAL BACKGROUND

Indian Railways were initiated at the height of capitalism with only British capital being invested, which was borrowed mainly from the London Money Market. Later, State capital was invested for a brief period and it was reverted to private capital again. The construction and expansion of the Railways in the initial period thus followed a very interesting pattern. The earliest proposal came in 1843-44. The East Indian Railway Company and Great Peninsular Railway Companies were formed in 1845. The first railway was opened in 1853. Till 1869, the period of "Old Guarantee System" was in force, where the companies, being under the general control of the Government, were guaranteed annual rate of interest of 5% on all capital raised by them and free land for 99 years by the Government. Half the surplus profit every year had to be paid to the latter.

However, because of wastage and extravagance, the state took over the direct management of the Railways and decided to construct railways through its own agency. The period continued until 1879, when, because of a resource crunch and a hostile feeling towards pure state management in England, the Government resorted to the "New Guarantee System," whereby the rate of interest guaranteed went down to 3½ % and the Government could keep a larger share of the profit, viz. 3/5th. This continued till 1900. Around this time, the Indian states were also invited to open railway lines. Thus, even though privatization was introduced in the Railways, the Government kept a stricter control over them.

In 1853, the "Rebate System" or the grant of subsidy was initiated to open branch or feeder lines, which was replaced by the "Absolute Guarantee System" in 1896. In 1913, as per a modification, capital for branch lines was allowed to be raised partly by the Rebate System and partly by the Guarantee System. Because of loss faced during the First World War and a subsequent recommendation made by the Railway Committee, in 1921 the policy of state

management was initiated again in 1924, though later, the Government declared that, each case would be considered on its merit regarding the termination of contracts. This policy continued until 1944, after which, except for the lines owned by the princely states and a few remaining under private companies, almost all the lines were nationalized.

The journey of railways in Indian sub-continent started modestly in 1853 with 34 kilometers (kms). Iron wheels rolled on rails on 16th April, 1853, where the first-ever train, with a capital of Rs 3.8 million, carrying 400 people in 14 carriages, covered the 21-mile distance in about 75 minutes from Bombay to Thane (Sailaja, 1988, Alivelu, 2006). By 1950, India had a net-work of about 34,000 miles. In 1948, immediately after Independence, there were as many as 42 different railway systems consisting of 13 Class I Railways, 10 class II Railways and 19 class III Railways. The class of a Railway is fixed depending on gross earnings. The major task for the Indian Railways (IR) is to integrate the above mentioned divided railway system of the sub-continent such as princely state railways, state owned railways and to bring them under one management.

The entire scenario of the Indian transport sector, however, changed after the independence and the accompanying partition of the country. The government of India took up the policy of mixed economy, thus nationalize most of the basic sectors, including transport infrastructure. Social return became more important than private return. The vast railway network was nationalized to form Indian railways. The smaller private companies were all merged together. Railway expansion was one of the main aims and ambitions of the government. A separate ministry was formed for the Railways.

The Railway Board in 1950 decided for the regrouping of the Indian Railways into six zonal systems, namely, the Northern, the North Eastern, the Southern, the Central, the Eastern and the Western Railways. The unequal distributions of workload on some of the railways have led to further bifurcation of zones. Eastern Railway was split into two zones, namely, Eastern Railway and South Eastern Railway. Similarly, North Eastern Zone was split into North Eastern Railway and Northeast Frontier Railway. Thus, by the year 1958, there were eight zones on Indian Railways. The functioning of the new zones continued to be watched

closely, and based on regular analysis of their working, minor adjustments were carried out wherever necessary, with a view to improve their utility and efficiency. Particularly close watch is kept on the rapidly increasing workloads of some of the new zones, in order to provide relief and streamline their operation. The formation of South Central Railway in 1966 as the ninth zone, in order to improve the services for the southern parts of India, is made with some marginal adjustments from Southern and Central Railways. Carving out of South Central Railway has resulted in stability in the zonal formations at least for little more than three decades in the history of IR. In order to bring about greater efficiency in administration, speedy implementation of the on-going projects, better customer care, reduction of work load on the administrators of each zone, Indian Railways have decided to create seven new zones by territorial re-adjustment of existing zones. Thus, IR has been reorganized into sixteen railway zones by adding seven new zones to the already existing nine zones.

IR is state owned and operated under Ministry of Railways (MOR), Government of India (GOI). The MOR functions under the guidelines of Minister for Railways assisted by Minister of State for Railways. The policy formation and management of Indian Railway Board comprises of Chairman and six functional members. Wide powers are vested in the Board to effectively supervise the running of 16 zonal railways, metro railway (Calcutta), production units, construction organization and other rail establishments. These are generally headed by General Managers. 12 subsidiary organizations under the MOR namely CONCOR, CRIS, DFCCIL, IRCON, IRCTC, IRFC, KRC, MRVC, RCIL, RITES, RLDA, and RVNL undertake specialized jobs contributing to IR's growth and progress. IRCON and RITES have their business abroad also.

IR is a vertically integrated organization controlling its own facilities, performing all operating and administrative functions and unilaterally determining what services to provide. In addition to carrying out the core business of rail transport, IR also owns and manages activities such as design and manufacture of rolling stock, overhaul and remanufacture of rolling stock, construction projects, schools, technical institutes, housing, hospitals, hotels etc. IR supports a work force of about 1.36 million constituting 5% of the 27 million people

employed in the organized sector. They are governed by central government rules for salary and other conditions of service. Another 0.7 million employees are supported indirectly through establishments servicing IR (Various Annual Reports). IR's finances were separated from the general exchequer in 1924 based on Ackworth Committee report and its annual requirement for funds is voted through a separate budget presented to the Indian parliament.

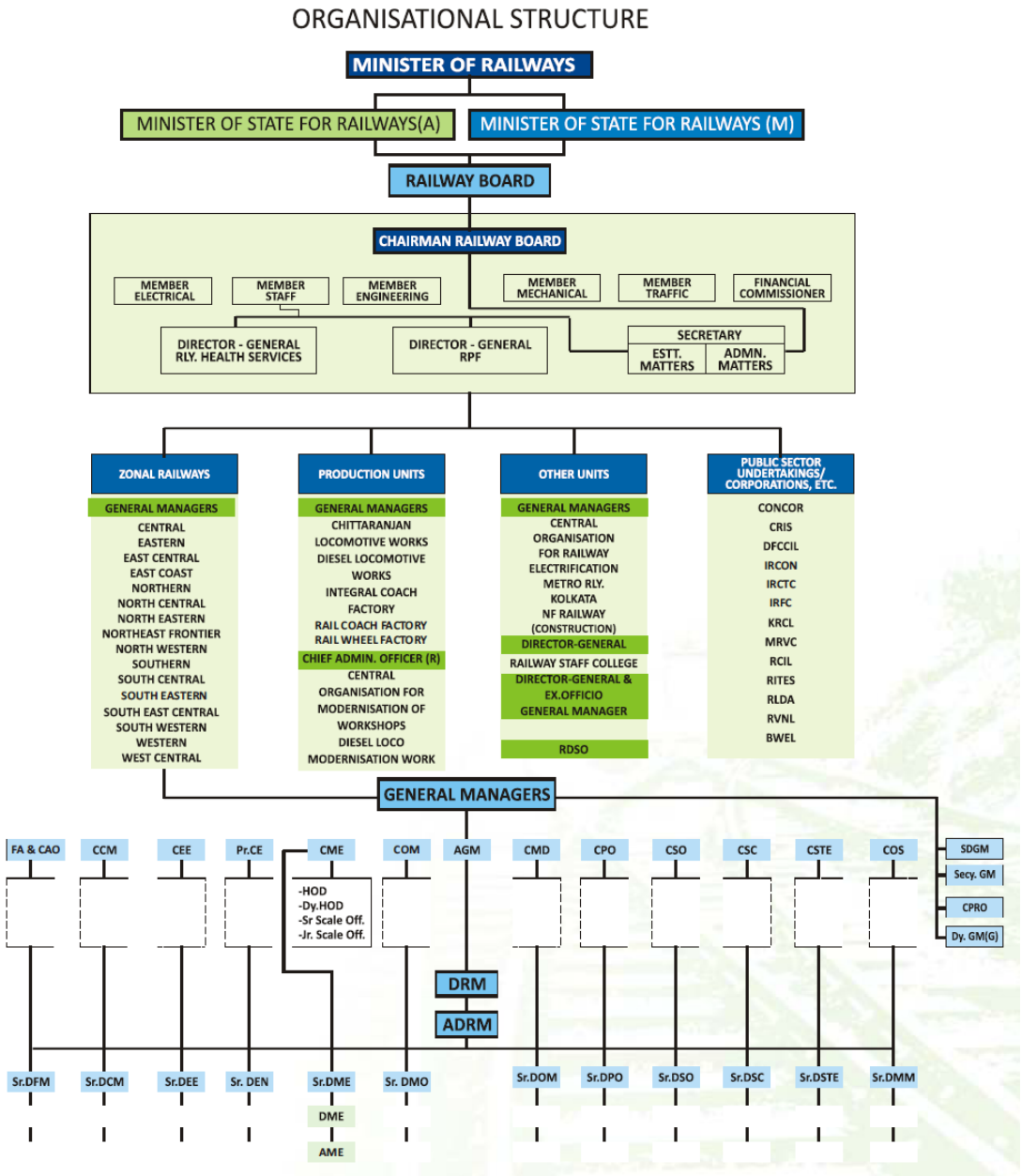


Figure: 2.1. Organization Structure of Indian Railways

Today the Indian rail system uses three different gauges depending on the rail traffic and area of the tracks. The first one is the Broad Gauge that is used in areas with high traffic and in areas with less traffic meter gauge is used. Mountain ranges like Nilgiri Mountain Railway and Darjeeling. Himalayan Railway resort to narrow gauge. This rail system is further divided into sixteen zones. The current zones of the Indian Railways are:

Table 2.2.: The current Zones of Indian Railways

Name	Abbr.	Headquarters	Divisions
Central Railway	CR	Mumbai	Bhusawal, Nagpur, Mumbai (CST), Solapur, Pune
Eastern Railway	ER	Kolkata	Malda, Howrah, Sealdah, Asansol
East Central Railway	ECR	Patna	Danapur, Dhanbad, Sonepur, Mughalasarai, Samastipur
East Coast Railway	ECoR	Bhubaneswar	Khurda road, Waltair, Sambalpur
Northern Railway	NR	New Delhi	Ambala, Ferozpur, Lucknow, Moradabad, New Delhi
North Central Railway	NCR	Allahabad	Allahabad, Jhansi, Agra
North Western Railway	NWR	Jaipur	Bikaner, Jodhpur, Jaipur, Ajmer
North Eastern Railway	NER	Gorakhpur	Lucknow, Varanasi, Izatnagar
Northeast Frontier Railway	NFR	Maligaon(Guwahat)	Katihar, Lumding, Tinsukhia, Alipurduar, Rangiya
Southern Railway	SR	Chennai	Chennai, Madurai, Palghat, Tiruchchirappalli, Trivandrum
South Central Railway	SCR	Secunderabad	Secunderabad, Hyderabad, Guntakal, Vijayawada Guntur, Nanded
South Eastern Railway	SER	Kolkata	Kharagpur, Chakradharpur Adra, Ranchi
South East Central Railway	SECR	Bilaspur	Nagpur, Bilaspur, Raipur
South Western Railway	SWR	Hubli	Bangalore, Mysore, Hubli
Western Railway	WR	Mumbai	Bhavnagar, Mumbai Cental, Ratlam, Rajkot, Vadodara, Ahemadabad
West Central Railway	WCR	Jabalpur	Jabalpur, Bhopal, Kota

2.2. PERFORMANCE REVIEW

In the following sections Indian Railway's performance in terms of Financial Performance, Operational Performance and Human Resource Development is analyzed. The financial performance from 1995-96 to 2009-10 is reviewed in terms of various financial indicators and methods of financing railways. Operational performance is reviewed in terms of key performance indicators like asset utilization. Finally human resource development has been reviewed in terms of man power planning and other human resource development activities of IR. The Table 2.3 provides the performance indicators of IR. The description of terms used in the table is given below:

Capital at Charge

Capital-at-charge means capital contributed by General Revenues for investment in Railways. Capital-at-charge excludes Capital Outlay on Metropolitan Transport Projects and Circular Railway(Eastern Railway) and disinvestments.

Gross Traffic Receipts

The gross traffic receipts are aggregation of passenger earnings, other coaching earnings, goods earnings, other sundry earnings and suspense.

Total Working Expenses

The Total Working Expenses include ordinary working expenses and contribution to Depreciation Reserve Fund and Pension Fund.

Net Revenue

Net Revenue is obtained by subtracting Total Working Expenditure from Gross Traffic Receipts and adding to its miscellaneous earnings.

Dividend

IR is required to pay a dividend to GOI as percentage of Capital at Charge, subject to certain exemptions and at rates fixed from time to time by the Railway Convention Committee. The

current rate is fixed at 7%. . In some bad years IR was not able to discharge full dividend liability due to inadequate surplus. This deferred liability is carried further as a interest free loan to paid in subsequent years. As of now all deferred dividend liabilities has been paid off.

Excess Shortfall

It is obtained by deducting dividend paid from the Net Revenue.

Operating Ratio

Based on the ratio of total working expenses to total earnings, a parameter called the operating ratio is assessed as a percentage. Basically it represents the rupee spent for every rupee earned. This should be as low as possible.

Net Tonne Km (NTkm)

Revenue earning Freight is represented by NTKm. It is calculated by multiplying total revenue earning loading in terms of tonnes to average lead in terms of kilo meters. It reflects growth of freight earnings traffic which is the largest component of Gross Traffic Receipts.

Table 2.3: Performance Indicators of Indian Railways

	1987-88	1888-89	1989-90	1990-91	1991-92	1992-93
Capital at Charge	11,622	12,988	14,630	16,126	17,713	20,123
Passenger Earnings	2,060	2,456	2,669	3,147	3,685	4,315
Goods Earnings	5,982	6,343	7,624	8,407	9,462	10,903
Other Earnings	393	461	446	542	583	470
Gross Traffic Receipts	8,435	9,259	10,739	12,096	13,730	15,688
Total Working Expenses	7,803	8,633	9,888	11,154	12,389	13,980
Misc. Transactions	91	111	130	171	200	247
Net Revenue Receipts	723	737	982	1,113	1,541	1,955
Dividend to General Revenues	639	716	809	914	1,032	1,172
Deferred Dividend				12	74	342
Excess/ Shortfall	84	22	173	187	435	441
Operating Ratio	92.5	93.1	91.5	92	89.5	87.4
NetRevenue/Capital at Charge	6.22096	5.674469	6.712235	6.901898	8.699825	9.715251
NTKm (million)	222,500	222,400	229,600	235,800	250,200	252,380
Capital at Charge/ NTKm	52.23371	58.39928	63.71951	68.38846	70.79536	79.73294

	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Capital at Charge	22,621	24,925	27,713	30,912	33,846	36829
Passenger Earnings	4,895	5,464	6,124	6,633	7,573	8,550
Goods Earnings	12,557	13,670	15,290	16,668	19,866	19,960
Other Earnings	493	968	1,003	1,018	1,149	1,109
Gross Traffic Receipts	17,946	20,101	22,418	24,319	28,589	29,619
Total Working Expenses	15,135	16,590	18,525	21,001	25,876	27,835
Misc. Transactions	291	297	242	306	311	356
Net Revenue Receipts	3,102	3,808	4,135	3,625	3,024	2,141
Dividend to General Revenues	1,296	1,362	1,264	1,507	1,489	1,742
Deferred Dividend						
Excess/ Shortfall	1,806	2,446	2,871	2,117	1,535	399
Operating Ratio	82.9	82.6	82.5	86.2	90.9	93.3
NetRevenue/Capital at Charge	13.71292	15.27783	14.9208	11.72684	8.934586	5.81335361
NTKm (million)	252,410	249,564	270,489	277,567	284,249	281,513
Capital at Charge/ NTKm	89.62006	99.87418	102.4552	111.3677	119.0717	130.825219

Table 2.3: Performance Indicators of Indian Railways (Continued)

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Capital at Charge	39,772	43,052	47,147	51,099	56,062	59,347
Passenger Earnings	9,581	10,515	11,196	12,575	13,298	14,113
Goods Earnings	22,061	23,305	24,845	26,505	27,618	30,778
Other Earnings	1,297	1,060	1,797	1,988	1,989	2,479
Gross Traffic Receipts	32,939	34,880	37,838	41,068	42,905	47,370
Total Working Expenses	30,844	34,667	36,293	38,026	39,483	42,759
Misc. Transactions	641	858	793	788	1,056	662
Net Revenue Receipts	2,736	1,071	2,338	3,830	4,478	5,274
Dividend to General Revenues	1,890	308	1,337	2,665	3,087	2,716
Deferred Dividend				50	300	483
Excess/ Shortfall	845	763	1,000	1,115	1,091	2,074
Operating Ratio	93.3	98.3	96	92.3	92.1	91
NetRevenue/Capital at Charge	6.879212	2.487689	4.958958	7.495254	7.987585	8.886717
NTKm (million)	305,201	312,371	333,228	353,194	381,241	407,398
Capital at Charge/ NTKm	130.3141	137.8233	141.4857	144.6769	147.0513	145.6733

Table 2.3: Performance Indicators of Indian Railways (Continued)

	2005-06	2006-07	2007-08	2008-09	2009-10
Capital at Charge	65,878	76,031	88,521	104301	123001
Passenger Earnings	15,126	17,225	19,783	21866	23414
Goods Earnings	36,287	41,717	46,425	51749	56912
Other Earnings	3,078	3,429	5,512	6247	6638
Gross Traffic Receipts	54,491	62,370	**71,720**	79862	86964
Total Working Expenses	45,575	49,047	**54,462**	71839	82915
Misc. Transactions	-912	768			
Net Revenue Receipts	8,005	14,453	**18,334**	9174	5544
Dividend to General Revenues	3,005	3,584	4,903	4718	5543
Deferred Dividend	663	663			
Excess/ Shortfall	4,337	10,206	**13,431**	4457	0.75
Operating Ratio	83.7	78.7	75.94	90.46	95.28
NetRevenue/Capital at Charge	12.15125	19.00935	**20.71147**	**8.795697**	**4.50728**
NTKm (million)	439,596	480,993	521371	551448	600548
Capital at Charge/ NTKm	149.8603	158.0709	**169.785**	**189.1402**	**204.8146**

Table 2.3: Performance Indicators of Indian Railways (Continued)

2.3. FINANCIAL PERFORMANCE

Given the importance of the IR in the context of the Indian economy, the GOI is always concerned about its financial performance. The key indicators of IR financial performance can be taken as Total Investment, Gross Traffic Receipts, Total Working expenses, Operating Ratios, Net Revenue, Dividend Paid, Excess/ Short Fall, Contribution to Depreciation Reserve Fund as a percentage of Gross Traffic Receipts, Net Revenue as a per cent age of Total Investment, Total Investment per NTKm. Earning and Expenses etc. The Comptroller and Auditor General of India (CAGI), the Reserve Bank of India (RBI), as well as the World Bank transport division, among others, use these indicators for financial performance assessment of the railways (World Bank, 1987).

The analysis of trends of different financial indicators is presented below.

2.3.1. Net Revenue Receipts

The trend of Net Revenue Receipts is shown in Table 2.3. The good performing years were up to 1996, after which the expenses caught up with the revenues until 2000-01, when the net revenue shrunk to a little over Rs 1000 crores. The situation started improving steadily to reach actual net revenue of over Rs 18334 crores in 2007-08, for a total earnings of Rs 71,720 crores in 2007-08. The major improvement has come from 2004-05 to 2007-08. In the year 2008-09 it again started declining and in 2009-10 it reached a value of Rs. 5544 crores. However the total earnings kept increasing right through and reached a value of Rs.86964 crores in 2009-10. Net revenue receipts as a percentage of total earnings provides a better appreciation of financial performances. A proper fiscal management must ensure a stable value of this percentage, if not a steady increase by enhancing the gross traffic receipts and controlling working expenses. The figure 2.2 below indicates this percentage over the years.

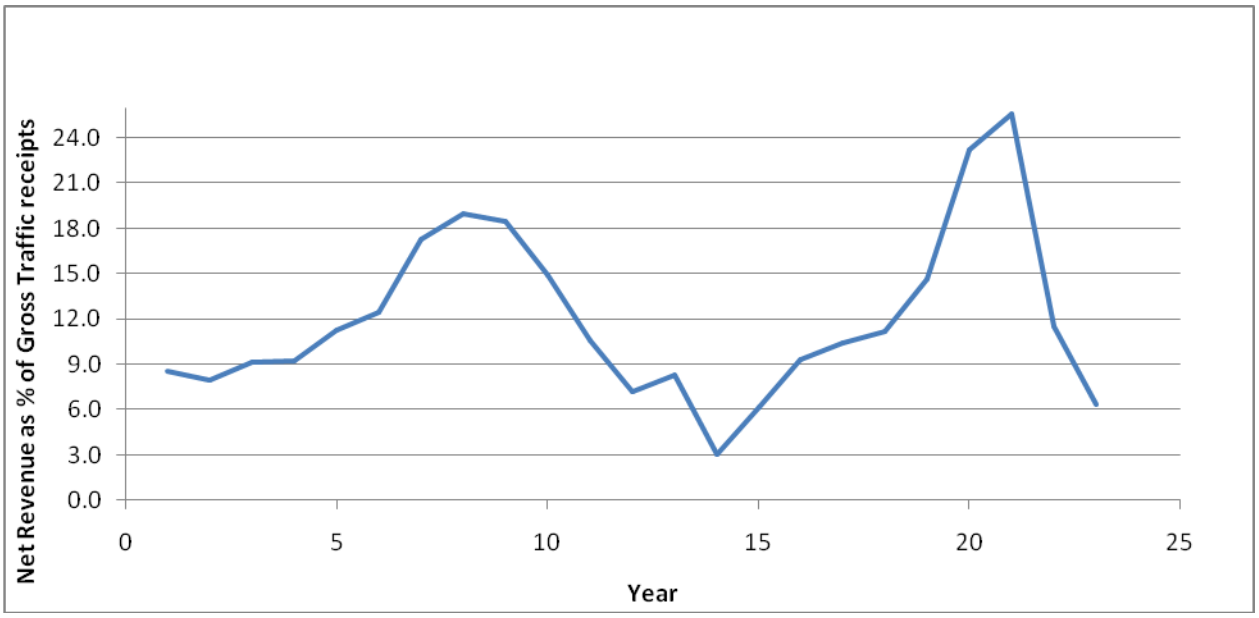


Figure: 2.2. Net Revenue Receipts as Percentage of Gross Traffic Receipts

From above it can be seen that situation started deteriorating since 1994-95 and reached an all time low of 3.1 percent in 2000-01. Thereafter the position improved continuously up to 2007-08 when it reached a all time high value of 25.6 per cent. The major improvement took place from 2004-05 to 2007-08. One of the contributory factors has been permitting loading up to 10 tons extra in the existing wagons there by more intensive use of rolling stock. The lengths of the trains were also increased by adding one extra wagon. It enhanced the revenue from freight trains same number of trains operated as earlier and it was partly due to change in accounting practice also, wherein principal payments towards rolling stock have been capitalized. However it again started declining from 2008-09 onwards and reached Rs.5544 crores in the year 2009-10 for a total earnings of Rs.82915 crores representing merely 6.69 per cent. It is attributable to implementation of recommendation of 6th Pay commission and focus on social responsibility instead of economic responsibility.

2.3.2. Excess / Short Fall

The following Figure 2.3 shows the Excess/Short Fall over last twenty three years.

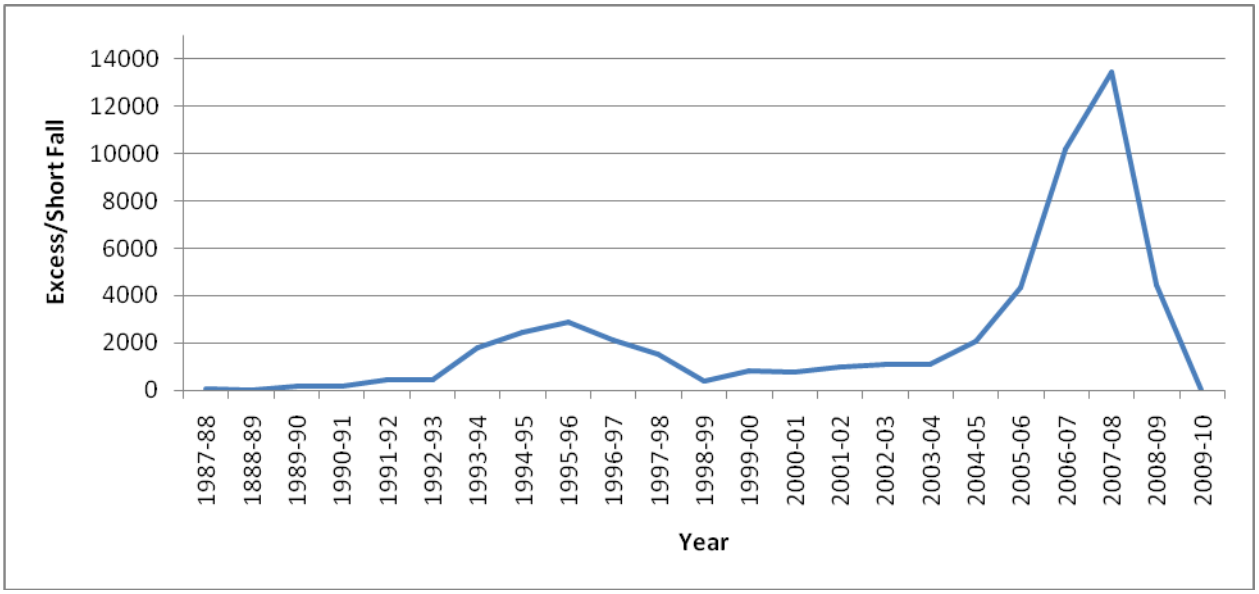


Figure: 2.3. Excess/Short Fall

Excess/Short Fall is obtained by deducting dividend paid from the Net Revenue. Table 2.3 gives the dividends paid out of the net revenues, including the payment due to deferred dividends. As can be seen, the deferred dividend payments have happened in the "good" years, which have followed the "bad" years when the IR would have sought deferment of the dividend. The deferred dividend liability from 1978-79 onwards aggregated to Rs 428.43 crore by end of March, 1990. The amount was cleared by 1992-93. The dividend payable in 2000-01 and 2001-02 worked out to be Rs 2,131 crore and 2,337 crore respectively, out of which Rs 1823 crore and Rs 1000 crore respectively have been transferred to a deferred dividend liability account. In the year 2007-08 the dividend payable was Rs. 4903 crores inclusive of Rs. 664 crores the deferred liability payment. Thereafter there has been no deferred liability. The reasons for the enhanced revenue have been outlined in the earlier paragraph leading to enhance Excess (Surplus).

2.3.3. Operating Ratio

Figure 2.4 presents the operating ratio since 1987-88. The operating ratio was 82.5 in the Year 1995-96 and stared increasing thereafter.

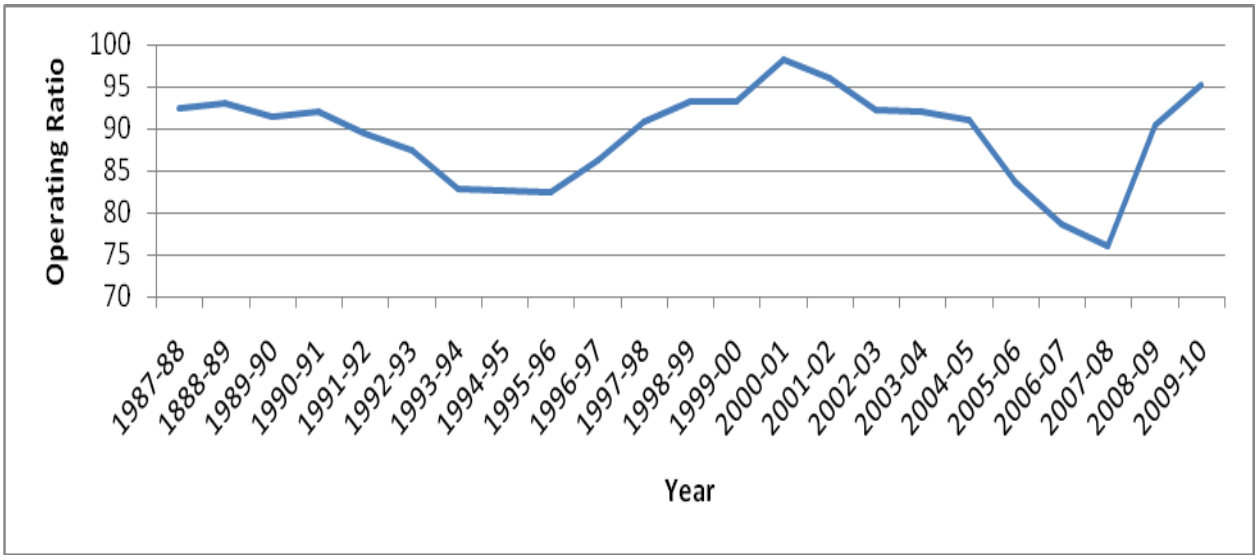


Figure: 2.4. Operating Ratio

It reached a peak of 98.3 in 2000-01, reflecting a relatively poor performance. After that, it had reduced year on year till 2004-05 when it dropped to 91.0. It dropped sharply to 75.94 in 2007-2008. As stated above, this was both due to better utilization of assets, increased loading permitted in wagons and changes in accounting practice. It started increasing again to 90.46 in 2008-2009 and 95.28 in the year 2009-10. This was primarily due to impact of implementation of sixth pay commission recommendations and increased fuel prices and no significant increase in the fare structure.

2.3.4. Net Revenue to Capital at Charge

The following Figure 2.5 presents the Net Revenue to capital at charge since 1987-88. This ratio indicates efficiency of leveraging of capital deployed for revenue generation. This ratio declined to 2.5 in the Year 2000-01 and then rose steadily to 20.7 per cent in the year 2007-08. Thereafter it declined to 2.73 per cent in 2009-10. Reasons for above have been indicated in the preceding paragraphs.

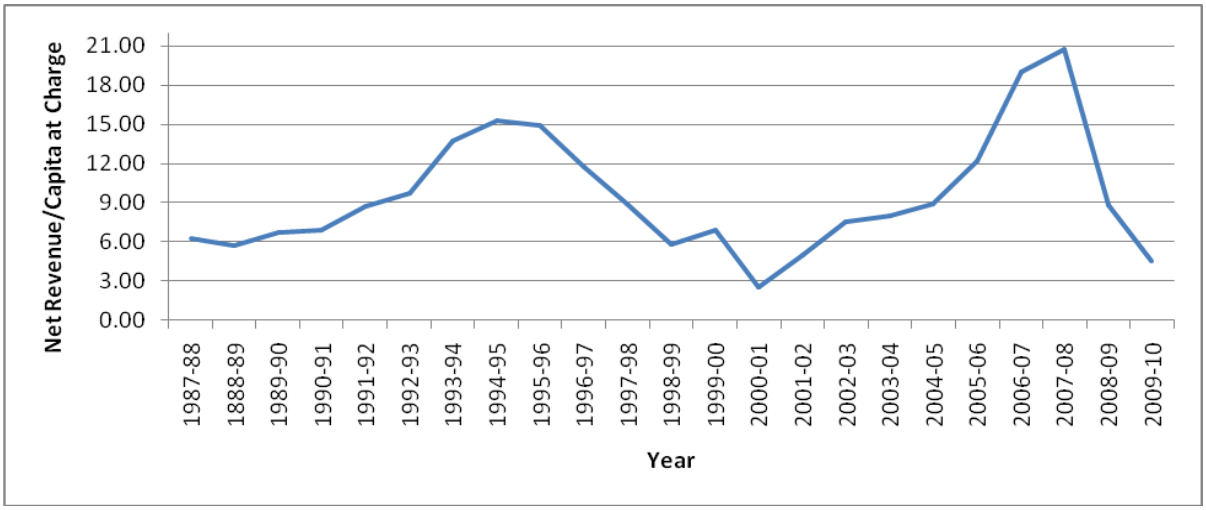


Figure: 2.5. Net Revenue/Capital at Charge

2.3.5. Capital at Charge / NTKm

This Ratio indicates Capital required per unit of transportation. The following Fig presents the Capital at Charge to NTKm since 1987-88. Upto 2009-10 it has grown continuously at a compounded rate of growth of 6.4 per cent per annum. This can be attributed to increase in the cost of infrastructure creation and increase in passenger trains year after year.

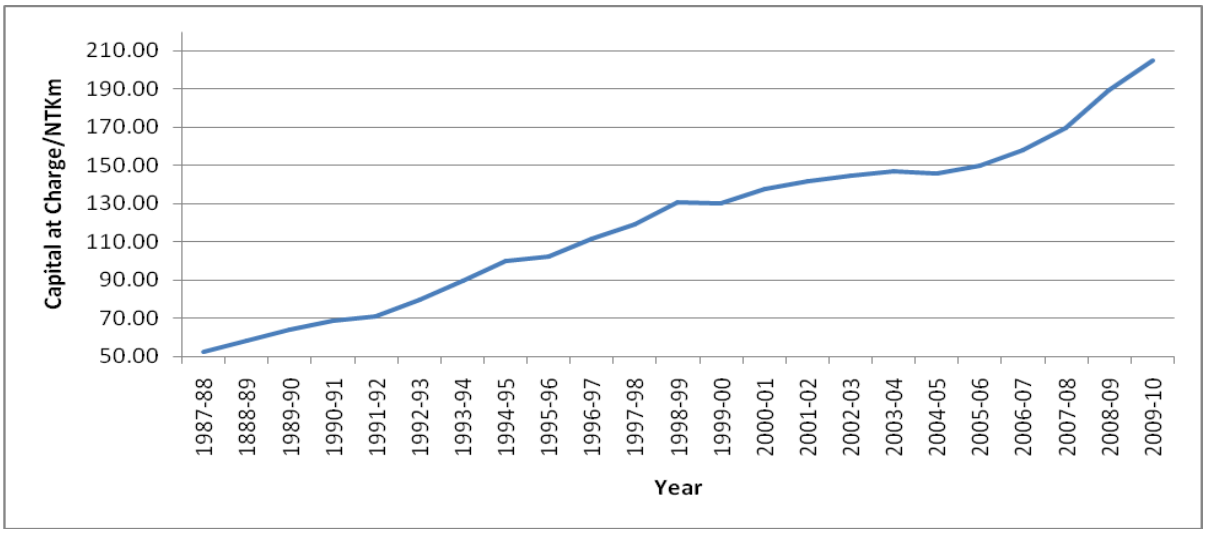


Figure: 2.6. Capital at Charge to NTKm

The RMC (2001:1) identified several causes of the IR financial performance decline during 1994-95 to 2001-02. These, among others, included the loss of market share in the profitable

freight business, lack of flexibility in pricing, and the high cost of internally sourced products and services together with investments in un-remunerative projects. It also noted that lack of accountability was the prime source of the IR's problems which were compounded by the rising employee cost and poor staff productivity (staff costs account for nearly half of the total operating costs of the IR). Malik (2005:2) identified 'political profligacy' as one of the major impediments for the poor financial state of the IR. Thus, the one of the important reasons for the IR's financial performance decline was politicization of the decision-making processes that emphasized taking populist action over hard business decisions. The philosophical change began in 2001 and this change in philosophy appears to have shown some results in the years that followed. There was a rise in dividend payments, substantial jump in annual growth rate of freight cargo transportation and a fall in the operating ratio (the ratio of total working expenses to total gross receipts) (Raghurama 2008).

The financial performance started improving gradually from 2001-02 and sharply from 2004-05 to 2007-08. This was because of better utilization of rolling stock and other assets, changes in accounting practices and high economic growth rate in the country. Thereafter it declined substantially due to higher wages, fuel costs, stagnant freight and fare structure and some social welfare measures undertaken.

2.4. FINANCING OF RAILWAYS

The Sources of Funds for Plan Outlay are broadly financed from the following sources:

- Internal Revenue Generation
- The Budgetary Support
- Borrowings From Markets
- Special Railway Safety Funds
- Railway Safety Fund
- State Governments
- Special Purpose Vehicles
- Public Private Partnership

2.4.1. Internal Revenue Generation

After providing for ordinary working expenses, the balance left over from gross traffic receipts is appropriated to several funds. Of these relevant for Plan Outlay are the Depreciation Reserve Fund, Railway Capital Fund and Development Fund.

Table 2.4: Appropriation to Railway Funds (Component of Plan Expenditure)

Year	Appropriation to DRF including Interest	Appropriation to DF including Interest	Appropriation to Capital Fund including Interest	OLWR	Appropriation to SRSF from Railway Revenues	Appropriation to RSF from Railway Revenues	Total
2004-05	2893	1944	1	38	779	132	5787
2005-06	3833	2039	4086	43	749	68	10828
2006-07	4446	2129	8541	51	818	0	15985
2007-08	5703	2630	11593	47	0	0	19973
2008-09	7260	1631	3616	48	0	0	12555
Total	24145	10373	27837	227	2346	200	65128

2.4.2. Contribution to Depreciation Reserve Fund (DRF)

Depreciation Reserve Fund (DRF) was created when railway finances were separated from general finances in 1924. Cost of replacements of assets is charged to the DRF, which again is made up through amounts credited from revenues year to year. There is no specified method to decide apportionment to this fund.

Table 2.5: Contribution to DRF/Gross Traffic Receipts

Year	Gross Traffic Receipts	Contribution to DRF	Contribution to DRF/Gross Traffic Receipts
1997-98	28,589	904	**3.16**
1998-99	29,619	1155	**3.9**
1999-00	32,939	1550	**4.71**
2000-01	34,880	2301	**6.6**
2001-02	37,838	2000	**5.29**
2002-03	41,068	2402	**5.85**
2003-04	42,905	2593	**6.04**
2004-05	47,370	2662	**5.62**
2005-06	54,491	3604	**6.61**
2006-07	62,370	4198	**6.73**
2007-08	71,720	5450	**7.6**
2008-09	79862	7000	**8.77**
2009-10	86964	2187	**2.51**

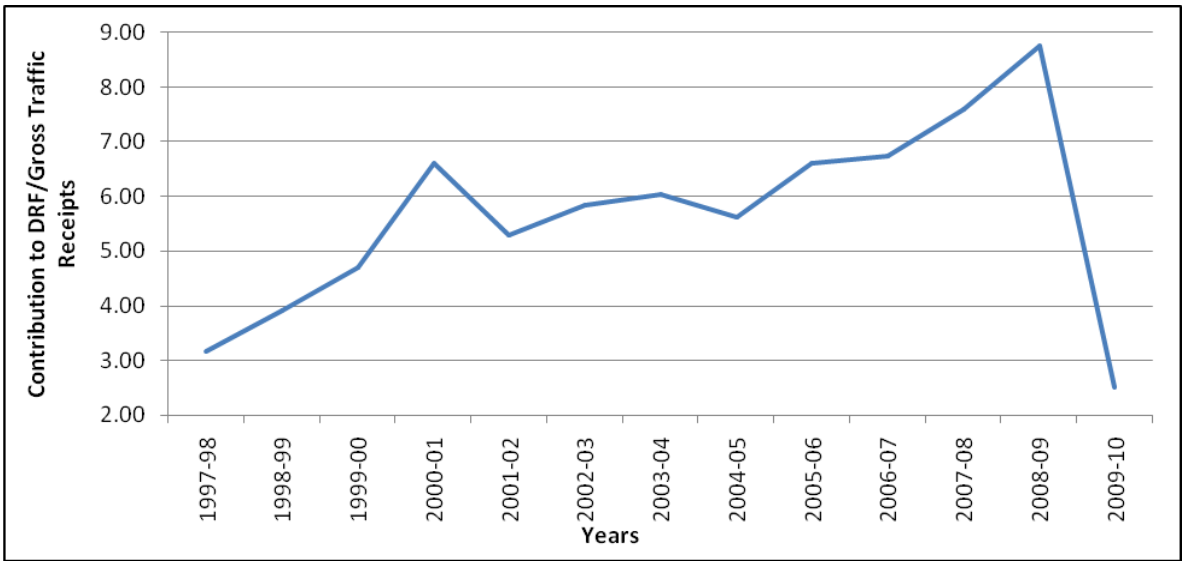


Figure: 2.7.Contribution to DRF/Gross Traffic Receipts

Contribution to DRF as a percentage to gross traffic receipts increased steadily up to 2000-01 to 6.60 per cent. It declined marginally in the year 2001-02 and 2004-05 but increased again in 2005-06 to the same level of 2000-01. Later it increased up to 2008-09 to 8.77 per cent. In the year 2009-10 it declined drastically to 2.51 per cent. To maintain the contribution of the year 2009-10 at the same level of previous year additional contribution of Rs.5440 crores to the fund was required. It would have resulted in a short fall(loss) of Rs. 5439.25 crores as against reflected excess of 0.75 crore (profit).

Railway Capital Fund (CF)

CF came into operation from 1992-93 as a result of a recommendation of the Railway Convention Committee. Appropriation to the Fund again is from revenue surplus, to be used to finance expenditure on assets of capital nature

Development Fund (DF)

DF is meant to finance schemes that are not remunerative, such as for investments towards passenger amenity and staff welfare works etc or schemes required to fulfilling a statutory obligation. Similar to the DRF this fund too gets recouped annually from revenue surpluses. The share of DF in Plan Outlay has remained at about 5% and is not very significant.

Open Line Works Revenue (OLWR)

The Open Line Works Revenue (OLWR) is meant for execution of works of small value which are accounted for as revenue expenditure. Appropriation has been of the order of Rs 35 crores for many years, too small to merit any further examination.

2.4.3. Budgetary Support

Funds made available from the general exchequer are used for acquisition of new assets such as construction of new railway lines, doublings, and gauge conversions required on consideration of logistics, railway electrification and additional rolling stock.

Budgetary Support as a percentage of Plan Outlay was substantial and hovered between 33% to 75% during the period 1951-93. A steep decline then took place up to 1996-97, when the percentage remained at around 18%. This temporary withdrawal from financing rail infrastructure by the Government had an adverse impact on rail transport, creating capacity constraints. From 2001-02 on wards till 2004-05 it contributed larger share in railways plan finances. it peaked to 56% in 2005. It was followed by the period 2005-06 to 2009-10 when once again the share of budgetary support declined continuously and reached 28% in 2008-09.How ever it has gone up to 34.6% in 2011 - 2012

2.4.4. Borrowings from the Markets

Severe reduction in the Budgetary Support necessitated the IR to set up the Indian Railway Finance Corporation (IRFC) in 1986 to borrow funds from the capital market for the acquisition of additional rolling stock. IR pays lease charges to IRFC for this purpose. This arrangement has of late been used even for replacements, when the appropriation to DRF was inadequate. Borrowings as a percentage of Plan Outlay averaged 17% in the Eighth Five Year Plan, went up to 28% in the Ninth Five Year Plan and was about 20% in the Tenth Five Year Plan. And it is noted that in eleventh five year plan as 30%. Lease charges as a percentage of the ordinary working expenses are the third highest after staff and fuel costs. There is a second component of market borrowings. IR pursued such schemes as Own Your Wagon, Build Own Lease and Transfer and Build Operate and Transfer. Being not very

successful, these are no longer a major source for Plan Outlay. For the resources raised in the past, lease charges are being paid.

2.4.5. Special Railway Safety Funds (SRSF)

Based on the recommendations of the Khanna Committee, IR created a Special Railway Safety Fund of Rs 17,000 crores in October, 2001. Because of cumulative lack of funding for renewals and repairs of assets, the assets became overage and due for rehabilitation. It has serious safety implications hence the non lapsable one time fund was created to wipe out the identified overdue replacements. Out of this, Rs.5000 cr was to be the railway's contribution through safety surcharge on passenger fare and balance Rs.12000 crore in the form of dividend-free budgetary support. The fund was exclusively used for liquidating the arrears of replacements of over-aged assets like track, bridges, rolling stock and signaling gear within a time frame of six years and has substantially contributed towards Plan Outlay. While clearing of the arrears of replacement of tracks, bridges, signaling gears and rolling stock were to be addressed through the SRSF, annual arising for these items were to be taken care of by normal provisioning under DRF. One impact of the creation of fund has been lesser allotment to and spends from the DRF by the Railways

2.4.6. Railway Safety Fund

A Railway Safety fund has been created on 1.4.2001 for financing works related to manning of unmanned level crossings and for construction of ROBs/RUBs at busy level crossings. This fund is financed mainly through receipts from Central Road Fund, which is funded by levying of cess of Rs. 1 per liter on diesel and petrol. The Railways get 12.5% of entire petrol cess and 6.25% of entire diesel cess. Two separate plan heads, viz. Road Safety Works - LCs and Road Safety Works-ROBs/RUBs have been created in 2000-01 for executing these works.

2.4.7. State Governments

Some of the Metropolitan Transport Projects are being jointly funded by the State Governments. In addition, Tamil Nadu Government is partly financing a gauge conversion project too. Contributions from the State Governments are not reflected in Plan Outlay.

2.4.8. Special Purpose Vehicles

IR have also followed the route of setting up corporations with initial capital and then seeking funding through private participation, from multilateral agencies, State Governments and other financial agencies. Pertinent.

2.4.9. Public Private Partnership (PPP)

With the economy growing at a robust rate of growth in the last few years, the current abysmal level of infrastructure has been under tremendous strain. The Prime Minister's Committee on Infrastructure has been specially formulated to give infrastructure- road, railways, port, air, electricity, irrigation etc a major boost. Indian railways vision 2020 has set ambitious target of 25000 km of new line, 12000km of gauge conversion, 14000 km of electrification, 2000 km high speed corridor, doubling stoke and quadrupling including DFCs of 12000km. These capacity enhancement works will need an investment of Rs.1400000 crores over ten years. These resources have to be raised through innovatively channelizing private investment through public private partnerships. Recognizing the need for substantial financial capital and techno managerial expertise in infrastructure building and freeing up its precious resources, the Railways have started seeking and encouraging increased private sector participation in this massive exercise.

In the past Indian Railways had made several attempts to rope in private participation in areas such as catering, wagon ownership and leasing and joint ventures for rail infrastructure projects. These efforts were, however, limited in scale and scope. The current strategy is to leverage private capital through PPPs to the maximum extent in areas which are amenable to PPPs to improve efficiencies and control costs. Some of the ongoing initiatives are:

- SPVs for Connectivity projects
- Wagon Investment Schemes
- Container Operation
- Manufacturing Units for Rolling stock/Components
- World Class Station
- Construction Sections of Dedicated Freight Corridor
- Automobiles and Ancillary hubs

2.5. OPERATIONAL PERFORMANCE (Asset Utilization)

IR's earnings in past few years have grown significantly. Improved asset utilization is an important factor contributing to this growth. IR has taken a number of initiatives to make its assets more efficient. Table. 2.5 analyses the efficiency indices for the rolling stock and track over the period of fifteen years.

Table 2.6: Operational Performance of Indian Railways

Year Ending March	NTKM/Goods Engine Hr.	Coaching Vehicle Km Per Coach/day	NTKM/Wagon day	Wagon Turn Round in days	GTKM/ RKM (BG)	Average Goods Train Speed in KMPH	Average Net Train Load in Tonnes
1996	11629	431	1792	9.1	19.27	23.3	1158
1997	11894	441	1840	8.5	19.44	23.4	1169
1998	12104	445	1894	8.1	19.85	23.8	1175
1999	12145	456	1904	8.2	19.81	23.7	1180
2000	12609	467	2027	7.7	21.59	23.8	1208
2001	12850	461	2042	7.5	21.95	24.1	1233
2002	13842	469	2223	7.2	23.11	24.4	1280
2003	14086	487	2468	7	23.8	24.7	1327
2004	16776	470	2574	6.7	24.91	23.3	1490
2005	16995	457	2677	6.4	26.04	23.8	1466
2006	18691	491	2960	6.08	26.53	24.2	1529
2007	19021	501	3242	5.49	26.86	24.9	1588
2008	19342	510	3539	5.23	28.03	25.4	1607
2009	19086	522	4343	5.19	29.29	25.7	1624
2010	20883	532	4635	4.98	30.99	25.8	1691

The following are the important operational performance parameters:

- NTKm /Engine Hour
- Coaching Vehicle Km per Coach per day
- NTKm /Wagaon day
- Wagon turn around
- Average Good Speed
- Average Net Train Load

2.5.1. NTKm /Engine Hour

It represents the efficiency of the use of locomotive. Heavier and longer trains run at higher balancing speeds will improve this parameter. It is seen that it has been improving continuously since 1995-96 to 2002-2003 at a compound rate of 2.8 per cent per year. There has been a significant increase from 2003-04 onwards registering a growth rate a 5.6 per cent per annum. due to permitting the higher loading of wagons up to 10 tons each.

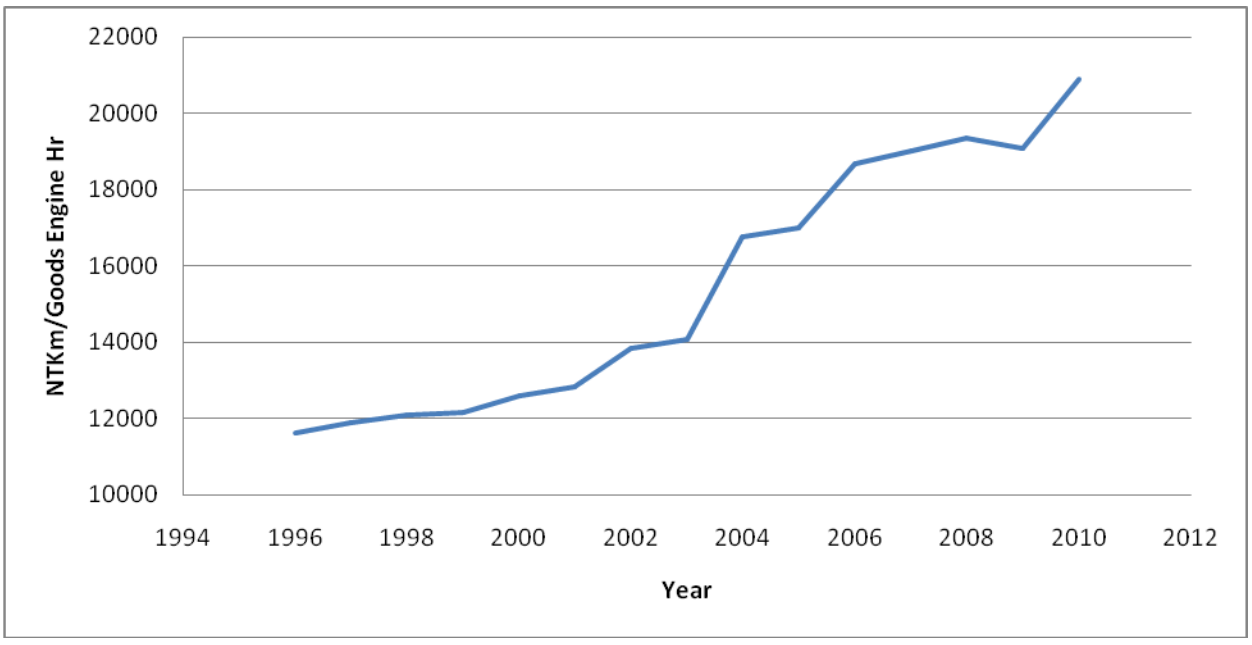


Figure: 2.8. Operational Performance of Indian Railways - NTKm/ Engine

2.5.2. Coaching Vehicle Km per Coach per Day

It indicates the intensity of use of coaching vehicles. It has increased from 431 km per day in 1995-96 to 532 km per day in 2009-10 representing a modest incremental improvement of 1.5 per cent per year.

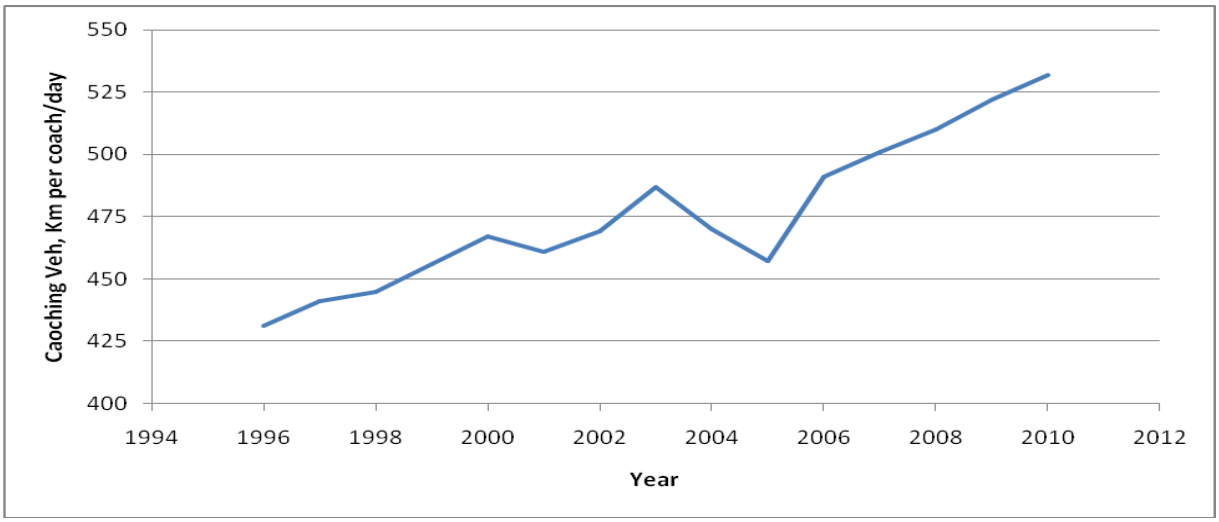


Figure: 2.9. Operational Performance of Indian Railways - Coaching Vehicle Km Per Coach per Day

2.5.3. NTKm / Wagon day

This parameter indicates intensity of use of a wagon in terms of loading and moment in a day. Higher per cent age of loaded wagon run for a higher distance will be indicated by improvement in this parameter. This improved continuously up to 2004-05 at a rate of 4.6 per cent. There after it increased significantly primarily due to additional loading permitted in the wagons.

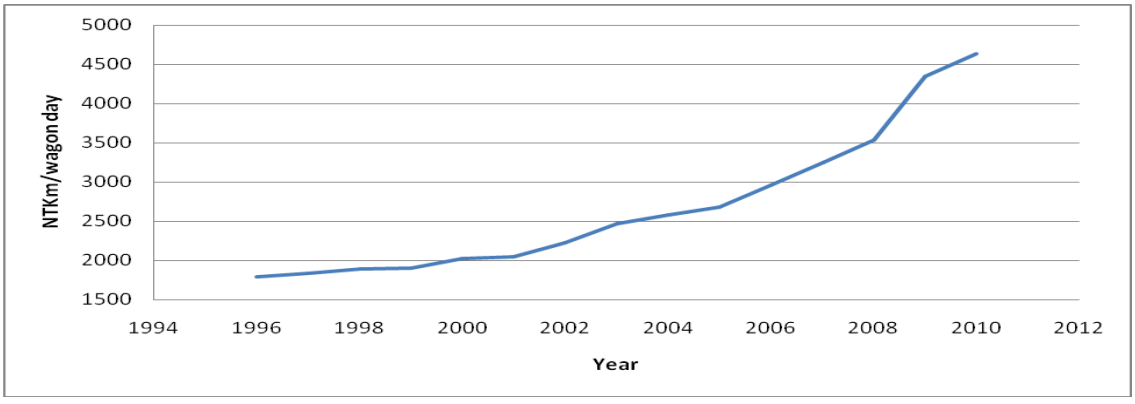


Figure: 2.10. Operational Performance of Indian Railways – NTKm/Wagon Day

2.5.4. Wagon Turn Around in Days

It is the average time taken by a wagon from the time it is loaded till it is available to load again. It has reduced from 9.1 days in 1995-96 to 5 days in 2009-10 indicating an improvement of 4.4 per cent per annum.

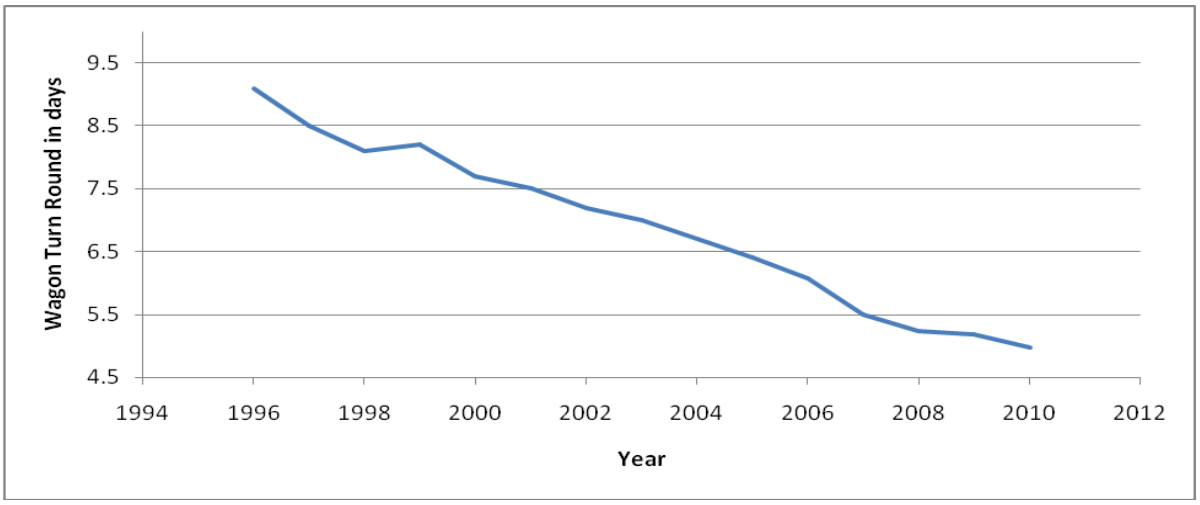


Figure: 2.11. Operational Performance of Indian Railways –Wagon Turn Round in Days

2.5.5. NTKm per Route Km

It signifies intensity of use of track in terms of total load in terms of NTKm passing over it. It was a stagnant till 1998-99 after which it showed continuous improvement. However significant increased took place from 2004-05 due to increase in permissible loading of the wagon.

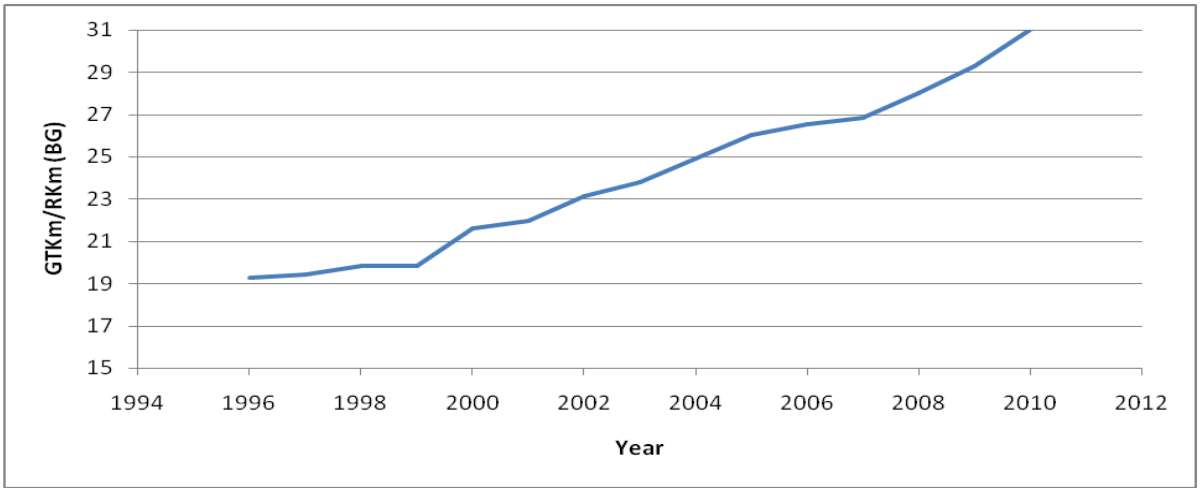


Figure: 2.12. Operational Performance of Indian Railways –NTKm per Route Km

2.5.6. Average Freight Train Speed

This indicates fluidity of movement. Improvement in average Goods Train speed can be achieved through operational improvements without increase in the input of other assets. Average good speed is hovering around 24-26 KMPH over last fifteen years which needs to be improved upon.

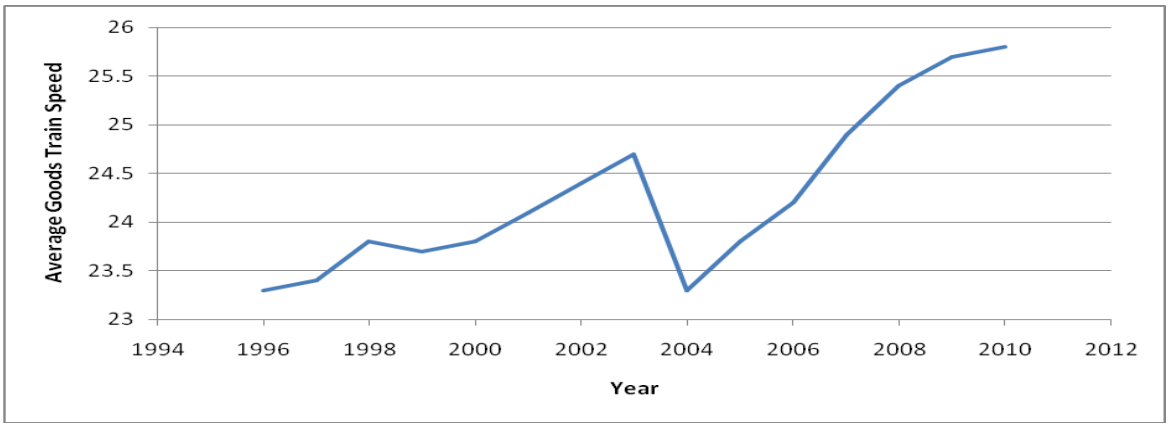


Figure: 2.13. Operational Performance of Indian Railways –Average Good Speed

2.5.7. Average Net Train Load

This indicates average net weight of commodity carried in a rake excluding tare weight of wagons and loco. Higher net train loads help in increasing throughput for a give track length and enhances revenue. Measures like permitting extra loading in wagons, attaching more wagons and running longer trains have helped in improving it from 1160 tons to 1690 tons in the last fifteen years.

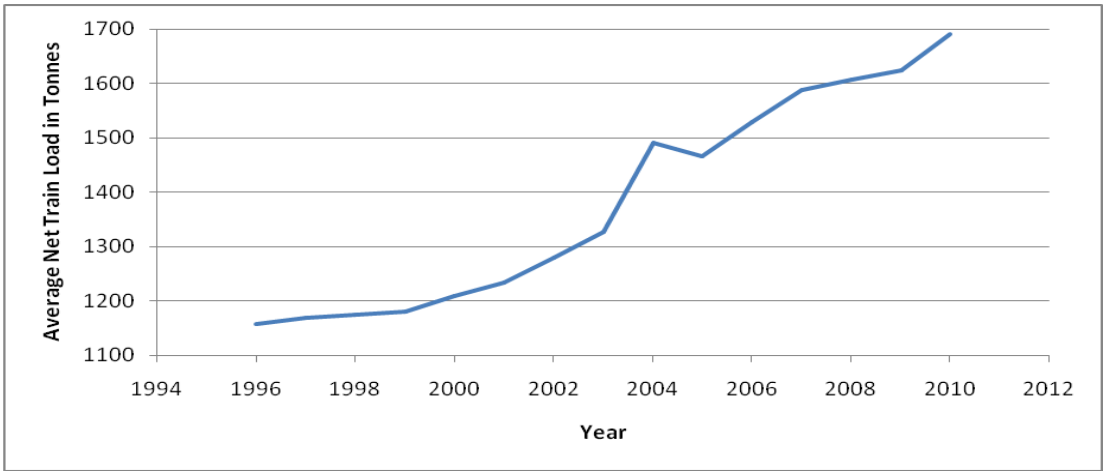


Figure: 2.14. Operational Performance of Indian Railways –Average Net Train Load

In terms of output, utilization indices have shown positive growth in important efficiency parameters related to rolling stock (engines, coaches and wagons) and track. Major improvement in the operating performance has come primarily because of more intensive use of wagons due to higher loading being permitted.

2.6. HUMAN RESOURCES MANAGEMENT

Man power on Indian railway broadly consists of management cadre (Group A & B), Supervisors and skilled staff (Group C) and unskilled staff (Group D). The composition of workforce has changed over the years as under.

Table 2.7: Man Power in Indian Railways

Year	Group A & B	Group C	Group D	Total	Expenditure on Staff (Rs. Crore)
1950-51	2.3	223.5	687.8	913.6	113.8
1960-61	4.4	463.1	689.5	1157.0	205.2
1970-71	8.1	583.2	782.9	1374.2	459.9
1980-81	11.2	721.1	839.9	1572.2	1316.7
1990-91	14.3	891.4	746.1	1651.8	5166.3
2000-01	14.8	900.3	630.2	1545.3	18841.4
2006-07	15.8	898.4	483.3	1397.6	24159.1
2007-08	16.1	907.4	470.9	1394.4	25892.3
2008-09	16.4	914.2	455.5	1386.1	39993.4
2009-10	16.8	904.7	440.0	1361.5	51236.8

Includes number of railway Protection Special Force (RPSF) personnel and expenditure on them from 1980-81 onwards. These were not included in earlier years.

Management personnel (Groups A & B) constitute up 1.2% of the total strength, while Group C and D account for 66.4% and 32.3 % respectively. Of the employees in Group C and D, 4.03 lakhs (29.95%) are workshop employees and artisans and 9.42 lakhs (71.09 %) from

other categories including running staff. In other than managerial cadres, the ratio of Group C to D changed from 25:75 in 1950-51 to 67:33 in 2009-10, indicating a shift towards induction of skilled manpower. Sixth pay commission has recommended the abolition of unskilled category (Group D) over a period of time by imparting various skills to existing Group D staff.

The number of employees, which peaked at 1.652 million in 1991, was brought down progressively to 1.472 million by 2003, and to 1.412 million by 2006 and 1.361by 2009-10. The approach that the IR adopted was not to partially fill in vacancies created due to retirement or wastage due to the other reasons. This reduction in staff strength was achieved by reducing unskilled staff and not by reduction in skilled and managerial manpower. Although the wage bill has been consistently rising and which constitutes largest component of its cost. In 2009-2010 it was 56.16% of it's ordinary working expenses. However this reduction in the staff has helped in slowing down this rise.

As a policy, IR has been encouraging the setting up of multidisciplinary training centers where cross-functional competencies are being imparted to railway employees. Seven Centralized Training Institutes (CTI) cater to the training needs of railway officers. Foundational and Induction courses are conducted for new entrants to management cadre. In service courses are run at various stages of carrier progression. Training needs of artisans and supervisory staff are taken care of by over 300 training centre located over IR. Training has been made mandatory at different stages for staff belonging to the safety and technical categories. Certain categories of staff overdue for refresher training are taken off from sensitive duty, till completion of the training.

Railway officers (Group A) are recruited through union Public Service Commission and Group B officers are selected from Group C staff on merit cum seniority basis. Group B officer migrate to Group A by a selection associating UPSC. The non gazette staff is recruited by Railway Recruitment Boards. To ensure timely availability of quality skilled manpower 19 Railway Recruitment Boards have been setup across the country. IR has setup Railways Sports Promotion Board which supports 30 sports disciplines. Sports persons are

directly recruited based on their achievement in various games. Similarly based on achievements in the field of Scouts & Guides and NCC direct recruitment is made.

Appointment to Group C and D are also made on compassionate ground to the spouse/children of those employees who die while in service. As a part of staff welfare IR's welfare schemes cover a wide spectrum of activities in the areas of education, medical care, housing, sports, recreation and catering.

2.7. KEY COSTS OF INDIAN RAILWAYS

The key costs for IR are staff salary, pension, fuel (including electrical energy), lease charges, material costs for maintenance etc. Table 2.8 gives details of various cost components for last 15 years.

Table 2.8 Key Costs Indicators of Indian Railways

Year ending (March)	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Staff Cost (Inclusive of pension)(in crores)	9363	10515	14141	15611	16289	18841	19216	19912
Percentage of Total Working Expenses	50.54%	50.06%	54.65%	56.08%	52.81%	54.35%	52.95%	52.36%
Fuel cost (in crores)	-	-	4637.5	4806.9	5629.7	6443.2	6863.8	7382.5
Percentage of Total Working Expenses	-	-	17.92%	17.26%	18.25%	18.59%	18.91%	19.41%
Store for operation, Repairs & Maintenance (in crores)	2382	2722	2827	2995	3028	3985	4030	4264
Percentage of Total Working Expenses	12.85%	12.96%	10.93%	10.76%	9.82%	11.50%	11.10%	11.21%
Appropriation to DRF			904	1155	1550	2301.1	2000.4	2401.5
Total working expenses (in Crores)	18524.9	21000.8	25876.03	27834.6	30843.99	34667.34	36293.21	38025.75

Year ending (March)	2004	2005	2006	2007	2008	2009	2010
Staff Cost (Inclusive of pension)(in crores)	20929	22553	23920	24159	25892	39993	51237
Percentage	53.00%	52.74%	52.59%	49.26%	47.54%	55.67%	61.79%
Fuel cost (in crores)	7928	8781	10229	11284	12150	14218	14656
Percentage of Total Working Expenses	20.08%	20.53%	22.45%	23.00%	22.30%	19.79%	16.66%
Store for operation, Repairs & Maintenance (in crores)	3856	4149	5214	5745	7036	9533	8277
Percentage of Total Working Expenses	9.77%	9.70%	11.44%	11.73%	12.91%	13.27%	9.98%
Appropriation to DRF	2593	2662	3604	4198	5450	7000	2187
Total working expenses (in Crores)	39482.21	42758.88	45573.53	49046.53	54462.17	71839.3	82915.35

Table 2.8 Key Costs Indicators of Indian Railways (Continued)

2.7.1 Staff Costs

The most significant cost for IR is the staff expense including salaries and pension, which, in 2009-10 was Rs 51237 crore. This constituted 61.8% of the total working expenses.

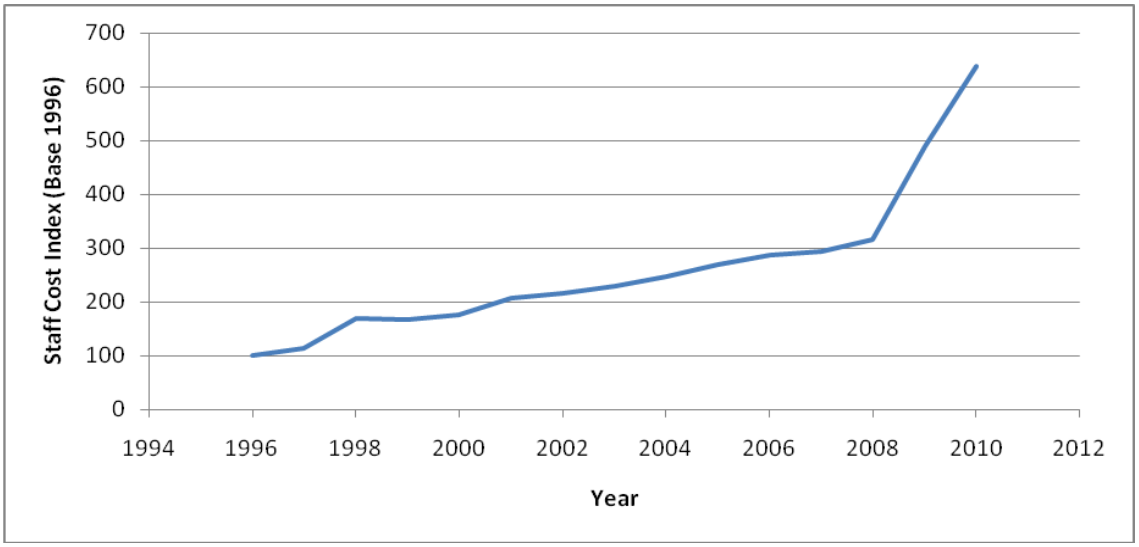


Figure: 2.15. Increase in Staff Cost

The figure 2.14 above gives the trend of the staff expense. As is evident, there was a significant rise in the expense in 1997-98, when the Fifth Pay Commission Recommendations for increase in Central Government staff salaries was implemented. The additional costs from that year went up by about Rs 2500 cr, making a significant dent on the profitability of IR. The pension component of the staff expense is also on the rise since the number of retired staff is increasing with increase in the longitivity. There was again a significant increase from 2008-09 due to the implementation of sixth pay commission. It is also important to note that staff expenses have gone up, in spite of the fact that the IR have managed to contain the number of staff by regulating fresh recruitment against retirements..

2.7.2. Fuel Cost

The second largest cost component for IR is fuel (including electrical energy). This was 22, 09% of total ordinary expenses in 2008-09.

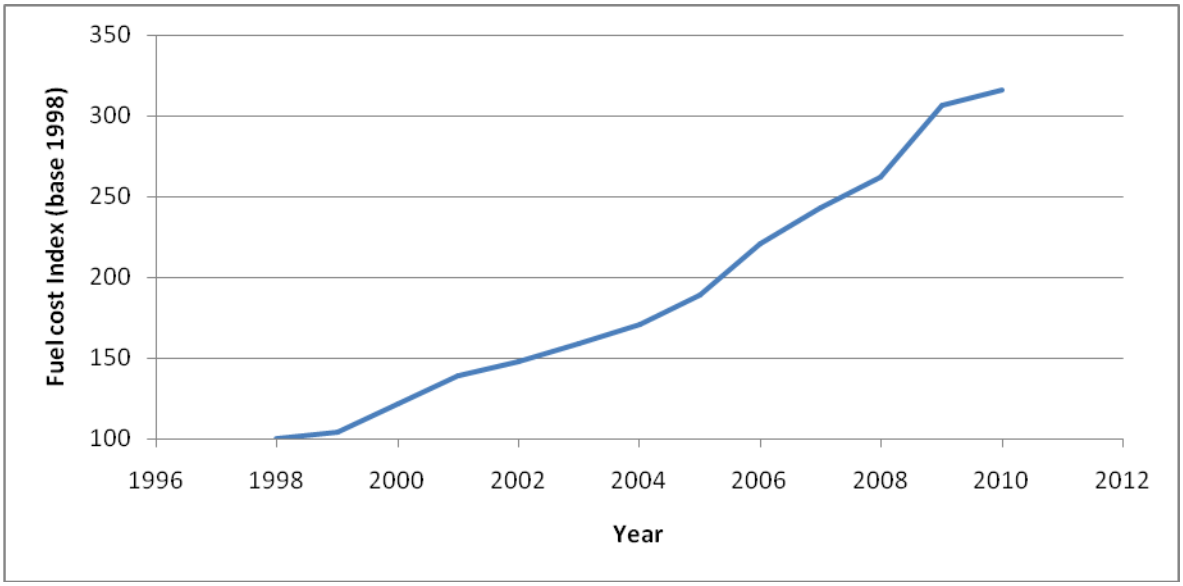


Figure: 2.16. Increase in Fuel Cost

It can be seen that in last 12 years cost on account of fuel has become 3.16 times. Efforts are required to be speeded up to develop more fuel efficient locomotives, both Diesel and Electric, use of regeneration at a large scale and improvement in the material used for building coaches and wagons to reduce tare weight.

2.7.3. Lease charges

Lease charges have been increasing due to a larger share of wagon stock being leased through IRFC. Until 2005-06, lease charges also included the contribution towards principal payments since the wagon stock ownership would be with IR. From 2005-06, this amount has been removed from the expenses and comes as a contribution to capital from the net earnings.

2.7.4. Material Costs

Material costs for maintenance of assets constituted 13.3 per cent of total working expenses in 2008-09. Table below does not indicate any significant increase in the material cost which has been in the range of 10 percent to 12 percent of total working expenses over the last fifteen years.

2.8. TRANSFORMATION EFFORTS ON INDIAN RAILWAYS

Some of the major transformation efforts under taken by Indian Railways are given below. As these are organization specific efforts and suggested by experts in the field and supported by government of India, in the text the where ever recommendations are to be given were produced as it is.

1. The practice on IR used to be accepting freight booking in terms of wagons. These wagons used to be for different directions. In marshalling yards these wagons were sorted direction wise to form a rake for a particular destination. It needed large marshaling yards which could hold wagons till the time it was possible to form a full train for a particular destination. It used to result in high wagon turnaround time and poor utilization of wagons. These wagons had different kind of couplings and compatibility of putting wagons together was also an issue. Average speed of goods train were low. In year 1982-83 IR started segregating wagons coupling wise, increase the train lengths and subsequently moved over to loading in terms of full rakes rather than wagons. It led to increase in average speeds of goods trains, closer of major yards, reduction in wagon

turnaround resulting in increase in total loading and better utilization of assets. It represents significant operational transformation on Indian Railway.

2. Booking of reserved accommodation on IR used to be done manually. At nominated stations quota for different trains was assigned and reserved accommodation was being made available to passengers up to the limit of quota. It was possible that while their could be high demand for a particular destination on a train at a station, quota at some other station could go unutilized. Reservation for trains used to be on nominated booking window for the trains, leading to long queues on some reservation counters and less passengers on other counters. The accountal of money and preparation of reservation charts were also being done manually.

   In 1985 computerized passenger reservation system (PRS) was started as a pilot project in New Delhi. The avowed objective was to provide reserved accommodation on any train from any counter and computerize preparation of train charts and accountable of the money collected. On 18th April 1999, all the five existing PRS namely Secunderabad, New Delhi, Kolkata, Mumbai and Chennai were networked together. Now anywhere to anywhere reserved ticketing on any PRS booking terminal became possible. As on 31st March, 2011, there were 2310 locations over IR where PRS was functional through 8320 terminals. PRS provided reservation to 40.9 million passengers in the month of February 2011.

   Indian Railway Catering and Tourism Corporation (IRCTC) has started an online booking facility through its web site. Customers can book tickets online with a credit card, debit card or a net banking account. In the month of February 2011, 16.1 million passengers booked tickets on line using IRCTC portal. An integrated booking portal, for the booking of tickets, Retiring Rooms, Cloak Rooms etc by IR shortly.

   Indian Railways (IR) carries large number of unreserved passengers, everyday which forms the bulk of rail users. Pre-printed unreserved tickets were being issued normally starting from two hours in advance of departure of train. Separate windows were

required for different directions. A large variety of tickets were required to be printed in advance and stocked at various stations. It used to result some time in over stocking of tickets for some destinations and non-availability for other destinations. Queue to purchase tickets used to be long and process of issuing tickets slow.

IR started issuing unreserved tickets through Unreserved Ticketing System (UTS). UTS provides the facility to purchase unreserved tickets up to three days in advance of the date of journey. A passenger can buy a ticket for any destination from the UTS counter for all such destinations which are served by that station. Passengers can cancel their tickets up to one day in advance of the journey from any station provided with a UTS counter. On the day of journey, the ticket can be cancelled from any station of the cluster from where the journey was to commence. Provision of issuing from Post Offices and other public amenity places is being introduced. As on 31-3-2011 UTS was provided on 4683 locations and 8469 counters. In the month of Feb 2011, 57.44 cores passenger purchased tickets from this system.

Issuing reserved tickets from any station to any station from any place, online booking and issuing unreserved tickets for any destination in advance to such a large number of passengers represents a major transformation on IR in field of issuing tickets which is an important passenger amenity.

3. Indian Railways recognized the need to focus on organizational restructuring. Top down restructuring with a focus on customers and merging of cadres, beyond the mid way career are imperatives for the IR. An expert committee under the Chairmanship of Shri. Prakash Tandon, Former Chairman, NCEAR was set up in 1993 to study the organizational structure and management ethos of Indian Railways The committee was required to spell out the manner in which the transformation to business led organization can be achieved. The major excerpts of the recommendations from the Tandon committee report are:

   - Tenures of general managers, members and Chairman of the Board should be for a minimum of 3 years. The general managers and members may be made equal in salary so that they do not have to move simply for the sake of increased salaries.

Similar tenures are suggested for additional general managers in the new structure.

- The average age of divisional railway manager is generally above fifty which results in short tenures at more senior positions. To remedy this and to assure minimum tenures at senior levels, posting at divisional railway managers should be at younger age level.
- Creation of a unified Indian Railways Service with a development and selection process to groom those who only will man general management positions such as Divisional Railway Manager, Additional General Manager, General Manager and Member.
- The changes suggested for the functions of the Board members from the present departmental to those proposed should be implemented first to send out the message of change.

However the recommendations have not been implemented.

4. IR does not have an adequate costing system, to assist managerial decision making. The present system of expenditure control vis-a-vis budgetary allocations is not based on sound costing principles and is, therefore, not conductive to cost control/reduction. A committee headed by Shri. Hasaan Iqbal, Ex Financial Commission, Indian Railway (FCIR) was set up in 1994 to study costing practices on IR. It suggested activity based unit costing system (ABUCS). However the same could not be implemented. The recommendations of committee for Identification of Cost/Profit Centers, Developing Accounting System and Modernization of Financial Management Information System on Indian Railways are:
    - A new system of costing various activities that go as input for the production of transport service should be introduced, with the object of determining unit costs of activities performed by various Activity Centers of IR. The system may be named Activity Based Unit Costing System (ABUCS). It may be introduced in a simple and workable form, to start with, and complexities/refinements of a full-fledged costing system may be built, up and introduced later, in subsequent

phases.

- Suitable but simple FMIS may be designed to enable cost- compilation at various levels of cost – incurrence, without undue accent on accuracy.
- A system of 'cost-variance analysis' inter-unit as well as intra-unit within Division, inter-Divisional and inter-Zonal may be introduced, which may serve as a tool for cost-control/reduction, till such time standard unit costs are developed for each activity, to eventually form the basis for cost control/reduction.
- The Divisions, which are the operating units should be made centers for evaluation of financial performance, in addition to the Zonal Railways, as at present. This will necessitate extension of the existing system of apportionment of earning on Zonal Railway basis to apportionment between the Divisions also. The basis for giving additional credit to 'originating', 'terminating' and 'transshipping' Divisions, while apportioning the earnings, may be reviewed with the object of providing sufficient inducement for marketing efforts to capture more/new traffic.
- With the introduction of ABUCS and divisionalisation of earnings, the Operating Ratio will be computed for each Division also. When ABUCS is fully refined and developed the financial statements viz. – Profit and Loss Account and Balance Sheet will be drawn on commercial principles.
- The new system (ABUCS) may be implemented in phase, so as to build up the super structure on a sound base.
- ABUCS and the divisionalisation of earnings should be implemented as a Pilot Project on Vadodara Division, with active association of Railway Staff College, Western and Central Railways, through. Task Forces constituted for various disciplines. Professional assistance for course correction, specially in respect of accounting problems that may arise in the course of exercises entrusted to the Task Forces, may be secured as and when necessary.
- Provision of Personal Computers at the stage of implementation of pilot project should be made for the Activity Centres of Vadodara Division. But, this need not delay the process of implementation, which may proceed on manual basis until PCs are made available.

- Railway Staff College should be asked to take a lead in designing training programmes, including training in computer skills, for various level of IR's functionaries. RSC may secure the assistance of professional expert/agency in designing the training programmes. Other Centralized Training Institutes and even Zonal Training Schools should be directed to play an active and serious role in imparting necessary training for successful implementation of the new system, treating it on a missionary footing.
- The existing delegation of powers should be reviewed, specially in respect of man-power placement and acquisition procedure (tender system), so that the powers at lower levels are enhanced and the tender system modified suitably, to match with the higher responsibility envisaged at various levels of cost-incurrence and cost-control.
- The question of considering the activity centers/units performing R & D work e.g. RDSO and training of IR personnel for being developed into Cost/Profit Centers may be gone into separately, at a later stage.
- The subject of Project Costing, however, needs to be taken up separately and immediately, with the dual object of determining standard units costs for different kinds of projects and of achieving substantial reduction in project costs, for which considerable scope exists.
- The costing system prevalent in the Production Units may be reviewed with the object of introducing the concepts of the ABICS and providing an in-built mechanism in the system for cost control/reduction.

However the recommendations have not been implemented.

5. An Expert Group headed by Shri. Rakesh Mohan, NCAER was set up in 2001 to study policy imperatives for reinvention and growth on Indian Railways. The committee's major recommendations are under:

    - Institutional separation of roles, into policy, regulatory and management functions. The institutional separation of roles will mean that policy makers are

limited to setting policy (and paying for what they ask for); regulators fix competition rules in general and pricing in particular; management manage and are measured against clear performance indicators.

- Clear differentiation between social obligations and performance imperatives. Increased pressure to carry social obligations has not been backed up by an increase in funding. In other words, parliament is demanding more and giving less.
- The need to create a leadership team committed and capable of redefining the status quo. Leadership must be differentiated from management.
- Vision: Develop a shared vision for a modern railway system- IR is desperate need of a clearly articulated forward looking vision that addresses the issue of creating a modern railway to meet the needs of a modern India.
- Strategy: The business portfolio: Less is more- Focus on core, spin off the rest- "Non-Core" businesses consists of the following:
  - ✓ Production units
  - ✓ Residential colonies
  - ✓ Catering
  - ✓ Other onboard services
  - ✓ Security
  - ✓ Hotels (Yatri Niwas etc.)
  - ✓ Sanitation
  - ✓ Printing presses
  - ✓ Medical facilities
  - ✓ Schools/Colleges
  - ✓ Research facilities
- IR's management would be able to concentrate on its core business of transportation if it reduces considerably the burden of managing all these peripheral activities.
- Indian Railways must aim to be corporatized into the "Indian Railways Corporation" (IRC). The Government of India should be in charge of setting policy direction.

- The Indian Railway Corporation (IRC) would be governed by a reconstituted Indian Railways Executive Board (IREB).
- The Expert Group recommends an immediate and comprehensive review of the legal framework and specific statues required to create a vibrant rail based industry.
- Structure: Outward looking, business oriented, customer driven

  This will involve reorganizing the core transportation network into its key component parts: freight, passenger, suburban, shared infrastructure: fixed and shared infrastructure: others. These business units will operate with a large degree of autonomy yet be held accountable for a balanced scorecard of commercial performance measures.

Disaggregation into business units is the first step towards commercialization.

- Adopt commercial systems

  The corporatization of IR into IRC will necessitate the recasting of IR's accounts into company format. The Government will therefore need to initiate the process of restructuring the financial accounts of IR in accordance with the Company's Act 1956.

- Rebalance pricing

  Al the restructuring in the world will not help a jot unless IR generates increased revenues.

  It is an inescapable fact that single most important step that must be taken in the short term is to rebalance tariffs both between passengers and freight and between the upper and lower passenger classes.

- Momentum and early wing:

  For an institution as large as Indian Railways, it has to be expected that the restructuring process will take five to ten years to be completed. Nevertheless, it is crucial to build in "early wins" to provide momentum and inspiration at a time when the destination of the journey still seems unclear for many.

- Participation and communication:

The restructuring process needs to be designed as a careful balance of top down decision making and bottom up change initiative.

The operational transformation carried out on Indian railways has resulted into quantum improvement in running of freight trains. Information technology enabled transformation in the field of passenger ticketing and reservation system also has been a success story. However more involved in deep transformations in the field of organizational size restricting and processes as suggested by various committees have not even been initiated due to non acceptance by stakeholders like employees and unions. The much needed reforms in accounting practices as recommended by the committee also have not been initiated.
However the recommendations have not been implemented.

6. ADB funded an Accounting Reform Project was undertaken in 2006. It was to restructure accounting system facilitating complete accounting separation of the major profit centers anchored on the lines of business. It was to evolve an acceptable accounting architecture together with the framework for chart of accounts that will present IR's financial statements in conformity with the commercial accounting standards internationally adopted in rail industry and also enable restatement of those financial statements into ones that conform to government reporting requirements and in line with the Governments Accounting Standards Advisory Board (GASAB).

2.9 ISSUES FACING INDIAN RAILWAYS

The Rakesh Mohan committee report identified some areas of concerns for viability of IR. Two of the important areas were unsustainable employee costs and cost of market borrowings. The latter was more relevant in 2000-01 when interest rates were still high. Over

the past few years, the rates have come down, and today seeking external funding from various stakeholders through public private partnerships is considered as the way forward.

2.9.1. No Market Segmentation Perspective

IR has yet not evolved a culture of generating its strategies rooted in an understanding of the customer. For this, segmenting the market on key dimensions would be essential. (This paper flags certain approaches towards this.) In a very fundamental way, IR focuses more on originating traffic and implicitly looks at customer service only at the origin. However, transportation is an origin-destination service, and hence servicing at the destination end, and in fact for the entire period that the customer or their goods are with us is essential.

Pricing, provision of infrastructure and services, long term contracting etc. could be driven effectively by appropriate segmentation. It would also be essential to have consultative process with key customers.

2.9.2. Need for Growth in Capacity

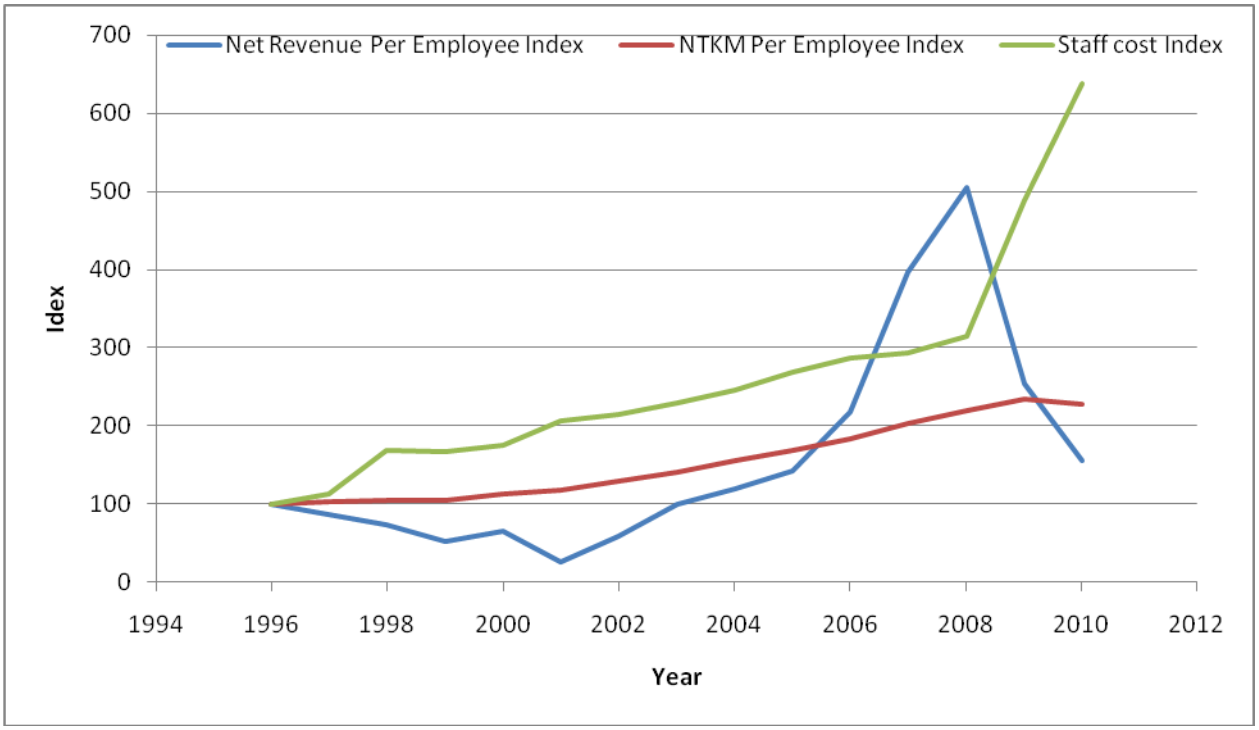
This can be achieved through better capacity utilization and investments in bottle neck sections and new sections like the dedicated freight corridors. Funding from multilateral agencies like ADB to catalyze such investments would be useful. Vision 2020 for Indian railways has emphasized it and strategise as under

- Major augmentation of capacity through doubling and quadrupling of lines, complete segregation of passenger and freight lines on High Density Network (HDN) routes, substantial segregation on other routes, and electrification on busy trunk routes.
- More than 30,000 kms of route would be of double/multiple lines.
- More than 6,000 kms would be quadrupled lines with segregation of passenger and freight services into separate double-line corridors.
- Maximum speed of passenger trains would be raised from 110 or 130 kmph at present to 160- 200 kmph.
- Maximum speed of freight trains would be raised from 60-70 kmph to over 100 kmph.
- Gauge conversion programme would be completed.

- 33,000 kms of routes would be electrified.
- At least 4 high-speed rail projects to provide bullet train services at 250-350 kmph.
- India's National Highway network comprising 2% of the country's road system carries 40% of the traffic and is already under strain. Finding land to meet the ever-rising requirements of road expansion and resources to meet the rising cost of fossil fuels will impose prohibitive costs on the economy.

2.9.3. Unsustainable Employee Costs

Graph given below Fig 2.17, indicates increase in employee cost index (taking 1996 as the base year), net revenue per employee index and NTKm per employee index. It can be seen that the employee cost index has increased at a higher rate as compared to other indexes. The root of the financial problem confronting IR is therefore found in the lack of the adequate productivity increases that are not commensurate with the real wage increases over the time [NCAER, 2001].



(Taking 1996 as the base year)

Figure: 2.17. Comparison of Employee Cost Index

2.9.4. Pricing not based on Economic Rationale

The hike in passenger transport services are not keeping pace with the cost of inputs. Prices of Diesel are going up year after year and implementation of pay commissions have increased staff cost significantly. In spite of this, the freight and fare have not been increased for many years. On the contrary, many new concessions have been started and many subsidized fare schemes have been introduced. On the freight side, prices were increased in past, which resulted in driving the market away from IR. However, more recently, there have been attempts to set the freight rates based on principles of elasticity. Consequently, some rates have come down (POL) while some others have gone up (Iron Ore). The political sensitivity to such increases has prevented the IR from changing to the market situations.

2.9.5. Departmental Structure with no Corporate Perspective

IR is a highly departmentalized organization with the departmental structure running all the way to the highest levels in the Railway Board. This does not lend itself to a corporate perspective and effective generation and dealing of strategic initiatives.

The high degree of centralization in decision making and the relatively low level of autonomy is a great obstacle in growth. In a fundamental way, the political control gets enhanced due to the managerial weaknesses of the departmental structure.

2.9.6. Safety

Indian railway operations should be free of accidents, be it derailment, collision or fire on trains. Advanced technologies in all spheres including track, rolling stock and signaling should be used for this purpose. High-quality training to improve the skills of employees to manage new technology is critical, and steps should be taken to provide the same. Nearly 70% of the fatalities in railway mishaps take place at unmanned level crossings. Today there are around 17000 unmanned level crossings in the coming years not a single level crossing in the country should remain unmanned or unprotected. Here too, advanced technologies should be adopted to meet the challenge. the Indian Railways in this major task. Vision 2020 has talked about Zero Tolerance for Accidents.

2.9.7. Green Railways

Indian Railways are a major consumer of diesel for traction purpose and for electric supply to coaches. Environmental sustainability is an important consideration. Railways should use more of green energy from non-conventional energy sources. Vision 2020 lays down a target to utilize at least 10% of its energy requirement from renewable sources and institute a foolproof eco friendly Waste management system.

2.9.8. Resource mobilization

Railways by nature are a capital intensive industry. Mobilizing resources to finance massive capacity expansion programmers and up gradation of infrastructure is a major challenge. Larger budgetary support from Government is not likely to come Innovative means to involve private capital are necessary. So far efforts through PPP mode have met with only modest success. Projects need to be priorities. Mobilization of resources from Parcel Services, Advertising, Commercial use of Railway Land, and commercial exploitation of Right Of Way etc which have not yet been fully tapped should be enhanced.

2. 10. CONCLUSION

This chapter has attempted to provide a comprehensive review of organizational details, performance and some specific issues concerned to Indian Railways. The rich history of IR and its current organizational structure is detailed. The IR performance review in terms of financial and operational performance and human resource aspects were analyzed. It is seen that there have been periods of good performance followed by period of not so good years. The financing of Railway projects through various funds were analyzed. The details of key cost components indicated that employee cost which is the largest component has increased rapidly over the years disproportionate to increase in revenues. By analyzing the performance of IR from time to time in terms of financial, human and operational performance vis-vis demand on it, the need for transformation was felt and government of India appointed various committees from time to time. These transformation efforts made by IR were studied

however it was seen that the recommendations of the various committees setup for this purpose had not been implemented. The efforts were made through performance and other documents like vision 2020, issues being faced by IR were identified. It is also observed that railways as an organization as unique characteristics of not being purely as not a profit driven economic organization. It is being used as a vehicle for development of underdeveloped areas, to meet strategic requirements and achieve inclusive growth disregarding financial concern.

CHAPTER 3
REVIEW OF LITERARURE

3.0. INTRODUCTION

Analysis of Indian Railways (IR) indicates that the organisation is undergoing various kinds of organisational changes. As organisations undergo a metamorphosis, a complex network of changes takes place, both internally and externally. The internal changes that take place must be congruent so that the organisation is capable of functioning in an efficient and effective manner externally. A change from, one form of the organisation to other, requires behavioural changes (Kets de Vries, 2001). In this process the organisational culture will also have to be transformed in order to ensure that changes are sustainable, as new behaviours will be needed and old paradigms transformed into new ones. Any attempt to change culture may be described as a radical organisational transformational effort as new underlying belief patterns resulting in behavioural change are implied.

Organizational changes can be gradual or radical, continuous or discontinuous, incremental or quantum in nature. In order to reap the benefits of diversity in the Indian Railways (IR) it is essential that all encompassing transformation take place within organisation. Any such attempt to instil a climate in which diversity is valued may, thus, be classified as an organisational transformational attempt. Chakravarthy, (1996) indicated that incremental change keeps constantly happening in the organization, its influence may be in felt in the long term. But the other transformational change has the capability to show its impact on the organization in the short as well as the long term. Kets de Vries (2001) mentioned that dealing with discontinuous change is far more difficult than dealing with incremental changes, and that discontinuous change usually comes at a high price in the form of human capital. The creation of a culture of inclusion that leverages diversity may also be described as a radical change effort (Miller & Katz, 2002). Many researchers (Mintzberg & Westley, 1992; Tushman, Newman & Romanelli, 1986) have defined organizational transformation in terms that were relevant to their respective contexts.

With IR being at the forefront of Indian transport sector, it is highly pertinent for IR to be ready for the increasing demands of its customers and also competition from others like road and air transport. IR must constantly transform itself to be able to keep up with the pace of

their environment. In the view of multi dimensionality nature of IR it is proposed to conceptualise the different perspectives on the topic of the thesis, as these different perspectives pertain to reactions to change caused by organisational transformation on individual and collective level, rather than to explore specific approaches in depth or argue their applicability or shortcomings. As the study on the theme of organisational transformation progresses a framework for exploring edifying changes within organisations emerges. Organisational transformation implies in-depth change in the way that constitutients of the organisation behave.

IR faces recurrent changes to their procedures in terms of technological advances, competition, and the need to improve performance. To fruitfully implement changes, IR must extend and administer a transformation strategy that integrates structure, procedures and process, and most importantly human resources. Given that organizational structures and processes are integrated, one cannot be changed without changing the other, and both are influenced by management and government policy.

This chapter explores the literature on the models of organizational change, organizational transformation and issues related to resistances and competencies that are relevant to understanding the development of, and interpreting the results of this study.

This chapter captures and reports relevant theory related to the research study. The purpose of this review is to further detail the relevance of the research study and to offer basis for supporting research objectives. Also summarize the existing theories on the organizational transformation for further evaluation of the research outcome and for designing the contents and the structure of the construct. Section 3.1 presents the literature review related to organizational change and transformation. Section 3.2 details the review on organizational transformation influence on organization's behavior and the organizational system and structures. Section 3.3 present approaches to organizational change and transformation. Section 3.4 deals studies related to strategic frameworks. Section 3.5 provides the discussion and research gaps. Section 3.6 ends with conclusion.

3.1 ORGANIZATIONAL CHANGE AND TRANSFORMATION

For becoming familiar with the concept, it is relevant to have a look at the existing knowledge of changing organizations. It forms one basis for both justification and evaluation of the research. Reviews presented in this chapter are later reflected against the contents and the structures of the designed construct. Organizational change is a new way of organizing and working, involving the alternation and transformation of the status in order to survive in the environments (Hage, 1980; Dawson, 2003). The environments act as source of forces for change that organizations have to adhere (Melin, 1989; Scott, 2004).

Van de Ven and Poole (1995) defined that organizational change is the observation of difference over time in one or more dimensions of an entity. Burnes (1996) noted that organizational change refers to understanding alterations within organizations at the broadest level among individuals, groups, and at the collective level across the entire organization.

According to French and Bell (1999), Goodstein and Burke (1997), Kanter et al. (1992) the need for change may originate from several different sources, both from inside and outside the organization. External forces includes regulators, competitors, customers, and technology whereas internal pressure may come from obsolete services and products, new market opportunities, new strategic directions, and an increasingly diverse workforce. In addition, Lippitt et al. defined in 1958 that the decision to strive for change may either be made by the organization itself, after experiencing pain or discovering the opportunity for a better future or by an outside change agent that takes the first initiative towards a change effort.

Organizations change primarily because of external pressure rather than internal desire to change (Goodstein and Burke 1997). The organizational change is triggered with the perception or experience of environmental threat, loss or opportunity. To summarize, change is needed when current performance and the way of operation of a business is no longer on a par with the requirements from inside the company or with the environment and the competitive situation.

Goodstein and Burke (1997) discuss the separation of different kinds of changes by claiming that organizations can change on three different levels. That is, changing the individuals, i.e., their skills, values, attitudes and behavior; structures and systems, that is reward systems, reporting relationships and work design and finally climate or interpersonal style. According to Turner (1999), change introduced may either be technical, i.e., change to the technology or physical environment, or cultural, i.e., changes to the skills, attitudes, values, processes and systems or the structure of the organization.

Salminen (2000) points out that it is mainly the boundaries between academic disciplines and different research traditions which have caused this somewhat artificial separation of different kinds of changes. "Social scientists have studied changes in human organizations from a people perspective, and operational changes have by and large been considered from the viewpoint of industrial engineering or operations research.

Dawson (2001) reported that organizational change is 'new ways of organising and working'. It involves the alternation and transformation of the status in order to survive in the environments. Hornstein (2001) indicated that organization should be able to adhere to different organisational change by responding, harnessing or initiating and provoking organizational change approach. Drucker (2002) designated that an organisational change requires the willingness and ability to transform what is already being done just as much as the ability to do new and different things through proper communication, marketing abilities and skills and also technological skills. Therefore a set of required policies and practices that make the present create the future should be considered.

According to Moran & Brightman (2004) that the management of organizations should also consider organisational change to be able to cope with the needs of their target market in the global environment; nevertheless, organisational change also cause change and transformation in politics of power and control to changes and transformations in the departmental level.

Researcher's exploring organization change through a cultural or social-cognition perspective would examine not dimensions but values. Because the language relating to change differs, a common language is difficult to find. Definite common concepts such as forces or sources of change and order of change are noted within key sources of literature review of change (Burnes, 1996; Goodman, 1982; Levy and Merry, 1986; and Rajagopalan and Spreitzer, 1996). As these researchers are studied organizational change those aspects became significant points of concern in their analyses.

Different classes of theories of change support in understanding, describing, and developing insights about the change process. These are different according to level impact, scope, speed, focus, structure, nature, etc. Consequently, there are several different types of organizational changes in the literature. Burke (2008) tried to show the language that researchers and practitioners currently use considering the types of change as: Revolutionary versus Evolutionary; Discontinuous versus Continuous; Episodic versus Continuous flow; Transformational versus Transactional; Strategic versus Operational; Total system versus Local option. These classifications are not comprehensive, and are intertwined. Different types require different methods and techniques. There is diversity considering magnitude and pace of change that is involved in the change process, as well as conceptual difference in terms of both the content and how the change occurs. The most important issues for understanding organizational changes are content and process issues. Sufficient research has been conducted on organizational change to make it clear that, in most situations, both content and how the change transpire factors ought to be evaluated. Barnett, & Carroll, (1995) reported that theories and analyses of organizational change often tend to address only one dimension.

The radicalness or thoroughness of change may also separate different change efforts. Often fundamental, large-scale changes inan organization's culture and strategy are separated from incremental changes, evolutionary changes, fine-tuning, fixing problems, making adjustments and modifying processes; that is, implementing modest changes that improve an organization's performance yet do not fundamentally change the organization. Fundamental changes are also referred to as revolutionary or radical change, transformation, turnaround,

refocus or reorientation (Goodstein and Burke 1997); (Barker 1998); (Buhanist 2000); (Mintzberg and Westley 1992); (Stace and Dunphy 1994); (Tushman and Romanelli 1985). Change may also be deliberate, i.e., planned or accidental, in other words unplanned. It can be fast or slow, it may affect many elements of the organization or only a few. (French and Bell 1999); (Cummings and Worley 1993)

Mohrman (1989) stated that large scale organizational change as organizational transformation, adurable change in the character of an organization that significantly alters its performance (Whitsett, & Burling, 1996). According to Wischnevsky, & Damanpour, (2006), organizational transformation is a transition between organizational states that differ substantially and it occurs over a period of years through a complex process involving a series of stages (Davidson, 1994).

Kilman and Covin (1989) defined transformation as a system-wide change in an organization that demands new ways of perceiving, thinking and behaving by all its members. It is termed as a type of radical change, because the organizational transformation is about pursuing new and different strategies, structures, processes, rewards, capabilities and resources, supported with new and different core values – new culture.

Blumenthal and Haspeslagh (1994) provided an improvement form of definition of transformation as an operational improvement, a corporate self-renewal program, and a strategic transformation. According to them the operational improvement is based on the re-engineering business processes to restructure ideas, move organizational boundaries and change work and information flow. Corporate self renewals seek to create organizational relationships and cultural processes that will allow the company to continuously adapt to changing situations thus avoiding performance gaps in the future. Finally, strategic transformation represents the process of re-establishing competitive advantage in the marketplace by recreating a productive match between core competencies and market opportunities.

Many problems are complex because change initiatives frequently combine these three

aspects in an undifferentiated transformation program. However, there should be a hierarchy among the three types (Lemak, Henderson, & Wenger, 2004).

Tolbert & Hall (2010) specified that Organizational transformation is said to be a change in some core property of the organization - a change in mission, core values, power, status, culture, structure, strategy, systems, procedures, interaction patterns, personnel and power distributions (Romanelli & Tushman, 1994; Tushman, Newman & Romanelli, 1986), organizational form (Forte et al, 2000), the current way of doing things in an organization (Nutt, 2004), vertical information flow direction, horizontal process designs and performance measures (Orgland & Von Krogh, 1998), culture, skills, teams, strategy-structure and reward system (Kilmann, 1995). Organizational transformation also includes a change in organizational orientation (Greenwood & Hinings, 1996; Miller 1982, 1990), employee behaviors like trust, cooperation, learning and innovation (Chakravarthy, 1996) or how the employees perceive, think and behave (Kilmann, 1995, Muzyka, Koning & Churchill, 1995). Greenwood & Hinings (1996) and Kilmann (1995) placed emphasis on the process of organizational transformation, which cover the speed of the change and the extent of its impact is studied by Greenwood & Hinings (1996); Kilmann (1995) and Mintzberg and Westley, 1992).

The research studies also include Revitalization (Mintzberg & Westley, 1992; Chakravarthy, 1996; Gouillart & Kelly, 1995), Renewal (Gouillart & Kelly, 1995; Kilmann, 1995; Muzyka, Koning & Churchill, 1995), Reorientation (Nadler & Tushman, 1989; Tushman & Romanelli, 1986), Reduction in size (Sutton & D'Aunno, 1989; Tushman & Romanelli, 1986), Recreation (Nadler & Tushman, 1989; Tushman & Romanelli, 1986), Regeneration (Muzyka, Koning & Churchill, 1995) and Rejuvenation (Baden-Fuller & Stopford, 1994), Turnaround (Mintzberg & Westley, 1992), Reengineering (Ascari, Rock & Dutta, 1995; Hill & Collins, 2000; Muzyka, Koning & Churchill, 1995; Orgland & Von Krogh, 1998), Restructuring (Chakravarthy, 1996 ; Gouillart & Kelly, 1995; Muzyka, Koning & Churchill, 1995; Orgland & Von Krogh, 1998), Reframing (Gouillart & Kelly, 1995) and Radical new positioning (Gareis, 2010). All these studies provides nomenclatures that go a distance in describing the different ways that organizational transformation works,

Some researchers used to discuss the importance of organizational change, but "organizational transformation" has become the latest catchphrase. Tosey & Robinson (2002) in their review research paper noted that the term has many different connotations and is used to refer to a range of change efforts that meet various ends and that are achieved through various means. At the same time, it is clear that transformation is not just a synonym for change. Change is an overarching term referring to the process or result of becoming different, while transformation is a specific kind of change.

According to some researchers Burke & Litwin, (1992); Cacioppe (2000); Dehler & Welsh, (1994); Gilley et al., (2009); Tosey & Robinson (2002) that "transformations" tend to refer to changes that are more radical and of a larger magnitude. These changes are not incremental and transitional changes that involve merely fine-tuning the status quo. Instead, they are discontinuous changes or paradigm shifts that involve redefining the organizational values, purpose, attitudes and beliefs, and they frequently require a qualitatively different set of organizational habits, such as in terms of strategy, leadership and culture. These qualitative changes in turn bring about changes to existing organizational systems, structures, management practices, organizational climate and these are what Burke & Litwin (1992) termed transactional changes.

3.2 ORGANIZATIONAL TRANSFORMATION: ORGANIZATION'S BEHAVIOR, ORGANIZATIONAL SYSTEM AND STRUCTURES

The review of the literature also exposes that successful organizational transformation requires changes in the organization's behavior and the organizational system and structures.

The organizational life cycle theory was corroborated by many researchers. Hayes & Wheelwright (1979) proposed that once organizations evolve over time they encounter opportunities and constraints, and must therefore acclimatize superior management systems and controls, and design and use the required organizational structures as well as develop measures in order to determine structural differences quantitatively (Pugh, 1973).

Kilzer & Glausser (1984) states that difficulties occurred can be successfully managed through watchful methods, time and growth planning, contingency planning, tactical planning, maintaining an operating budget, and equitable treatment of all stakeholders. Change has brought certain challenges for management in terms of transcending and adjusting their behavior and skills. Tice (2007) elucidates that a great leader require skills that are "tailored to today's environment." These leaders must behave in a manner that is exemplary to staff (Kotter, 2007; Tice, 2007). Tice (2007) states that leaders must be adaptable, self aware, purposeful, decisive, and collaborative, possess people skills, foster innovation, and execute their strategy (Tice, 2007).

Eggers (1999) identifies that the factors that can be learned and measured that give rise to growth are competitive advantage, market size, organizational culture, psychological characteristics of the leader, and the ability and capacity to manage growth. Organizational transformation strategies therefore be aligned with the organization's internal and external environments. They must be reactive, easily adapted to changing competitive environments, based on informed choices, and incorporate scenario planning for multiple contingencies.

Scott & Bruce (1987) observe that managers need to engage in strategic planning in order to develop a system of management that transitions with company growth. Once the management identifies the organist ion's functions, promotes and trains employees, and provides opportunities for skill development, the organization will grow.

Olivier (2004) reiterates that Organizational growth is based on talent management and the leader's theoretical ability. Therefore to experience the organizational growth leaders must develop their management skills (Stevens 1988), apply apposite management styles at appropriate time (Johnson, 1989; Olivier 2004; Waldrop, 1987), and also make adjustments to their conduct and approach.

Churchill and Lewis (1983) stress that change and transition also require managers to adjust their individual goals, operational abilities, managerial abilities, and strategic abilities.

Excellent managers are characterized as, administrators, entrepreneurs, and integrators. The extent to which they utilize certain characteristics depends on the circumstances. According to Johnson (1989) individual's needs and those of the business determine the most appropriate management style

Greco (1996) notes that organizations must be able to understand the diverse psychological phases management leaders experience which are likened to the stages of the grieving process. Successful organizations are not based on their leader's competence, experience, and credentials alone (Osborne, 1994; Fenn, 1996). Organization's growth can be attributed to a team of employees (Fenn, 1996), its business concept, and its ability to generate capital (Osborne, 1994; Churchill & Lewis 1983; Eggers, 1999).

Organizational transformation efforts require managing changes in behavior of personnel also. An organization must prepare its personnel for change so they are capable of shifting their tasks. These changes can be initiated by leaders in terms of communicating the organization's vision and viable strategies (Ford, 2005)

Baum (1998) in his research has found that strong leaders are able to reinforce their values through vision communication which in turn affects organizational-level performance. Transformations may also be reached through strong corporate culture, and facilitating employee work-related learning (Lang, Wittig-Berman & Ursula, 2000) which develops employee cognition, skills, behaviors, and attitudes. Hayes and Wheelwright's (1979) study reports that organizations need to keep current not only on technological developments and maturing markets but also maintain a learning curve in the organization.

Structural changes are growth strategies that emerge out of crisis as well as situational gaps. Scott and Bruce (1987) indicated that each distinct stage of growth for a business is associated with a crisis end. O'Neill (1983) and Olson & Terpstra, (1992) stated that if organization to succeed from this crisis, it must develop effective strategies in the form of new structures and systems to accommodate the effects of growth.

Studies indicates that size of the organization determines its structure, while a level of dependence on other organizations and social environments will most likely cause a concentration of authority (Pugh, Hickson, Hinings & Turner 1969a).

Olson and Terpstra (1992) argue that organizational structural changes are the result of the firm's transition from first satge to the growth stage of development. That stage is characterized by complexity, formalization, and decentralization. We can compare this to the study of Pugh (1968) which identifies six areas of organizational structure which include specialization, standardization of control and workflow, formalization, centralization and configuration. These research findings supports four structural dimensions like structuring of activities, line of control, concentration of authority, and size of supporting constituents.

Churchhill & Lewis (1983) reveals that the structure of a small organization is largely influenced by resource availability and in addition to technology, while the size of the workforce in a large organization is influenced by technology (Pugh, Hickson & Pheysey 1969b).

3.3. APPROACHES TO ORGANIZATIONAL CHANGE AND TRANSFORMATION

3.3.1 Change Models

For the purpose of gaining a better understanding of organizational transformation as change type we turn to its early use as a synonym for second order change (Levy & Merry, 1986; Lichtenstein, 1997, Torbert, 1989). This perspective probably originated from the definition by Levy and Merry (1986) wherein organizational transformation is effectively considered synonymous with second-order change: "second-order change or organization transformation is a multi-dimensional, multi-level, qualitative, discontinuous, radical organizational change involving a paradigmatic shift." The descriptive parameters included in this definition capture the features ascribed to most of the change types that have surfaced over the past three decades, for example, deep change, discontinuous change, gamma change, radical change, revolutionary change, and so forth (cf. Van Tonder, 2004a). This definition addresses the scope and inherent nature of transformational change, (discontinuous,

qualitative) and indicates that its effect (impact) is at the organizational paradigm level i.e. a change in the tacit worldview or meaning structures held by the organisation and is therefore essentially a cognitive change. Transformation as depicted however does not consciously account for the notion of "time" (e.g. the pace and duration of the onset and dissipation of the transformational change), nor does it consider the potentially influential role of context.

Many contemporary researchers nonetheless subscribe to concepts of transformation that are closely related to the content of Levy and Merry's (1986) definition. Chapman (2002) for example equates transformation consciously to second order change (cf. Watzlawick, Weakland & Fisch, 1974) and gamma change (cf. Golembiewski, Billingsley, & Yaeger, 1976) while Thorne (2000) draws on the same change concepts (by these authors) to define transformation.

Transformation as fundamental or "state" change Despite the expansive and all-encompassing view offered by Levy and Merry's (1986) earlier definition, scholars continued to attach their own specific meanings to the concept of transformation. A sense of this diversity in perspective is evident from the many definitions that have been proposed. Contrast, for example, King's (1997, p. 63) view that organizational transformation is a planned change designed to significantly improve overall organizational performance by changing the majority of people in the organization, with that of Levy and Merry (1986) or that of Marshak (1993) and Hill and Collins (2000). Both Marshak (1993) and Hill et al. (2000) refer to transformational change as a transfiguration from one state to another. The latter further suggests that transformation comprises a series of transitions from one state to another (that entail evolutionary and revolutionary zones), while Marshak (1993) emphasizes the fundamentally different nature of the successive states of being. These definitions very closely approximate the working definition of change presented earlier, but key to their meaning is the incorporation of the principle of a change in "state". It can also be deduced that the organization's state of being reflects its manner of existence and therefore functioning, and consequently transformative change signifies a change in the organization's modes of existence and functioning. The substantive nature of this change is suggested when the author details the change as one that is fundamental, indicating change in the

organizational core and hence its modes of existence and functioning. Nutt and Backoff (1997) concluded from an analysis of different transformation definitions that transformation is fundamental change, but also the development of higher levels of complexity, chaotic change, cultural metamorphosis, and so forth.

3.3.2. Content of Organizational Transformation

To build a theoretical framework for IR the organizational transformation literature is reviewed and noted that Armenakis (1999) theoretical and empirical studies on organizational transformation are divided into the four major themes or issues of: content issues, which are mainly focused on the substance of contemporary organizational changes; contextual issues, which are primarily centered on forces or conditions present in organization's external and internal environments; process issues, which are concerned with actions undertaken during the establishment of an intended change; and criterion issues, which tackle outcomes usually evaluated in organizational change. In this section the analysis focused on the content of transformation. Strategic change focuses on changes in vision and business goals and objectives (Gersick, 1994). Organizational transformation and change literature highlights vision (Vollman, 1996; Trahant et al, 1997), strategy (Pettigrew and Whipp, 1991; Kilmann, 1993 (from Leavitt, 1965); Vollman, 1996; Trahant et al, 1997; MacIntosh and MacLean, 1999, 2001; McHugh et al, 1999), organizational structure (Kilmann, 1993 (from Leavitt, 1965); Trahant et al, 1997; MacIntosh and MacLean, 1999, 2001; Wischnevsky, 2004), culture (Kilmann, 1993 (from Leavitt, 1965); Blumenthal and Haspeslagh, 1994; Vollman, 1996; Trahant et al, 1997), infrastrucutre (Kilmann, 1993 (from Leavitt, 1965); Vollman, 1996; Trahant et al, 1997; MacIntosh and MacLean, 1999, 2001; Wischnevsky, 2004) and processes (Davidson, 1993; Venkatraman, 1994; Vollman, 1996) as the content of transformation. The dynamic capabilities literature discusses changing resources and competencies within the organization (Teece et al, 1997; Eisenhardt and Martin, 2000; Helfat and Peteraf, 2003). Configuration, as discussed by Miller (1996) is concerned with the integration of states of strategy, structure and systems of an organization to form archetypes, and changing these states results in a transformation of standard.

The following Table 3.1 recapitulates organizational transformation literature which have examined the content of transformation. The proposed transformation elements of each model are listed in this table. It became difficult to identify any studies that investigated the content of transformation in Indian Railways exclusively, and so proposes that the components listed below can collectively be described as the content of organizational transformation in this context.

Table 3.1. : Content change Elements derived from Organizational Content Change or Transformation Studies

Researcher's Reference	**Component (s) of the Content with respect to Organizational Transformation**
Leavitt's Model, 1965	Tasks Task, Structure, Technology & People
Likert System Analysis, 1967	Motivation Motivation, Communication, Interaction, Decision Making, Goal setting, Control and Performance
Nadler & Tushman, 1980	Environment Resources, Formal & Informal Organizations, Outputs, Task, Strategy, History,
Mc Kinsey. 1982	Structure Strategy, System, Skills, Style, Staff, Shared Values
Peters & Waterman, 1982; Vollman, 1996; Miles, 1997; Trahant et al, 1997; Mintzberg et al, 1998	Vision Purpose, Values and/or Desired state of the Organization
Peters & Waterman, 1982; Pettigrew and Whipp, 1991; Kilmann, 1993 (from Leavitt, 1965); Miller, 1996; Vollman, 1996; Miles, 1997; Trahant et al, 1997; Mintzberg et al, 1998; MacIntosh and MacLean, 1999, 2001; McHugh et al, 1999; Galbraith et al, 200;1 Bititci, 2007	Strategy High level objectives for the organization to meet the desired Vision, Value Proposition, Value Streams and Operating model
Peters & Waterman, 1982; Kilmann, 1993 (from Leavitt, 1965); Miller, 1996; Miles, 1997; Trahant et al, 1997; Mintzberg et al, 1998; MacIntosh and MacLean, 1999, 2001; Galbraith et al, 2001; Wischnevsky, 2004; Bititci, 2007	Organizational Structure Organization operations, , Governance and Employee Structure
Peters & Waterman, 1982; Kilmann, 1993 (from Leavitt, 1965); Blumenthal and Haspeslagh, 1994; Vollman, 1996; Miles, 1997; Trahant et al, 1997; Mintzberg et al, 1998; Galbraith et al, 2001; Bititci, 2007	People and Culture Employees Behavior, Systems, and the roles and Responsibilities of Employees

Researcher's Reference	Component (s) of the Content with respect to Organizational Transformation
Burke and Litwin, 1992	Environment Leadership, Mission and Strategy, Culture, Management Practices, Structure, System, Work Group Climate, Motivation, Skills, Needs and Values, Performance
Peters & Waterman, 1982; Vollman, 1996; Miles, 1997; Mintzberg et al, 1998; Eisenhardt and Martin, 2000; Bititci, 2007	Competencies The skills, Experience, and Abilities of the Individuals within an Organization
Peters & Waterman, 1982; Kilmann, 1993 (from Leavitt, 1965); Miller, 1996; Vollman, 1996; Miles, 1997; Trahant et al, 1997; Mintzberg et al, 1998; MacIntosh and MacLean, 1999, 2001; Eisenhardt and Martin, 2000; Wischnevsky, 2004	Systems and Resources Technology, Management Systems, Infrastructure and Financial Resources
Davidson, 1993; Venkatraman, 1994; Vollman, 1996; Mintzberg et al, 1998; Galbraith et al, 2001; Bititci, 2007	Processes Management, Operational and Support Processes for delivering goods and services to the customer
Trahant et al, 1997; Bititci, 2007	Performance Measures Strategy, Organisation, People, Process, Systems and Resources, Leadership,

3.3.3. Addressing Process

In literature various models are presented that focus on change as a process comprising different phases or steps. The different theories which exist to describe the type of transformation process have been explain as the planned approach, emergent approach, processual approach, contingency theory, punctuated equilibrium, and continuous transformation. These theories are inextricably connected to the process of managing change and transformation, the boundaries between them are blurred when considering their application to practice and they do not appear to be mutually exclusive (Collins, 1998).

Lewin's (1951) change management theory is based on a model of unfreezing, changing and refreezing. The characteristics of Lewin's planned approach explain the stable state being changed to desired new stable state through defined steps. It is directive and top-down. For many researchers this framework still constitutes the theoretical foundation of planned change (Kreitner & Kinicki, 2004). Schein (1987) improved on Lewin's model by specifying the mechanisms at work in each stage. Lippet, Watson and Westley (1958) expanded the three stage model into a seven stage-model. Kolb and Frohman (1970) and Burke (1994) also produced similar models. Although these models are helpful in describing change in isolation it is often not possible within organizations to take such a simplistic view of systemic problems.

Kilmann (1989) specifies critical leverage points for organizational change, namely, to initiate the programme, to diagnose the problems, to schedule the "tracks", to implement the "tracks" and to evaluate the results. "Tracks" refer to focus points for organizational change, namely, the culture, management skills, teambuilding, strategy-structure and reward-systems.

Kotter (1990) identifies eight steps in the change phase model that should be followed in an exact order in order to ensure sustainability (Kotter, 1990; Kotter & Cohen, 2002). These steps include: establish a sense of urgency, create a coalition, develop a clear vision, share the vision, empower people to clear obstacles, secure short-term wins, consolidate and keep moving, and anchor the change.

Kanter et al, (1992) prescribed an emergent process approach which has a characteristic of continuous process of adapting to shifts in internal and competitive environments. It is participative and led from wherever the change is needed.

Kanter (1997) presents largely anecdotal papers and did not provide a complete change management framework. Miller and Katz (2002) identified six strategic levers for organizational change, which are similar to the eight steps of Kotter (1990). Miller and Katz (2002) also stress the importance of the education and accountability of the supervisors, the value of talent, and the need to create a culture supportive of the change initiative.

Dunphy & Stace (1993) proposed a Contingency process approach. In this process type is dependent upon the contingencies of the situation when the change is required. Appropriate approach should be chosen based on situational factors.

Dawson, (1996) and Kotter (1996) suggested a Processual process approach. Process occurs in a complex environment and follows a series of sequential steps that take into consideration the complexities of the business context. Directive but involving a team, top-down.

Gersick, (1991) Romaneli and Tushman, (1994) defined an Punctuated Equilibrium process change approach Organizations incrementally evolve but experience intermittent, revolutionary changes that radically change them. The frequency of the revolutionary changes depends upon the dynamism of the competitive environment.

Greenwood and Hinings (1996) and Brown and Eisenhardt (1997) adopted Continuous transformation in which organizations are in a constant state of radical change in order to remain competitive.

The systems model of change in Kreitner and Kinicki (2004), namely, that of input, transformation and output, does not take into account the human impact to the necessary depth. Senge et al. (2004) mentioned that most change initiatives do not fail because they lack grand visions and noble intentions. They fail because people are not able to see the reality they face. Senge, et al (2004) identifies seven core capacities needed for transformation. Each capacity is seen as a gateway to the next activity.

Nel (2003) explains the process of change agents within an organization and indicated that, initially, only a few "change mavericks" are needed. What is required are the maverick qualities of non-conformance, imagination, independence, belligerence and divine dissatisfaction with the status quo (Fischer & Boynton, 2005). Mohrman and Lawler (2003) discovered that successful leaders did not simply command strategic change; but, instead, they ensured integration within organizational designs to facilitate the changes.

Large organizations need a modicum of predictability in order to function. It is paradoxical that self-renewal is, ultimately, necessary if transformation is to be successful (Hulbert & Pitt, 1996). According to Greiner (1998), the greatest resistance to change often appears at the top because revolution means that those units which are under the control of each senior executive will either be transformed or eliminated. Long-term, sustainable change will not be achieved by hiring a consultant and implementing generic solutions. The researcher does not agree with the notion of aggressively promoting and marketing a management idea/theory, as described by Huczynski (1992). Human resource practitioners and business leaders should help to unleash tacit knowledge within the organization so that thoughts and insights manifest in wisdom. Leaders should ensure that they are not perceived as the "messiah" or rescuer, but that the competencies be transferred to the system for future use (Cilliers, 2001).

Miller and Vaugh (2001) discuss the dynamic that situations are not static, but, rather, that a milieu is active and in constant evolution. The researcher is of the opinion that management must remain supremely aware of the fact that the most effective answer at the present moment might not be the appropriate response at a later stage. The interplay between the changing external environment and the internal world always leads to continual changes in both worlds.

3.3.4. Addressing Technology

Following Grant and King (1978), Hax and Majluf (1984), and Hofer and Schendel (1978), strategic management can be viewed in terms of a hierarchy of three levels of strategies: corporate strategy (concerned with the portfolio of and interrelationships among businesses), business strategy (focusing on developing a strategy that maximizes firm-specific comparative advantages to best compete in the marketplace), and functional strategy (reflecting efficient allocation of resources allocated to the particular function). Within this hierarchy, I/T strategy is at the functional level, with a charter of efficiently allocating its resources to best support the chosen business strategy. Thus, within these two roles, I/T strategy reflects a functional, efficiency orientation (King, 1978).

In contrast, the competitive role represents a significant point of departure. Extending beyond internal, efficiency focus, the capability now exists for organizations to deploy new I/T applications that leverage information and technological attributes to obtain differential sources of competitive advantages in the marketplace (Cash and Konsynski, 1985; Copeland and McKenney, 1988; McFarlan, 1984; Venkatraman and Kambil, 1990). Increased attention is being paid to the potential role of I/T to influence structural characteristics of markets (e.g., demons and Row, 1988) as well as shape the basis of competition. It is becoming increasingly clear that a limited consideration of the first two roles for I/T in modern corporation is sub-optimal with potentially dysfunctional consequences.

More importantly, the emergence of the competitive role has significant implications for organizational transformation. This is because the mere superimposition of powerful I/T capabilities on the existing organizational structure and processes is unlikely to yield superior competitive benefits. Management in the 1990s (Scott Morton, 1990) that successful organizations can be distinguished by their ability to leverage I/T capabilities to transform their businesses (structures, processes, and roles) to obtain new and powerful sources of competitive advantages in the marketplace. While we are on the threshold of the competitive role, we also note that the existing frameworks are limited in terms of their ability to provide fundamental insights and guidance. The administrative role is supported by frameworks such as: Critical Success Factors (Rockart, 1979; Davis, 1979), while the second, operational role is supported by frameworks like: Business System Planning (IBM Corporation, 1981) or Value Chain analysis (Porter and Millar, 1985). However, insights for leveraging the competitive role, being sufficiently different from the other two, cannot be obtained from the above frameworks.

Nevertheless, several frameworks have been proposed to address the challenge of recognizing the competitive role of I/T. These include: articulation of different levels of impact of I/T in the marketplace; specially McFarlan's (1984) adaptation of Porter's competitive strategy framework to a context characterized by the deployment of I/T applications; Rockart and Scott Morton's (1984) adaptation of Leavitfs (1965) organization theory model; as well as other frameworks rooted in a set of convenient dimensions

(Hammer and Mangurian, 1987). Based on a general assessment of these frameworks (for a systematic approach to organizing these frameworks, see Earl, 1988), we argue that they are useful for describing and highlighting the emerging interconnection between I/T capabilities and organizational actions, but they fail in their lack of articulation of the fundamental logic and rationale for exploiting I/T capabilities as well as the complexities of the organizational transformation required to leverage technological capabilities. More specifically, they fail to simultaneously address the business (external) and organizational (internal) requirements of transformation enabled and shaped by new and powerful I/T capabilities. This work aims to address the need by offering a model to link organizational transformation and the exploitation of I/T capabilities in its competitive role.

3.4 STRATEGY PROCESS FRAMEWORKS

Great strategies are worth nothing if they cannot be implemented (Okumus and Roper 1999). It can be extended to say that better to implement effectively a second grade strategy than to ruin a first class strategy by ineffective implementation. Less than 50% of formulated strategies get implemented (Mintzberg 1994; Miller 2002; Hambrick and Canella 1989). Every failure of implementation is a failure of formulation.

The utility of any tool lies in its effective usage and so is the case with strategy. Strategy is the instrument through which a firm attempts to exploit opportunities available in the business environment. The performance of a firm is a function of how effective it is in converting a plan into action and executing it. Thus implementation is the key to performance, given an appropriate strategy.

In literature, implementation has been defined as "the process by which strategies and policies are put into action through the development of programs, budgets and procedures" (Wheelan and Hunger pp15). This involves the design or adjustment of the organisation through which the administration of the enterprise occurs. This includes changes to existing roles of people, their reporting relationships, their evaluation and control mechanisms and the

actual flow of data and information through the communication channels which support the enterprise (Chandler 1962; Hrebiniak and Joyce 2005).

The field of Strategic management has grown in the last thirty five years developing into a discipline in its own right. Borrowing extensively from Economics and Social sciences, it is still fragmented by the presence of number of distinct schools of thought, diversity in underlying theoretical dimensions and lack of disciplined methodology. The fragmentation is due to high degree of task uncertainty and lack of coordination in research —a result of lack of uniformity and focus between the strategy field, its base disciplines and practitioners (Elfring and Voelberda 2001 pp 11).

Strategy as a field of enquiry developed from a practical need to understand reasons for success and failure among organizations. This led to a focus on overall performance and on the top management. The works of Chandler (1962) and Andrews (1971) created a view that strategy is made at the top and executed at the bottom, further reinforcing the fields focus on the top management while implementation was seen as secondary (Floyd and Woolridge 1996).

The present context for strategic management has been described as hypercompetitive (D'aveni 1994) which ensures that sustained advantage is transitory. Under these circumstances, strategy and form of organization need to be continuously assessed for appropriateness. Thus fast paced change makes strategy dynamic in character. Learning has become a key attribute along with organizing of knowledge resources. Under such circumstances, strategy formulation and implementation are viewed as intertwined sub processes in the strategy process.

Strategy research has also undergone changes paralleling these changes. Starting with longitudinal process oriented studies of Chandler (1962) and Mintzberg (1978), it shifted to use of quantitative methods which were cross sectional in nature. As the legitimacy of the field grew, and with advances in research methods along with liberal interjections from social sciences, the re emphasis on processual studies has emerged (Pettigrew et al 2002).

The development of the now in vogue – strategy process research—can be traced to Europe, where attention was drawn to the role of power as an influence on strategy outcomes (Pettigrew 1973). The role of culture was probed and later the combined effects of culture and power were studied (Pettigrew 1985).

A series of large scale empirical studies (Pettigrew and Whipp 1991, Pettigrew et al 1992) developed a process approach which combined the content, process, context of change with longitudinal data collected at multiple levels of analysis, thereby introducing the element of time into the study and allowing for multiple levels of analysis but integrated. Thus process research has opened up the firm's internal processes for study, and given an impetus to the role of time and dynamics in addressing issues of strategic choice and change. Process research has been fragmented, characterized by limited theory building and empirical testing (Pettigrew et al 2002).

Thus it can be seen that the evolution of research on strategy implementation is directly linked with the evolution of strategy research and the emphasis on implementation has been seen to be dependent on the dominant approach (perspective) guiding a researcher.

The core of the strategy process including implementation involves decisions and actions. Decision making is the rational application of knowledge to a choice problem (Simon 1976). It involves seeking answers to questions such as what are the alternatives, what are the consequences of each alternative, how desirable are the consequences and what criteria to apply to evaluate the alternatives. Such rationality is possible with highly structured problems but with highly unstructured problems- strategic decisions—it is not possible to get all the information and specify all the set of alternatives. The evolution can be succinctly summarized as given below in the Table 3.2:

Table 3.2.: Strategy Process Frameworks

Descriptor	1950's and 1960's	1970's	1980's	1990's	21st century
Environment	Stable	Dynamic , complex	Dynamic complex	Highly dynamic	Hyper competitive
Dominant paradigm of strategy content	Growth, large corporations, control and coordination, production	Strategy as direction of company, production orientation	Core businesses, competitive advantage, production orientation	Core competencies, production, services orientation	Services orientation, learning,
Key to implementation	Fit structure with strategy and context	Resource allocation	Factors along with structure leading to efficiency	How structures are created, adjusted and made to work?	How structures are created, adjusted and made to work?
Research	Processual , longitudinal case studies	Cross sectional, quantitative,	Cross sectional, quantitative,	Processual Longitudinal	Processual Longitudinal
Basis of corporate value added	Skills of general manager	Portfolio planning	Vale based planning	Development capabilities, learning,	Learning and knowledge creation
Strategy logic	What business to be in	Portfolio management	Economies of scale and efficiency	Compete on strengths, synergy	Economies of scope

Source: Based on Pettigrew et al (2002), Whittington (2002), Gould and Campbell (1993)

Decision making under conditions of uncertainty or ambiguity can be achieved by a political process, especially in conditions where multiple groups exist with each having their own legitimate views of organizational interests (absence of shared goals).

3.5. DISCUSSION AND RESEARCH GAPS

From a theoretical research view, the analysis in this chapter presented a discussion on the factors or variables responsible for organizational transformation. This review is used to provide specific answers to the research objectives mentioned. The main observations from this chapter are presented below.

- The spur for organizational transformation can come from both the internal and external environment of the organization. The important contents of organizational transformation include: strategy, vision and directions of leadership and commitment, personnel, technology, design, organization culture, specific competencies, systems and key performance measures, obligation. All the process of transformation is viewed from various perspectives and importantly the management, type and order of change of the content items. Research in change and transformation in strategic management are has predominantly been cross sectional in nature, concentrating mostly on simple bivariate relationships and has been added with the problems of multiple definitions of constructs.

- The analysis of literature suggests that organizations change or transform in a reactive manner due to external changes in the competitive environment, however specific studies of Indian Railway's organizational transformation were not found.

- In addition, any detailed studies that researched on content transformation in Indian Railways' were also not identified. So the components considered by other researchers are collectively being explained as the content of organizational transformation in this study.

- The literature analyzed on organizational change and of transformation is not sector detailed, nor does it claim to be applicable to a specific size and scale of operations of organization, therefore the assumption is made that the findings for the literature review are applicable in a government organization of service oriented context.

On the basis of the discussion on Indian railways issues and organizational transformation efforts presented in Chapter 2, and also review of literature in this chapter, the following research gaps were identified:

- To-date, very few studies have been conducted in India related to organizational transformation through strategic business orientation mainly due to lack of authentic

data. Also there is a need to look at strategy related organizational transformation of Indian Railways as an integrated and dynamic process and content oriented. Study of the process is study of simultaneously occurring activities and their linkages.

- Even in some cases where such research studies have been conducted, Indian Railways remains largely untouched despite the fact that this sector has been very important sector in India's economic development. There is abundant scope to study organizational transformation process on Indian Railways and evaluate the impact of various factors on it.

- Specifically, identification of transformation drivers and existence of causal relationship if any, and integration of all these drivers or parameters and their impact on organization transformation issues in context of Indian railways has not been studied so far.

- There is a need for achieving integration of the fragmented and dispersed pieces of research on organizational transformation through strategic orientation of implementation. This requires a framework or model which would look at the variables involved in transformation in an integrated way, duly looking at the interactive effects of the variables

- Lack of a good framework which explains the organizational transformation process of IR duly accounting for the interactive effects of variables/factors influencing it and which would be more practitioner and researcher friendly.

3.6. CONCLUSION

This chapter reviewed literature on the models of organizational transformation and issues related to change, resistances and competencies, and research gaps were identified and presented. A review of literature on these provides that organizational change and

organizational transformation are viewed inter-changbly in parts of literature. The organizational transformation is viewed as radical change and is said to be a change in some core property of the organization including a change in mission, core values, power status, culture, structure, strategy, systems, procedures, interaction patterns, personnel and power distributions organizational form, the current way of doing things in an organization vertical information flow direction, horizontal process designs and performance measures, culture, skills, teams, strategy-structure and reward system. Organizational transformation also includes a change in organizational orientation. In a complex organization which is gigantic and government organization like railways any transformation process consists of large number changes taking place in different organs of the organization in a congruent manner covering above aspects.

The next chapter describes the research process and methodology adopted for measuring the organizational transformation.

CHAPTER 4

RESEARCH METHODOLOGY

4.0 INTRODUCTION

The past few decades in business have been characterized by a succession of fundamental shifts in the way they operate and structure themselves. In their search for greater efficiencies, economies of scale or lower costs, companies have embraced different trends. Rapid technological development has transformed the way information is shared and communicated, and the way business processes and transactions are conducted. Transformation is a way of operating businesses in a manner so as to sustain and fine-tune a organization's ongoing evolution to achieve its objectives and therefore encompasses every facet of it.

Transformation is complex and is the change in state of an organization as a result of a series of changes in key organizational elements, including strategy, behavior, structure, technology, and systems. Emphasis must be placed on how the entire environment functions and on interrelationships and interdependencies at all levels of the business. These dimensions and relations are described through models representing: strategy, business metrics, services, processes, organizations, information models and technology solutions. Business orientation is a leadership initiate towards corporate renewal, constituting a range of strategies. It implies the involvement of leadership, towards a purpose of attaining substantial process improvements, financials, sustainability and market leadership through a process of renewal and revitalization. Further the range of competitive strategies could include anything from reengineering, restructuring or revitalization, but execution of these strategies to bring about results that are transformational is the key. Organizational transformation' is a term referring collectively to such activities as reengineering, redesigning and redefining business systems. The dominant enabling factor in transforming organizations is business orientation. Analysis of transformation efforts on Indian Railways and review of literature on organizational change and transformation studies, the research gaps were identified and were presented in earlier chapters.

To fill the research gaps, the present study is conceived with the following objectives:

- To identify the drivers or parameters of organisational transformation and dimensions critical to implementation of the model.
- To develop an empirically-tested, valid and reliable instrument for measurement of the drivers/parameters of organisational transformation
- To propose a holistic framework for management of organizational transformation through strategic business orientation.

This chapter presents the research methodology adopted. The research process used in this study to develop measures of the critical dimensions of organizational transformation is the systematic research methodology in the management emphasizing generation of theory from data in the process of conducting research. The approach consists of a more general approach to developing a sound theory in organization change and transformation in government organization, Indian Railways, and carried out in the following way. In this chapter Section 4.1 discusses the method of developing a sound theory in organizational transformation. Also, discusses in details the variables identified form literatures that are critical to transformation. Section 4.2 describes thoroughly the design of research questionnaire, data collection and data analysis methods. Section 4.3 provides the ethical consideration to be born in mind while doing such type of research. Section 4.4 presents the chapter conclusions.

4.1. RESEARCH METHODOLOGY

4.1.1 Variables or Constructs

Literature review is the first step to identify the most important factors for the drivers or parameters of organizational change or transformation management. Based on a thorough review and synthesis of information from literature thirteen critical areas of managerial planning and actions to achieve the objective were identified. Henceforth the critical factors will be referred to as constructs. A construct is considered as a latent variable, which means that it cannot be measured directly. e. g. Leadership and Commitment to change is a construct that cannot be measured directly however, if there is commitment then managers would allocate resources to convert thinking into action and finally results. Therefore allocation of resources is a manifestation of Leadership commitment to achieve

desired goals. Further for a field study, each manifestation is measured with an item in a scale. Now, a scale achieves content validity when the items in a scale sufficiently span the scope of the construct. In this study the content validity of constructs was achieved through literature review and organizational expert inputs for the selection of their representative items. Hard evidence based rigorous methodology is mandatory so that a researcher can develop reliable, valid and diagnostic measuring instrument for theory building. For this purpose an exploratory pilot study and discussions with senior managers of Indian Railways and experts were conducted and it helped to verify the contents further from understanding of railways best practices. This exploratory research also helped developing insights about the actual implementation of the constructs in organizational transformation frame work.

4.1.2 Construct Identification and Selection

The literature indicates that as decision makers of an organization focus on management of the critical factors, improvements in performance will occur and ultimately result in improved organizational performance in all aspects. The development of the constructs is based on the analysis of the empirical research by Saraph et al. (1989), Ahire et al. (1996), Black and Porter (1996), Flynn and Saladin (2001), and Zhang et al. (2000) in the manufacturing literature. Empirical research by Sureshchandar et al. (2001) provides the basis for constructs specifically important for services viz. service culture and Servicescapes. Their study was conducted in the Indian banking services, hence applicability of the critical factors is judged to be more valid for the current research study. Criticality of constructs was brought out in the empirical studies by Huq (1996), Kunst and Lemmink (2000), Meyer and Collier (2001) and Chow-Chua and Goh (2002). The comparative analysis of all the works is given in Table 4.1 and Table 4.2. The details of MBNQA Criteria and the dimensions are shown in Table 4.3. The comparison is based on the scale items corresponding to each critical factor using judgmental process. The literature review encompasses prescriptive, conceptual, and theoretical and practitioner research in strategic management. Some of the important literature of critical success factors is summarized in Table 4.2 is given. It highlights the significance and relevance of the various management dimensions in different environments. After that research constructs and their dimensions are

described in detail. The potential success factors are emerged from the literature and were thus not predefined. By each author, critical success factors represent those issues that the author considers most important for a successful change. They are usually identified and picked up from a change model.

Table 4.1: Critical Variables or Constructs for Organizational Transformation

Author(s) (date)	Location	Industry	Method	Respondents	Reliability	Validity	No. of Factors	Questions
Saraph, Benson & Schroeder (1989)	US	Manufacturing	Survey	162 General managers and quality managers of 89 divisions	Y	Y	8	78
Ahire, Golhar, and Waller (1996)	US	Manufacturing	Survey	371 plant managers	Y	Y	12	60
Black and Porter (1996)	Europe	Manufacturing	Survey	204 quality/senior managers from member organizations of EFQM	Y	Y	10 (Based on Baldrige non-result criteria)	32 (items based on Baldrige Model)
Huq (1996)	US	Services and Hospitality	Interview	About 24 TQM personnel	Y (Qualitatively)	Y (Using Co-efficient of Variation)	10 quality dimensions involving management issues; 8 control and implementation. (Causal relationships-empirical evidence)	N.A.
Epstein (1996)	N.A	General	Interview	30	Y	Y	10	N.A
Berry and Rondinelli (1998)	US	Proactive companies	Interview	N.A	N.A	N.A	6	N.A
Kwai-Sang Chin(1999)	Hong Kong	General	AHP	Six evaluators	Y	Y	4	N.A
Flynn and Saladin (2000)	US, Germany, Japan, England and Italy	Manufacturing	Survey	4264 respondents (most qualified) in 164 plants from a list of World Class Manufacturing database, Round II	Y	Y	7 MBNQA Criteria (Validating theoretical mo	67
Zhang et al. (2000)	China	Manufacturing	Survey	Senior (or Quality) Managers from 212 companies	Y	Y	11	78
Meyer & Collier (2001)	US	Services and Hospitality	Survey	Senior Quality Managers of 228 hospitals	Y	Y	7 MBNQA Healthcare Criteria with 28 dimensions	115
Sureshchandar, Rajendran and Anantharaman (2001)	India	Services and Hospitals	Survey	248 executives from 43 banks	Y	Y	12	126

Author(s) (date)	Location	Industry	Method	Respondents	Reliability	Validity	No. of Factors	Questions
Kit-Fai Pun,2002	Hong kong	General	Personal - Interview using AHP Modeling	Four EMS Practitioners and two experts	Y	Y	9	22
Chow-Chua and Goh (2002)	Singapore	Services and Hospitality	Survey	Reporting; mainly of quality steering committee	N.A.	N.A.	7 Singapore Quality Award Criteria	N.A.
Yeo Soo Wee,2003	Singapore	Electronic and chemical	Personal - Interview	186	Y	Y	7	40
James Karles (2003)	Australia	Food Packaging	Personal - Interview	27	Y	Y	9	N.A
Ambika Zutshi,2004	Australia	General	Survey	286	Y	Y	6	N.A
Zeng SX 2005	Sweden	Construction	Interview	N.A	Y	Y	5	N.A
Pornlert Arpanutud 2009	Thailand	Food Manufacturing	Survey	217	N.A	N.A	6	N.A
Sirish Snagle 2009	India	Public Sector	Personal - Interview	N.A	N.A	N.A	4	N.A

TABLE 4.2: Summary of Different Researcher's Views on Critical Factors in Carrying out Transformation in Organizations

Critical Factors	Saraph, Benson & Schroeder (1989)	Ahire, Golhar, and Waller (1996)	Black and Porter (1996)	Huq (1996)	Berry et.al (1998)	Kwang-Sang Chin (1999)	Flynn and Saladin (2001)
1. Leadership and Commitment	1.Top Management Leadership	1.Top Management Commitment	1. Strategic Management.	1.Management Commitment 2. Commitment to Continuous Improvement	1. Top Management Commitment.	1.Development of strategies and their implementation	1.Leadership
2. Strategic Planning		2.Benchmarking		3. Mission Statement	2. Strategic Quality Management	2.Employee Empowerment 3. Company awards	2.Strategic Planning
3. Human Resource Development	2. Employee Relations 3. Training	3.Employee Training 4.Employee Empowerment 5.Employee Involvement	2. People and Customer Management	4.Familiarity with TQM 5.Education and Training 6.Performance Appraisal System 7.Worker Empowerment	3. Training and Education Program		3.Human Resource Focus
4. Service Delivery	4. Product design	6.Design Management	3. External Interface Management		4. External Interface Management		
5. Process Management	5. Process Management		4. Operational Quality Planning	8.Causes of quality variation 9.Problem-solving approach		4.Reduction of environmental impact by supplier management	4.Process Management
6. Service Culture			5..Corporate Quality Culture	10.Remove barriers for consensus 11.Communications in Company			
7. Servicescapes					5.Servicescapes	5.Conduction of Cost-Benefit Analysis	
8. Organization Structure				12.Comparison of planned with actual performance		6. Integration of existing system with information system	(Part included in Process Management)
9. Information Systems	6. Quality Data Reporting	7.Internal Quality Information Usage 8.SPC Usage	6.Quality Improvement Measurement Systems	13.Measures of costs of quality 14. Statistical Evidence of Quality 15.Quality Circles/Teams		7. Necessity and usage audit	5. Information & Analysis
10. Technology Management	7. T M -Quality Management	9..TM-Quality Management 10.Supplier Performance	7. Technology Management	16. Technology Management	6. Technology Management		
11. Customer Focus		11.Customer Focus	8.Customer Satisfaction Orientation	17.Customer Focus 18.Customer Feedback-Vehicles used			6.Customer & Market Focus
12. Key Performance		12. Product Quality					7.Business Results
13. Unremunerative Obligations					*7.* CSR Initiatives		*(Part of Leadership)*
Others	8. Role of Quality Department		9.Team Work Structures 10. Communication Improvement Information				*NOTE: Baldrige Criteria*

Critical Factors	Zhang et al. (2000)	Kunst & Lemmink 2000	Meyer & Collier (2001)	Sureshchandar, Rajendran and Anantharaman (2001)	Salminen 2000
1. Leadership and Commitment	1.Leadership	1. Leadership	1.Leadership	1.Top Management Commitment & Visionary Leadership	1.Leadership and
2. Strategic Planning	2.Vision and Plan Statement	2. Policy & Strategy	2.Strategic Planning	2.Benchmarking 3. Continuous Improvement	2.Strategic Planning
3. Human Resource Development	3.Education and Training 4.Employee Participation 5.Recognition and Reward	3. Personnel Management	3.Human Resource Development & Management	4.Human Resource Management 5. Union Intervention	3.Human Resource Development & Management
4. Service Delivery	6.Product Design		*(Part of Focus on Satisfaction and other Stakeholders)*	6.Technical System	
5. Process Management	7..Process Control and Improvement	4.Process Management	4.Process Management	(Part of Technical System)	4.Process Management
6. Service Culture				7.Service Culture	
7. Servicescapes				8.Servicescapes	5. Supporting Environment
8. Organization Structure			(Part included in Process Management)		6. Clear need for Change
9. Information Systems	8.Evaluation 9.Quality System Improvement	5. Resource Management	5.Information & Analysis	9.Information & Analysis System	7.Use of Information and Analysis
10. Technology Management	10. TM-Supplier Quality Management		(Part of design and services)		
11. Customer Focus	11.Customer Focus	6. Customer Satisfaction 7. Employee Satisfaction	6.Focus on and satisfaction of patients and other stakeholders	10.Customer Focus	8.Customer Focus and Satisfaction
12. Key Performance			7.Organizational Performance Results	11.Employee Satisfaction	9. Operational Results
13. Unremunerative Obligations		8. Effect on Society	*(Part of Leadership)*	12.Social Responsibility	

Critical Factors	**Chow-Chua and Goh (2002)**		**Yee Soo Wee et.al (2003)**	**Zutshi Ambika (2004)**	**Meyer et.al (2001)**
1. Leadership and Commitment	1.Leadership and Quality Culture		1.Top Management Commitment towards environmental mission 2. Benchmarking by top managers	1.Top Management Commitment and Leadership 2. Commitment to Continuous Improvement	1.Leadership
2. Strategic Planning	2.Strategic Planning		3. Green team set up for employee involvement		2. Initiatives from employees
3. Human Resource Development	3.Human Resource Development & Management		4.Employee Training to understand goals	3.Employee Induction and Training 4.Performance Appraisal System 5.Employee Empowerment	3.Learning andTraining
4. Service Delivery			6.Design Quality Management to minimize impacts		4.Service Delivery
5. Process Management	4.Management of Process Quality		7.performance criteria for supplier selection	6. Process Mangement	5.Process Management
6. Service Culture			8. Measurement Gauge	7.Measurment Systems	
7. Servicescapes					
8.Organization Structure					(Part included in Process Management)
9.Information Systems	5.Use of Information and Analysis			8. Information Planning System	6.Information & Analysis
10.Technology Management				9. Technology Management	
11. Customer Focus	6.Customer Focus and Satisfaction				7.Focus on impacts on society and other stakeholders
12. Key Performance	7.Quality Operational Results			10 Performance Results	8. Performance Results
13.Unremunerative Obligations			9.CSR Responsibility		9. Obligations

Table 4.1 compares empirical researches on critical factors from manufacturing, environmental, other services sector organizations. Huq (1996) utilized qualitative method of type, survey questionnaire of interviews to arrive at the factors. Chow-Chua and Goh (2002) used a criteria for implementation and integrated it with Balanced Score Card and used case methodology to validate the award criteria. The studies by Saraph et al. (1989), Ahire et al. (1996), Black and Porter (1996), Flynn and Saladin (2001), Kunst and Lemmink (2000), Zhang et al. (2000), Meyer and Collier (2001) and Sureshchandar et al. (2001b) used survey technique to validate the different frameworks. Table 4.2 compared the studies and grouped the constructs in 13 categories using intellectual and judgmental processes. Such a process took into consideration the scale items of each critical factor before grouping under a construct. Finally, the present research identified the following 13 dimensions as critical for the organizational transformation:

14. Leadership and Commitment
15. Strategic Planning
16. Human Resource Development
17. Service Delivery
18. Process Management
19. Service Culture
20. Servicescapes
21. Organizational Structure
22. Information Systems
23. Technology Management
24. Customer Focus
25. Key Performance
26. Un-remunerative obligations

The constructs can be broadly classified under three categories:

- The dimensions that are generic to organizational transformation and extensively researched in the manufacturing set-up. Later on other researchers have investigated the validity of the constructs to organizations in service sector. The constructs are: Leadership and Commitment, Strategic Planning, Human Resource Development,

Process Management, Management of Information Systems, Technology Management, Customer Focus and Key Performance Results.

- The factors that need to be specially considered for service organization namely Servicescapes and Service Culture. Other factors, which are critical to organizations, namely, Service Delivery, Organizational Structure and Unremunerative Obligation are included as separate factors. Organizational Structure is an important part of organizational transformations in terms of integrating various functions of transformation and providing basic support to all operations Unremunerative Obligation was found to be a critical factor in services related public sector organization. Use of certain services is considered a social good and a basic right of individuals. Therefore, this construct is included as a separate factor.

Table 4.3. : 28 dimensions of Meyer and Collier (2001) Study

Leadership	Senior executive and staff leadership Leadership system and organization Public responsibility and citizenship
Measurement Analysis and Knowledge Management	Management of Information and data Performance comparisons and Benchmarking Analysis and use of Organization-level data
Strategic Planning	Strategic development Strategy deployment
Human Resources	Human Resource Planning and evaluation Employee/ staff work systems Employee/ staff education, Training and Development Employee/ staff well-being and satisfaction
Design and Services	Design and introduction of services Delivery Patient care support services design and delivery Community services design and delivery Administrative and business operations management Supplier performance management
Customer Focus	market knowledge relationship management satisfaction determination satisfaction results satisfaction comparison
Organization Performance Results	Results support services results Community services results Administrative, business and supplier results Accreditation and assessment results

4.1.3 Explanation of Constructs

The detailed explanation of these constructs is presented below. The importance of each construct is carefully examined from various studies, especially quality as a factor of organizational transformation and also service related organizations, and logical relationship among different management actions best representing each construct is analyzed. This exercise helped to establish the measurement items to be included for each construct The literature stressing the significance of use of constructs in different Settings is provided in the appendix.

4.1.3.1 Leadership and Commitment

The factor of ' Leadership and Commitment' is identified in almost all models. The crucial role of top management leadership in creating the goals, values and systems that guide the pursuit of excellence on a continuous basis cannot be missed by anyone. The understanding of senior managers that services should receive a higher priority over cost or schedule and that in the long run, superior service quality will lead to improvements in cost and delivery performance acquires special significance. A predominant theme in literature is the role of top management commitment in terms of allocating resources, setting up systems, influencing and communicating the commitment to all in the organization. Lin and Clousing (1995) surveyed the best practices and found that top management lead the efforts by putting a number of supportive systems in place such as training, education, administration, restructuring, communications and encouraging participation.

Literature has cited numerous examples (Chandrasekhar et al., 1999; Daellenbach et al., 1999; Knights et.al, 1996; Nattrass et.al, 1999; Taylor et al., 1994; Lutz, 2000; Fielding, 1998) of commitment from the top management in various parts of management. It has consistently identified that lack of senior management commitment, fuzzy or unclear purpose or mission of organization and lack of appropriate resources like time, trained manpower and budget for activities would result in lack of consistency, alignment and integration of product or services (Gaucher and Coffey, 1993, p.21; Short and Rahim, 1995; Aggarwal and Zairi,

1997; Nwabueze and Kanji, 1997; Zabada et al., 1998; Ennis and Harrington, 1999 a & b; McLaughlin and Simpson, 1999, p. 34; Theodorakiogleu and Tsiotras, 2000; Adinolfi, 2003; Kanji and SÁ, 2003). Commitment by top mangers is the most crucial and should be maintained along the change management process for its successful implementation. Many models in fact identify leadership and management commitment as a driver to improvement programmes in an organization. Meyer and Collier (2001) in their study concluded that the Baldrige theory "Leadership drives the System which creates the Results" stands supported. Further, Kanji Business Excellence Model depicts that the whole system is driven by leadership and organizational values, which help create culture of improvement and coordination of efforts of all stakeholders (Nwabueze and Kanji, 1997; Kanji and SÁ 2003).

Based on the above discussion the construct of 'Leadership and Commitment' in this work is defined as a expression of involvement of senior leaders to change management and Service delivery, customers and new technology improvements and implementation, focus on improving overall services in the organization and decisions to provide new improved services with an inherent focus on knowledge management, quality, resource allocation, involve everyone, and constantly seek feedback to improve services. Commitment to change is not only a matter of conviction but also of a missionary zeal from top-level leaders down the management hierarchy. Leadership has to ensure employee participation, motivation and commitment to bring about the workplace transformation. Leaders as role models are important in any set up.

4.1.3.2 Strategic Planning

Along with leadership, strategic planning forms the key driver for performance in the organizations. In the context of an ever-growing competition in the transportation sector, Strategic business orientation as a competitive strategy has become very crucial for organizational transformations and the top management has to address this change performance as both a service provider as public organization and a supplier as business enterprise. In fact, studies have shown that short term orientation of administrators and

managers, limited and poor translation of the strategies and goals into actions across various departments and lack of consistency, alignment and integration as barriers to successful implementation (Gaucher and Coffey, 1993, p.21; Short and Rahim, 1995; Aggarwal and Zairi, 1997; Nwabueze and Kanji, 1997; Zabada et al., 1998; Ennis and Harrington, 1999a, b; McLaughlin and Simpson, 1999, p. 34; Theodorakiogleu and Tsiotras, 2000; Adinolfi, 2003; Kanji and SÁ, 2003). Many best frameworks essentially include the issues of strategic planning and implementation as a critical factor described in Table 4.1 & 4.2. Among the empirically tested models from literature the following studies are worth mentioning to highlight the importance strategic planning for achieving high levels of change, they are: Black and Porter's (1996) Strategic Quality Management, Huq's (1996) Quality Mission Statement, Vision and Plan Statement of Zhang et al. (2000), Policy and Strategy of EQA (Kunst & Lemmink, 2000), Strategic Planning in MBNQA (Flynn & Saladin, 2001; Meyer & Collier, 2001) and Strategic Planning in Singapore Quality Award (Chow-Chua & Goh, 2002). The construct 'Strategic Planning' measure in this study includes the organization's ability to develop and integrate short- and long-term plans; address performance as a service provider and a business enterprise; partnerships with others for support; implementation of plans to various work units; use of objective measures and plan for reducing ineffective ways and compare with key competitors to ensure long-term survival.

4.1.3.3 Human Resource Development

People issues are occupying the most crucial position in the management of organizations and rightly so. Role of human resources and importance of individual employee was hardly recognized by the classic "gurus" namely, Deming, Juran, Feigenbaum, Crosby and Ishikawa (Krüger, 2001). Though gurus like Deming included training as an important factor in holistic management process, motivating employees so that they dedicate themselves to work and other aspects of human issues have further evolved. The human factor has emerged as a critical one in both manufacturing and service industries.

Use of advanced technology in running an organization efficiently will not take away the importance of people. Human Resource (HR) and training factor measures the organization's ability to develop and realize the full potential of its workforce, including management, and to maintain an environment conducive to full participation, efficient leadership and personal and organizational growth. In a service and government organization since the interaction between the service provider and the customer is so great that it determines the performance perceptions and satisfaction of the consumer. Employees play a crucial role in the production and marketing of services due to the nature of work. Business orientation specially is largely dependent on the understanding, behavior and actions of the people. Human actions in general are based on sense making in their present moment of experience. Making sense and meaning of life can be both in an individual and a collective perspective. This requires strong conviction and understanding to be effective in a Organizational transformation wide context. Therefore, HR planning, bringing about change, continuous training and learning, involvement of staff various levels are essentials of success. HR planning is of strategic importance and proper mix of professionals and practices have to be streamlined with organizational strategic goals. Proper employment and selection of staff determines the quality of the workforce and their participation. This will eventually determine the efficiency of services of any organization provides.

Education and training is recognized as a very important factor for best practices in literature repeatedly. While studying the causal relationships Meyer and Collier (2001) found that Human Resource Development and Management and Process Management were significantly linked with Customer Satisfaction. Based on the comparison of empirically validated critical factors by various researchers, employee relations, training, development, empowerment, participation and reward/recognition and union intervention emerge as important components of Human Resource Development in an organization. The analysis and synthesis of literature recommends that support mechanisms for success in organizational transformations included training and education support, reorganizations, encouraging participation, communications and recognition and awards and recognition. Empowerment of employees through knowledge, teamwork participation, and decision-

making participation would go a long distance in determining the high quality of services. Many good organizations in fact provide a number of opportunities for learning for their staff particularly the technical persons in order to leverage the latest knowledge in the fast and ever growing gamut of technologies.

Brooks and Zeitz (1999) studied the perceived justice as a mediator between quality dimensions and organizational commitment. It was found that provision of quality training enhanced procedural justice (openness and proper decision making by supervisors/engineers). It is possible that professional employees value the opportunity for further training, which enhances their development as professionals. Lack of staff involvement has been identified as a major obstacle for organizational change by many researchers. Resistance by employees including technical staff to change, autonomy and occupational subcultures have made issues more complicated (Gaucher and Coffey, 1993, p.21; Short and Rahim, 1995; Aggarwal and Zairi, 1997; Nwabueze and Kanji, 1997; Zabada et al., 1998; Ennis and Harrington, 1999 a & b; McLaughlin and Simpson, 1999, p. 34; Theodorakiogleu and Tsiotras, 2000; Adinolfi, 2003; Kanji and SÁ, 2003). Another important area of human relations and involvement include the union-management relationships (Short and Rahim, 1995). Sureshchandar et al. (2001a, b) included the Union Intervention as a separate critical factor. However, the factor showed a low correlation with other factors and it can be argued that it deserves to be considered as a part of human relations/involvement and development and not as a separate factor. With a highly knowledgeable work force, Organizations looking for transformations face the challenge of motivating, retaining and rewarding employees. Training in communication skills, interpersonal relations, teamwork and customer service is emerging as important in the service sector (Sureshchandar, 2001, a). Education and training so that staff sees a reason for change, improvement processes, use of analytical tools, techniques and skills and people skills are all highlighted in literature (Gaucher and Coffey, 1993, pp.246-280). Teams and problem-solving training were found to be associated with performance (Harrington, 1997).

Another important area is that of employee development and motivation for consistently high levels of performance and continuous learning. In general, Meyer and Collier (2001) have reported that developing better work systems, improving staff training, and measuring and promoting staff well-being, should result in increased satisfaction of staff, which in turn should improve patient (and other customers) satisfaction. From the above discussion, the construct of Human Resources Management encompasses HR planning, education/training and staff development including rewards, recognition and participation of all employees emerge as highly crucial in providing service in organizational transformation process.

4.1.3.4 Service Delivery

Designing services or products so that excellence is achieved is emphasized in literature abundantly. Sound product design meets or exceeds the requirements and expectations better than the competitors. Before production, new product design should be thoroughly reviewed in order to avoid problems happening during production. In manufacturing literature, experimental design and quality function deployment are effective methods in product design (Zhang et al., 2000). Kaulio (1998) highlighted three phases: specification, concept development and prototyping. Ahire et al. (1996) have emphasized the nature of complex products which require an interdisciplinary approach such as inputs from design engineer, manufacturing design team and marketing experiences to enhance the product improvement at the design stage. Such methodologies are rather very well understood and implemented in product design and services continue to implement their service design through similar approaches (Table 4.4). Works of Motwani (2001) and Silvestro (2001) highlighted the importance of service design in non-health care set up. Sureshchandar et al. (2001a, b) included service design as a part of technical system factor in which sound and reliable service design echoes an organization's strategic planning abilities and enables the organization to surmount customers' needs, expectations and desires, consequently resulting in improved business performance. Two basic strategies can be identified which when adopted would ensure high level of services from the design stage itself. One is prevention, that is, ensuring that the design of the service avoids problems arising during production and

two, zero fault strategy which means when the design is right and employees do the right things then the service would have zero faults. To achieve this in services, a number of technological and attitudinal considerations are important. Service delivery in this sense includes service design.

4.1.3.5 Process Management

Process management focuses on managing all the process so that it operates as expected, without breakdowns, shortage and missing manpower, technology, materials, tools, etc. It is needed to reduce rework and waste due to mis-specification of processing parameters. Management of core and support business processes is vital for effective enhancement. The great achievements in revolution in various industries have come from restructured and metamorphosed business processes. From the literature one can prove that it has an abundance of evidence to show the criticality of process management. Process management essentially refers here to the procedures, systems and technology that are required to streamline the operational aspect of service. As noted from the revised Boynton and Victor Model (McLaughlin and Kalunzy, 1999, p.15) process enhancement requires that processes be analyzed and modified to develop best practice approach using the feedback and process-owning teams within the organization. For consistently delivering efficient services, the key and support processes should be clearly analyzed, understood, perfectly streamlined, standardized and simplified so that stakeholders can receive the service without any problems.

Process standardization ensures consistent delivery of services. Process management and improvement in services have shown a number of advantages such as improvements in overall turn around time, better customer satisfaction, cost minimization & savings, employee morale, reduction in waiting times, improved motivation of workers, safety, better customer outcomes, efficient resource utilization (Kohli et al., 1995; Chow-Chua and Goh, 2002; Anderson et al., 1996; Klien et al., 1998; Poirier and Moran, 1998; Chang and Cheng, 2003; Singhal et al., 2001; Bharat et al., 1998; Gonalez et al., 1997; Murray, 2003) Studies

have shown that the use of standard operating procedures and departmental protocol help standardize processes to minimize variations in operations. In general, a number of process improvement techniques are available for improvement of processes from simple modification of the process to radical rethinking and revamping processes from scratch known as process re-engineering. Note that customer related issues and process management as most important components of successful delivery. In an empirical study conducted in Spain, Netherlands and UK. Kunst and Lemmink (2000) found that process management as an explanatory factor for high efficient services followed by personnel management. From the critical factors Table 4.2, it is clear that process management is a critical factor validated in different sectors in order to achieve the desired goal. The identification of core and support processes is very essential and the processes need to be mapped and standardized, tracked on a regular basis and improvement should be achieved by regular monitoring and feedback.

4.1.3.6 Service Culture

Organizational culture is extremely important for improving overall performance. Edgar Schein defined corporate culture as "the basic assumptions driving life in a given organization" (Schein, 1985 cited in Gaucher and Coffey, 1993, p. 148). Every organization has a culture created by the shared beliefs, values, norms, and expectations of the workforce. A process can revitalize an organization and allow people to feel passionately about work. According to Gaucher and Coffey (1993, pp. 148-151) peak performance begins with commitment: to the team, to excellence, and to changing the organization. "A strong culture, with well-socialized members, improves organizational effectiveness because it facilitates the exchange of information and coordination of behavior" (Denison, 1990 cited in Gaucher and Coffey, 1993, p.148). Jabnoun (2001) identified respect, responsibility, and empathy as values driving continuous improvement and humbleness, trust, openness and cooperation as enabling factors.

Customers in service organizations are separated by only a very thin layer from the employees in which physical and psychological closeness between them is so great that only an organizational culture that stresses service efficiency throughout the organization could establish the seamlessness in the service delivery (Sureshchandar et al., 2001). Zeithame et al. (1990) have emphasized that with good service culture in place an organization is more likely to offer a reliable, responsive, empathetic service to various groups of customers. The perceived service attributes namely, reliability, responsiveness, empathy and assurance have time and again shown to be major determinants in service delivery performance. Service culture is actually the extent to which the employees at all levels realize that the real purpose of their existence is 'service to customers'. In general, customer focus and satisfaction is one important strategy to achieve would be through a strong internal service culture in an organization. Zabada et al. (1998) further emphasize a culture of heroism to commercial goals without losing the dignity of services as very important.

Black and Porter (1996) have emphasized a corporate culture committed to quality improvement as a critical factor in manufacturing. Employee involvement and empowerment in developing human resources for total quality achievement is available in service sector literature. Research by Sureshchandar et al. (2001a, b) validated the 'Service Culture' factor as a critical factor. In a study by Huq (1996), activities to remove barriers to consensus and methods as well as proper communication of the values, attitudes and staff involvement figured as important strategies for establishing service culture in Organizational transformations. Mandal et al. (2000) based on empirical observations of quality management practices in Indian manufacturing industry concluded that improvement of organizational culture including team work, harmony and participation as essential component to improvement programmes. Similarly, Oakland (1997) stressed that creating culture or changing the culture in terms of people interactions, norms for working groups, values, rules of the game and the climate as essential to best practice. From the literature review analysis, Service Culture dimension would include the service orientation; open, trusting and good relationships instead of strong bureaucratic relations among employees of

different levels; strong belief in providing high quality services; strong feelings towards work and the organization and working amicably in teams.

4.1.3.7. Servicescapes

Facility and service tangibles have been one of the most recognized factors in services only next to human interactions between customers and the service providers. The tangible facets of the service facility, i.e. the man-made physical environment such as equipment, machinery, signage and employee appearance-the 'servicescapes', strongly influence both employees and customers in physiological, psychological, emotional, sociological and cognitive ways, particularly as the core service becomes more intangible (Sureshchandar et al., 2001a, p.354). Such an impact of overall facility tangibles on perceived quality aspect of services is often highlighted in literature. The physical environment's influence on behaviors and image creation about the organization and its employees, particularly in services such as hotels, restaurants, professional offices, banks, retail stores and Organisational transformations is well recognized in literature (Sureshchandar et al., 2001a). Works of Parashuaraman et al. (1985, 1988) and Zeithmal et al. (1990), which focused on conceptualizing value performance in the service industry, identified facility tangibles as an important dimension of perceived service value. In this study, the Servicescapes factor attains greater importance as it is closely connected to the impact of external environment.

Servicescapes, then can be viewed as "a sum total of all possible moments of truth experienced by the customers-both human and non-human that provides the rationale behind the customers' perception of the service business and satisfaction they derive from it" Sureshchandar et al. (2001). The facility tangibles apply more to service organizations and are not viewed as a critical factor in manufacturing. It includes ambient conditions such as temperature, ventilation, noise, odor, etc. Also, signs, signboards, symbols, advertisement boards, pamphlets, educational materials, employee appearance and other artifacts in the organization form an important part of servicescapes. In an organization, physical layout of the premises, furnishings, ramps, lifts etc also have high impact.

4.1.3.8 Organizational Structure

In complex and government organizations wherein a number of activities are set up, and issues like day-to-day functioning of organizational operations, monitoring, governing etc need to be streamlined. It is very clear that different stakeholder groups interact and influence the functioning of a typical service in unique ways. Four major stakeholder groups were identified as important by Kanji and SÁ (2003) as important: Internal members (e.g. administrators & managers, etc); Suppliers (equipment); Customers and purchasers and Regulators & others (government, professional bodies, financial institutions, observers). Governance and administrative processes eventually determine the integration of various organizational transformation activities.

Organizational transformations use various mechanisms to govern and integrate all activities. A number of committees are used to set standards and ensure the smooth running of the organizational activities. Activities such as billing, recovery, claims, waiving, staff benefits etc., need to be integrated and administrative processes are very essential to overall performance. Further interdepartmental coordination and monitoring is essential for ensuring that multiple stakeholder needs are met. From the studies the following activities of administrative services are identified as crucial namely, streamlining of various administrative functions across the Organizations and measuring the performance of administrative processes through feedback from different stakeholders, coordinating and monitoring activities of committees involved in quality and ensuring proper documentation from legal and regulatory aspects of services.

4.1.3.9 Information Systems

Anything to be controlled or improved has to be measured. Measurement is a central element. One of the slides quoted by Johnson and McLaughlin (1999, p.93) used in a number of training programmes read "In God we trust, all others send data". In data are full of "factoids", opinions, and anecdotes masquerading as facts and as data. Using scientific approach requires data to evaluate the current situation, analyze and improve processes and

tract progress. Flow charts, cause-and-effect diagrams, check sheets, Pareto charts or diagrams, histograms, run charts, regression analysis and control charts etc are all used (Gaucher and Coffey, 1993, pp. 319-396; Johnson and McLaughlin, 1999, pp. 93-128). In general, information measures the organization's scope, validity, use, and management of data and information that underlie its overall system.

As one looks across Table 4.2 on critical factors in various empirical studies in manufacturing and services literature, the factor emerges consistently as significant. Reduction of variation, process improvements and internal benchmarking are some of the major applications of measurement and data analysis at the organizational level. Variation exists and always will in every process, more evident in some processes and it has to be constantly reduced. Two kinds of variations can be identified so that they can be controlled: First, common cause (also referred to as systemic and internal) is inherent in the processes, generally random in nature; Second, special source which can be attributed to a particular source, is nonrandom in nature. Benneyan et al. (2003) have stressed that measurement of data from some processes display a natural variation which can be modeled using a variety of statistical distributions. Use of control charts, for instance, can often yield insights into data more quickly and easy to use for decision making than traditional statistical methods.

EHerbert et al. (2003) evaluated the use of control tools and statistical process control in 37 service organizations including banks, courier services and utilities in UK. Flow charts, histograms, check sheets and arrow diagrams were the most popular tools used in these organizations. The general benefits reported were:

- Improving consistency and process performance in service delivery
- Creating defect-free process and service
- Increasing productivity and reducing operating costs
- Promoting teamwork
- Improving communication between departments and employees
- Increasing organization’s reputation and market share

The study indicated that the most important factors were management commitment, training and education, communication and teamwork and cooperation.

In many companies benchmarking is a key component. Profitability and growth flow from a clear understanding of how business is performing, not just against its previous accomplishment, but against the toughest competitors or world-class organizations (Ghobadian and Woo, 1996). Harrington (1997) reported that process benchmarking showed a high correlation to high performance of organization and that SPC did not have an impact on performance though it did not have a negative effect. Integrated and accessible information is a necessary ingredient for organizations for implementing management strategies. Almost all models have incorporated information and analysis as a critical factor. Based on the literature analysis on empirical studies on the impact of information technology noted that information technology had a significant effect on all the critical factors of organizational transformation including leadership, strategic planning, output quality assurance, important innovations, information and analysis, HR utilization, customer satisfaction and quality results.

The discussion clearly establishes that the construct Information Systems is critical and would include the following dimensions different information and financial data; business and administrative services, monitoring and review of information and long-term strategy formulation are some of the important areas of application of information systems for Organizational transformations.

4.1.3.10 Technology Management

To enhance the service delivery and to provide best support to customers' organizations focus on suppliers quality management. Superior Information system and Technology Management measures the ability of the organization to develop mutually beneficial relationships built on trust, sharing of knowledge and integration. It is an important aspect

that technology implemented and used actually determines the nature and importance of delivery services.

4.1.3.11 Customer Focus

It is essential to know what customers want and to provide products or services. Customer satisfaction is the ultimate goal of any organizations. Organizations can outdo their competitors by effectively addressing customers' needs and demands and anticipating and responding to their evolving interests and wants. A successful organization recognizes the need to put the customer first in every decision made. The key issue is maintaining a close relationship with the customer in order to fully determine the customer needs, as well as receive feedback on the extent to which those needs are being met. Customer satisfaction is a very important measure of the company's performance and helps predict the future success or failure of an organization. In order to enhance customer satisfaction, customer complaints should be treated with top priority (Zhang et al., 2000; Sureshchandar et al., 2001a). The competitive advantage in a excellence revolution comes from customer delight and the management responsibility is to ensure that satisfaction manifests itself as commitment in the long run (Kanji and SÁ, 2003). Ang et al. (2000) validated the customer requirements determination, customer satisfaction evaluation and relationship management as dimensions of the critical factor of customer satisfaction. From a typical marketing perspective, parties exchange goods and/or services form the context for dis/satisfaction measures. The expectancy disconfirmation model used to explain post purchase satisfaction suggests that consumer satisfaction can be simply defined as "……the evaluation rendered that the experience was at least as good as it was supposed to be" (H.K. Hunt, 1977 cited in Savitz, 1999, pp. 129-130).

Increased global competition, where high quality and low cost are at premium, has led to increased interest in continuous improvement. Consumer satisfaction provides a useful outcome measure of type of care offered. It has been reported from literature that some of the benefits of measuring satisfaction include increased profitability, increased market share,

improved customer retention, improved collections, increased referrals, improved customer compliance, continuity of care, increased willingness to recommend the organization to family and friends, and reduced risk of malpractice. Inter correlations among satisfaction, quality and loyalty have been reported to be quite significant.

From the above discussion, it is clear that customer focus and satisfaction should be the driving force behind day-to-day operations and customer satisfaction is a crucial goal of organizational transformation. Accurately analyzing customer needs, expectations, measuring and meeting those needs are essential. Complaints and grievances should be handled in appropriate manner so that service recovery can take place and causes of complaints should be minimized or eliminated in the future operations. So far it was not considered as a primary factor due to the monopoly which the railways enjoy. However with increased competition with other modes of transport Indian Railways have been forced to take this into account.

4.1.3.12 Key Performance

As managers implement long-term improvement management techniques and gradually extend it to the whole organization the importance of evaluating the key performance result areas becomes apparent as that performance is used by most as a competitive strategy. The goal would be superior customer orientation, satisfaction and overall business results. Harrington, (1997) reported that improvements in performance such as profitability, productivity and quality as good indicators of a successful implementation of organizational change methods. Ang et al. (2000) included product and service value, productivity, waste reduction or elimination, employee satisfaction. Such key performances have to be monitored on a regular basis to ensure that the organization is progressing well.

McLaughlin and Simpson (1999, pp.34-56) have concluded that a continuous improvement programmes based on key performances can and will provide benefits such as profitability, employee satisfaction, reduced costs and improved and continuity of concern. Based on an empirical survey research on market orientation, Kumar et al. (1997) found that survival and

growth/profit emphasis was a critical factor. Profitability of a organization and earning revenues was found to be very important to improve performance relative to competitors. Raju and Lonial's (2002) study based on survey of top executives through path model analysis found a linear relationship among the constructs 'quality and market environment,' 'quality and market outcomes' and 'financial performance.' Chow-Chua and Goh (2002) have highlighted the importance of tracking progress of the organizational transformation with key performance indicators such as net income margin and customer loyalty/retention rates.

4.1.3.13 Unremunerative Obligations

Social concerns and Social responsibility is the keyword in the arena of global social and environmental issues among academic, business, governmental and non-governmental agencies (Doh and Guay, 2006). This term can be explained as companies taking responsibility for the impact of their product and process on environment by adherence to different standard parameters which exceeds their legal obligations. Many eminent management thinkers (McIntosh, 2004; McWilliams and Siegel, 2001; Porter and Kramer, 2006; Waddock and Bodwell, 2004) and other influential organizations such as British Standards Institution (Castka et al., 2004a; Rosam and Peddle, 2004), Social Accountability International (SA8000, 2001) and Global Reporting Initiative (GRI, 2002) are working on this topic to enrich the existing literature. The concept of corporate citizenship is very important for an organization to be successful, progress towards achieving business excellence and sustaining gains.

In the government organizations in fact it can be considered inbuilt because of the nature of the service itself. A typical delivery system utilizes a number of resources (human, material and knowledge), which are used in a series of processes that ultimately aim to improve the conditions of the business and contribute to communities (Asuboteng Rivers and Bae, 1999; Kazandjian (1999, pp.270-272) has stressed that performance improvement has to be seen in the context of the environment in which the delivery system is situated. The organization

needs to be socially accountable and be sensitive and change to the ever-renewed social expectations based upon values, economic imperatives and the information infusion.

Social and community obligations become important to have a good image and grow, for any organization, much more so in IR. Un-remunerative Obligations becomes indispensable for organizations. This factor nonetheless powerful dimension sends strong signals towards improving the organization's image and goodwill, and consequently affecting the customers' over all satisfaction with the services and their loyalty to the organization. Treating customers with respect, openness & team spirit and positive work attitude and reasonable pricing strategies are found to be important for providing total value services. Based on the above discussion ' Social and strategic requirement related Un-remunerative Obligations' was categorized as a critical factor encompassing the issues of integration of business activities in order to achieve excellent performance, ethical behaviors of employee and responding to community emergencies.

4.2. RESEARCH QUESTIONNAIRE DESIGN

Literature review and analysis helped to develop a tentative list of critical factors or constructs framework of organization transformation. It helped develop a 13-factor framework for organizational transformation. The measurement model for this is developed in the form of a questionnaire and in order to ensure that the questionnaire instrument provides a valid measurement of the constructs several steps were taken. As the constructs cannot be measured directly and can be put into function using a scale or a set of items. Each scale was based on a thorough review and understanding of the literature, empirical research, expert guidance and inputs from professional railway managers. The number of questions was determined by ensuring that the content of the dimensions is adequately addressed. This was carried out during the construct development phase by classifying the most crucial attributes from management literature. As organizational transformations do not conform to use of any one particular method, it was clearly noted that questions are included that they should focus on whether the relevant management and transformation issues are addressed thoroughly or not. Wording and comprehension was done and revised the questions from the inputs of the experts in the field as well as literature. A pilot study, using open ended questionnaire was conducted in order to validate this tentative list. Four revisions of questionnaire development were carried out after the initial selection of items. These item were them discussed with a group of top Managers (during seminar for General Manager of Indian Railway at Railway Staff College in 2005) middle level managers (participants of Advance Management Programme & Management Development Programme at Railway Staff College) and new entrant to the organization (participants of Group A foundation 2005). Based on these interactions, items selected after literature summary were refined and questionnaire was finalized. A total of 118 items were developed under the thirteen critical factors. The questionnaire was finalized by rearranging the various items. After, eliminating certain items, the remaining items were administered to a total of 59 organizational experts and professional managers including administrators, technical heads and heads of various departments. Following similar studies (e.g. Saraph et al., 1989; Zhang et al., 2000) a five-point Likert-type scale was employed for scoring responses. Managers had to indicate the

degree or extent of practice of each item by their organizational transformation item utilizing a scale anchor of 1=Strongly Disagree; 2=Disagree; 3=I don't know; 4=Agree; 5=Strongly Agree for all constructs except for Key Results the scale anchor was 1=Very Low; 2=Low; 3=Medium; 4=High and 5=Very High.

"For the Customers of Indian Railways transportation costs have become more important due to increased competition"

1	2	3	4	5

4.3. RESEARCH SAMPLE DESIGN

A multi-stage stratified sampling technique was used in selecting the respondents for the empirical research. Sample was designed to capture the perception of entire range of Indian railway managers. The railway Managers were grouped based on number of years of service, geographical area wherever the Managers have predominantly, worked and the cadre (Indian Railway Traffic Service, Indian Railway Engineering Service etc.) to which they belong. Each of above group was divided in three sub groups. Minimum sample size of 30 from each subgroup

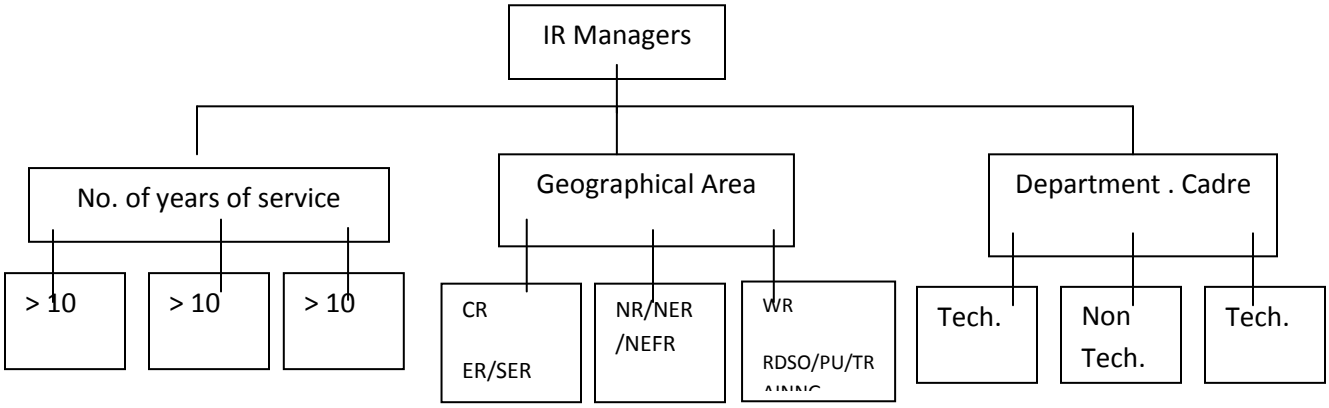


Figure. 4.1. Job profile of Indian Railway Managers is broadly divided in two categories

- Those dealing with one of the cadre especially (for example, Electrical Engineering, Traffic, Security etc.) & predominately performance technical functions. This group included will improve the branch officers at divisional level (for example Sr.DEE, Sr.DTM, Sr.DCM etc.) in charge of department in division, Head of the Department (HOD) and Principle HOD at zonal railway Head quarters. (for example Chief Mechanical Engineering, Principle Engineering. etc.), functional Member at Railway Board level (for example Member Electrical, Member Staff, Finance Commissioner etc).
- Indian Railway Managers who are responsible for coordination of various departments to achieve stated objectives and targeted performance. Division railway manager is CEO of a division and coordinates all the departments (13 in number) and outside agencies like state government.
- General Manager Performances the similar function at Zonal Railway which include many Divisions.
- It was considered necessary to capture perceptions of the General Manager, the Divisional Railway Managers on one hand and branch officer of HOD/PHOD on the other hand. It was ensured that minimum 30 representation of each category are included. One response could be represented both in 1st group as well 2nd group.

The study is to be conducted at the facility level with Senior Managers as a sampling unit. At the organizational transformation level more than one respondent group was included for the study, namely, top and middle level managers referred to as 'Senior Managers'. Research has shown that this type of respondent selection provides a true picture of implementation level as top management is usually involved in planning and midlevel managers are actively involved in implementation. Based on Magnani, Robert (1997) study's sample size was selected. The steps are:

First step is to calculate the base sample size n. $\{n= [t^2 p (1-p)] / m^2$, where t = confidence level at 95 %; (Standard value of 1.96); p= estimated prevalence of variable of interest (12%); m = margin of error at 5% (standard value of 0.05).

Second step is to multiply n * D (Design Effect=2; to correct for the difference in design, the sample size is multiplied by the design effect (D)).

Third step is that the sample is further increased by 5% to account for contingencies such as non-response or recording error so that Sample Size N becomes 380.

4.4. DATA ANALYSIS

In any management theory, evolution of a fundamental body of knowledge is through the development of genuine measures in order to obtain reliable and valid estimates. A thorough measurement analysis on questionnaire instrument used in empirical research is primarily essential for two reasons: One, it enhances the confidence level that the empirical findings accurately reflect the proposed constructs. Two, that such an empirically validated instrument can be used in other studies in the future for different populations. This would be possible only if the scale of construct is statistically reliable and valid. In the broadest terms reliability refers to the degree of dependability and stability of scale. In a field study assessing reliability would be best achieved using the internal consistency method, as it requires only one administration. A scale has construct validity if it is measuring the concept that it was intended to measure. Conventionally, studies in organizational change, organizational behavior and marketing research utilize Exploratory Factor Analysis (EFA) for factor identification and refinement.

Comparable method has been established useful in research on using critical factors for transformation. These approaches use that first, a theoretical and conceptual background in a particular domain is clearly interpreted through an broad literature review and a subsequently critical dimension of the construct that is intended to be measured is identified. After that researcher will design and develop a survey instrument to measure those constructs by carefully selecting the items to measure each scale. Pre-testing of this instrument will be done by involving experts in the field for content validity. Finally the measurement

instrument is revised and refined. Survey method is carried out to test the instrument. Data analysis is performed using an exploratory factor analysis on item responses to extract latent factors according to item-factor loadings. EFA seeks to uncover the underlying structure of a relatively large set of variables. The researcher's á priori assumption is that any indicator may be associated with any factor. There is no prior theory and one uses factor loadings to intuit the factor structure of the data. Once those steps are performed refining the scales will be done by using Cronbach's scale reliability coefficient alpha. In this research all these steps have been carried out and for the data analysis the Confirmatory Factor Analysis (CFA) is opted. Mulaik (1972, cited in Ahire et al., 1996, p.36) reports that "The major disadvantage of pure exploratory factor analysis lies in the difficulty involved in interpreting the factors. The difficulty most often comes about because the researcher lacks even tentative knowledge about the processes which produce covariation among the variables studied and has no basis on which to make his interpretation. In these circumstances, the interpretations given the factors may be nothing more than tautological transpromotions of the names of the original variables." To overcome the limitations mentioned, the Confirmatory Factor Analysis provides a viable alternative for scale refinement and validation of constructs.

4.4.1. The Confirmatory Factor Analysis Approach

The CFA approach is similar to EFA except that the researcher specifies a measurement model á priori and tests the hypothesis that a relationship between the observed and the latent variables does in fact exist. The postulated model draws logic from research outputs and other theoretical perspectives. The researcher is aware of the number of factors that are required to explain inter-correlations among the measured variables. Therefore, the hypotheses that form the constraints are an integral part of the CFA technique. The present research developed the constructs by carrying out a sound theoretical and empirical research. A minimum requirement of CFA is that one hypothesize beforehand the number of factors in the model, usually the researcher will also posit expectations about which variables will load on which factors. Then the researcher seeks to determine, for instance, if measures created to

represent a latent variable really belong together. CFA can be accomplished through any general-purpose statistical package that supports factor analysis.

Having arrived at a 13-construct framework for Organizational transformation and selected an appropriate methodology to validate model, the following hypothesis is defined for the study:

"The framework for Organizational transformations is a 13-construct structure consisting of the following constructs only: Leadership and Commitment; Strategic Planning; Human Resource Development; Service Delivery; Process Management; Service Culture; Servicescapes; Organizational Structure ; Information Systems; Technology Management; Customer Focus ; Key Performance; Un-remunerative Obligations"

This hypothesis specifies which variables will be correlated with which factors and which factors are correlated. In addition; confirmatory factor analysis offers the researcher a more viable method for evaluating construct validity. The researcher is able to explicitly test hypotheses concerning the factor structure of the data due to having the predetermined model specifying the number and composition of the factors. Confirmatory methods, after specifying the a priori factors, seek to optimally match the observed and theoretical factor structures for a given data set in order to determine the "goodness of fit" of the predetermined factor model.

The following are the procedures involved in confirmatory factor analysis (CFA):

1. **Defining individual construct:** Firstly, We have to define the individual constructs. In this method, the first stage involves the procedure that defines constructs theoretically. This involves a pretest to evaluate the construct items, and a confirmatory test of the measurement model that is conducted using confirmatory factor analysis.
2. **Developing the overall measurement model theory:** We should consider the concept of unidimensionality between construct error variance and within construct error variance.

3. **Designing a study to produce the empirical results:** In third stage, the measurement model must be specified. Most commonly, the value of one loading estimate should be one per construct.
4. **Assessing the measurement model validity:** In confirmatory factor analysis assessing the measurement model validity occurs when the theoretical measurement model is compared with the reality model to see how well the data fits. In this method to check the measurement model validity, the number of the indicator helps us. For example, the method suggest that the factor loading latent variable should be greater than 0.7. Chi-square test and other goodness of fit statistics are key indicators that help in measuring the model validity.

4.4.2. Cronbach Alpha and Internal Consistency - Scale Reliability Analysis

Establishing the reliability of any research tool is an important part of its development, as tool reliability is essential if it is to be applied with any level of confidence regarding its consistency and utility (Kraemer et al, 2002). Reliability has been described as the extent to which an experiment, test, or any measurement procedure yields the same results on repeated trials (Carmines and Zeller, 1979). So reliability refers to the degree of dependability, consistency or stability of a scale. Reliability is the consistency of a measuring instrument, often used to describe a test. To evaluate a survey, it is necessary to have an instrument which will gives an elicit, consistent and reliable response even if questions were replaced with other similar questions. When you have a variable generated from such a set of questions that return a stable response, then your variable is said to be reliable. Cronbach alpha is an index of reliability associated with the variation accounted by the true score of the "underlying construct." Construct is the hypothetical variable that is being measured (Hatcher, 1994). Cronbach alpha is known as an internal consistency estimate of reliability of test scores as it will generally increase with the increase in the intercorrelations among test items as the intercorrelations among test items are maximized when all items measure the same construct. Cronbach alpha is widely believed to indirectly indicate the degree to which a set of items measures a single unidimensional latent construct. However, the average inters correlation among test items is affected by skew just like any other average. Thus, whereas

the modal intercorrelation among test items will equal zero when the set of items measures several unrelated latent constructs, the average intercorrelation among test items will be greater than zero in this case. Indeed, several investigators have shown that alpha can take on quite high values even when the set of items measures several unrelated latent constructs (e.g., Cortina, 1993; Cronbach, 1951; Green, Lissitz et.al, 1977; Revelle, 1979; Schmitt, 1996; Zinbarg, Yovel, Revelle & McDonald, 2006). As a result, alpha is most appropriately used when the items measure different substantive areas within a single construct Alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted from dichotomous (that is, questions with two possible answers) and/or multi-point formatted questionnaires or scales (i.e., rating scale: 1 = poor, 5 = excellent). The higher the score, the more reliable is the generated scale. Factors are analyzed for reliability with Cronbach alpha coefficient.

4.4.3 Content Validity

In general terms, the concept of validity has been referred to as the best approximation to the truth or falsity of statements, e.g. research findings, including propositions about causation (Cook and Campbell, 1979, Nunnally and Bernstein, 1994). In scientific research, 'validity is essential to the research proposals theoretical framework, design and methodology' including how well a particular research tool measures what it is designed to measure (Higgins and Straub, 2006, p.24). Validity provides a basis for applying research findings to other populations, times or settings (Ferguson, 2004).

Content Validity which is also known as logical validity refers to the extent to which a measure represents all facets of a given construct. To measure content validity method developed by C. H. Lawshe was adopted. Lawshe developed a formula termed the content validity ratio, CVR = [(E - (N / 2)) / (N / 2)] where N is the total number of experts and E is the number who rated that the item as essential. Content validity ratio (CVR) was developed to rate how essential an object is to the needs at hand.. The formula is based on ratings from a group of experts (here the group consisted of the food and packaging analysts and experts in environment management area) in the field related to the subject, in question. Each of the

subject matter expert raters on the judging panel respond to the following question for each item: "Is the skill or knowledge measured by this item 'essential,' 'useful, but not essential,' or 'not necessary' to the performance of the construct?" According to Lawshe, if more than half the panelists indicate that an item is essential, that item has at least some content validity. Greater levels of content validity exist as larger numbers of panelists agree that a particular item is essential. Using these assumptions, this formula yields values which range from +1 to -1; positive values indicate that at least half the SMEs rated the item as essential.

4.4.4. Correlations between Constructs

Organizational transformation models need to use both profession-specific and modern organizational quality methods to develop personnel and organization in an integrated way. Study of relationships between various constructs was carried out by analyzing correlations by the following researchers: Ahire et al. (1996), Ang et al. (2000), Zhang et al. (2000) and Sureshchandar et al. (2001b). This study particularly would follow the method used by Zhang et al. (2000) which considered the perceptual ratings based on comparison of quality performance of an organization to industry best practice. The relationships among 13construct framework would be tested using bivariate correlation (Pearson's) based on the ratings of quality performance on each construct in comparison to the industry best practice by quality experts from the major Organizational transformations. Positive correlations would indicate that constructs are interrelated and that the quality management efforts should be applied in a holistic manner rather than piecemeal.

4.5. CONCLUSIONS

This chapter presented the identification and selection of measurement model consisting of thirteen constructs that is critical dimensions for implementation of organizational transformation which is based on an extensive literature review, analysis & synthesis and expert inputs. They are: Leadership and Commitment; Strategic Planning; Human Resource Development; Service Delivery; Process Management; Service Culture; Servicescapes;

Organizational Structure ; Information Systems; Technology Management, Customer Focus; Key Performance; and Un-remunerative Obligations.

Two studies are planned for content validation before the main study would be conducted. The details of content validation are also presented. The scales for the measurement model were determined and a questionnaire was developed for testing and validating the framework. After expert reviews and refinement, a measurement instrument with items to evaluate the constructs for organizational transformation was finalized. The details of the sampling plan and scale refinement and validation of the constructs are given in this chapter. Confirmatory Factor Analysis and reliability coefficient Cronbach's alpha were selected for validation of the framework. Survey research is deemed appropriate for testing the reliability and validity of 13-construct structure for Organizational transformation. Further, bivariate correlations, the Pearson's Correlation between these constructs would be carried out to study the relations among various factors. The results, analysis and discussion of the survey research are presented in the next chapter.

CHAPTER 5
RESULTS AND ANALYSIS

5.0 INTRODUCTION

Indian Railways (IR) is facing unparalleled challenges as many struggle to find ways to reduce operational costs while improving further value and productivity. Recent years have witnessed an uptake of interest in the efficiency in its operations within the organization. Increasingly it is being viewed as a means of increasing efficiency and improving the value of service it delivered. After a thorough examination of the literature, it was identified that a 13-construct structure would sufficiently measure the organizational transformation issues of IR. Preliminary studies showed the criticality of the constructs and further empirical study is planned to test the reliability and validity of the constructs. The details of the methodological issues were discussed in the previous chapter.

This chapter presents a detailed analysis of the results of the cross-sectional survey conducted to validate the organizational transformation constructs and finally an integrated framework for organizational transformation of Indian Railways through strategic business orientation is proposed after examining the relationships among the constructs. Section 5.1 presents the details of pilot study on organizational transformation system variable verification. Section 5.2 details the sample characteristics. Section 5.3 presents reliability analysis of instrument. Section 5.4 explains the item wise analysis. Section 5.5 provides results of validity analysis. Section 5.6 presents the factor analysis of all constructs. Section 5.7 ends the chapter with conclusions.

5.1. ORGANIZATIONAL TRANSFORMATION SYSTEM VARIABLE VERIFICATION – A PILOT STUDY

Organisation Transformation studies on Indian railways are not yet exhaustive as described in earlier chapters except one important study by Madhu Ranjan Kumar (2005) in that the researcher assessed the suitability of Total Quality Management (TQM) via the International Standards Organization (ISO) 9000/2000 quality accreditation system route for bringing about organizational transformation in the Indian Railways and to develop an India specific model for taking an ISO certified organization towards TQM. In addition to that based on the analysis of studies on IR there is a need to transform in order to survive in the current

globally competitive transport business environment. As result of changes or some amount of crises from the internal and external environment or the changes in the governments at central level or the introduction of leaders in to the organization. Indian Railways are characteristically different from other larger organizations working in the country and so need to be empirically studied as a separate unit of analysis in relation to organizational phenomena. Therefore keeping the present research objectives in mind an exploratory pilot study has been carried out to identify the variables responsible for organizational transformation in Indian railways. This study helped to improve the framing of questionnaire designed for organizational transformation instrument.

Based on literature review and basic understanding of the organizational issues in Indian railways a survey questionnaire was designed and developed. According to Van der Stede et al. (2007), survey questions should always be pretested to assess whether they can be correctly understood and easily answered by respondents. Thus, the questionnaire was first pre-tested through peer evaluation that is 25 colleagues who are organizational experts at Railway Staff College, Vadodara, Gujarat, to test whether respondents can understand the wording of the questions, the time taken to complete the questionnaire and if they had difficulties in completing the questionnaire. The details of these experts were presented in the methodology chapter. Four organizational area experts also second time reviewed the contents of the questionnaire and finalized. This was undertaken in order to improve the quality of the instruments, to increase respondent understanding of all questions, and to detect any weaknesses in the questionnaire and also it increases the likelihood that the survey uses terminology that reflects the respondents frame of orientation. As a result, selection of open ended questionnaire was opted to capture the information in the real world situation. In addition to expert's comments, senior railway managers provided their views on the current systems and organizational changes in the IR. Besides this valuation, the questionnaire was also pre-tested in a pilot study on prospective respondents which included 59 managers in organization. These were mostly the senior officers dealing with IR organizational system functioning and change implementation practices.

Among the suggestions received during this study among colleagues were concerns that the wording used in the questionnaire which might cause bias. The questionnaire was revised in

response to these concerns. Finally, in the span of eight months around fifteen respondents were interviewed and information collected was analyzed. Moreover, to keep the ethical consideration, consent of not revealing the identity was signed. While conducting this research, this researcher also had the opportunity to participate in the analysis of the transformation as he himself is a senior officer in the Indian railways.

- The motivation for the transformation was the growth aspirations of the senior officers of the railways and the vision of the management team to exploit the opportunities and challenges in transport sector.
- Different essentials of IR changed during the transformation journey like new leadership, growth strategy, improving technology related to signaling, operations, reengineering of certain processes, ERP system, price restructuring, customer focus, new value streams like joint ventures, investment in infrastructure and equipment, restructuring of organization and redefinition of roles and responsibilities, quality standards
- The content of the organizational transformation emerged to linked to the models that supported the strategy, organizational structure and culture, infrastructure and design, systems and resources, processes and competencies, leadership and specific performance management all changed.
- Key performance measures were not assigned to new processes or used to embed any changes, acting as a barrier to Indian railways cultural change.
- For the organization changes, related factors initiated the direction of the succeeding changes during the transformation state, thus the holistic transformation was emergent in environment, rather than a planned program.
- Factors in the literature justified are: Leadership and Commitment; Strategic Planning; Human Resource Development; Service Delivery, Servicescapes; Organizational Structure; Information Systems; Technology Management; Customer Focus. New factors emerged are Process Management; Service Culture; Key Performance; Un-remunerative Obligations

This section had presented an empirical research study of a qualitative analysis of survey of organizational transformation variables verification of Indian railways. In addition, this pilot study supports the appropriateness of the factor identified from the literature and has proved

useful in improvising upon the items construction under each construct in the final study and enhanced the organization transformation measuring instrument.

5.2. SAMPLE CHARACTERISTICS

A survey was conducted on Indian Railways (IR) organizational experts and focused on the extent and nature of organizational transformation issues within IR. This study is an investigation of organizational transformation issues in the context of strategic business orientation of Indian Railways (IR) which provide a wide variety of services and contributes for the economic development of the country. The cross-sectional survey method was applied because of its effectiveness as a tool for gathering a 'snapshot' of information about the subject under research. Following an initial pilot study on 156 organizational experts a personalized self-completion questionnaire was administered with detailed explanation of the nature and purpose of the research. The questionnaire was designed so as to elicit information on the key issues identified within the literature review on organizational change and transformation, and was as a result divided into five major sections containing questions relating to each area of concern The questionnaire was given at appendix.

The Indian Railways population for the study included all zones, divisions, production units, training institutions and other central organizations and included samples based on expert recommendations in order to obtain a larger population frame. We divided the population in groups based on the number of years of service indicating the type of responsibilities they have handled, the nature and area of their functioning indicated by the department they work and geographical area where they have been working predominantly to cover all possible combinations and to have broad representation. The study was conducted at the facility level at Railway Staff College, Vadodara where officers of all departments in railways from new recruits to the highest level of General Managers come for in-service training interventions as a sampling unit. A sample size of 318 was achieved. A very small number of missing data points in these 318 filled questionnaires were replaced with scale average scores. However, it was in just 12 of the 118 items under 13 constructs, namely, in 37,524 responses and hence

the data gaps are not significant. Sample size adequacy is judged to be satisfactory as the number of responses is more than the items in the measuring instrument that is 118 items under 13 constructs, a minimum requirement for sample size for statistical analysis purposes. Overall the sample size and the number of respondent managers represents across all divisions in the country are judged to represent the entire Indian railways population frame of the study quite well and hence the results from the study could be generalized for the Indian railways as a whole population under study.

5.3 RELIABILITY ANALYSIS

Internal consistency can be estimated using a reliability coefficient such as Crocnbach's alpha (α). Cronbach's alpha (α) is computed for a scale based on a given set of items described earlier in the questionnaire development based on the detailed work on construct development. It is a widely used measure of scale reliability and it is an index of reliability associated with the variation accounted for by the true score of the 'underlying construct', the construct being a hypothetical variable measured. Crocnbach's alpha (α) can be written as a function of the number of test items and the average inter-correlation among the items. We can observe from the formula that if you increase the number of items, you increase Cronbach's alpha. Additionally, if the average inter-item correlation is low, alpha will be low. As the average inter-item correlation increases, Cronbach's alpha increases as well. If the inter-item correlations are high, then there is evidence that the items are measuring the same underlying construct. This is really what is meant when someone says they have "high" or "good" reliability. They are referring to how well their items measure a single unidimensional latent construct. If we have multi-dimensional data, Cronbach's alpha will generally be low for all items. The Alpha coefficient ranges in value from 0 to 1 and is used to describe the reliability of factors from a mulit-point formatted questionnaire scales such as the five-point Likert's rating scale used in the present study. The higher the score, the more reliable the generated scale is. Typically, a scale is said to be reliable if α value is 0.7 or higher (Nunnaly, 1988). If a scale is found to violate this requirement, its items are examined, and those with the lowest item-total correlations are removed to see if the reliability is enhanced beyond the minimum requirements. This process is continued until

the scale is refined to meet the requirement of the reliability coefficient. But, researcher's judgment is called for in eliminating suggested items depending on the relevance of the item to the construct. Otherwise, a reliable scale lacking content validity may result. The Table 5.1 presents the sets of measurement associated with the 13 constructs and the reliability coefficient, the Cronbach's alpha (α) values for all the 13 scales. The standardized alpha values are also shown in the table, however, as noted already they are not specifically discussed, as the original alpha values are better indicators of reliability. All statistical analysis was carried out using SPSS 16 version software.

Table 5.1: The Reliability Analysis: Reliability Coefficients, Cronbach's Alpha and Standardized Cronbach's Alpha for all factors of Organizational Transformation Constructs

Construct	No. Of Items	Item Means for Scale	Means of Inter Item Covariance	Means of Inter Item Correlation	Cronbach Alpha (α)	Standardized Item Alpha (α)
1. Leadership and Commitment	9	3.8835	0.2998	0.3714	0.8476	**0.8475**
2. Strategic Planning	8	3.8217	0.3845	0.3895	0.8413	**0.8467**
3. Human Resource Development	16	3.6109	0.4974	0.4097	0.9297	**0.9286**
4. Service Delivery	12	3.7923	0.4425	0.4054	0.8867	**0.8869**
5. Process Management	9	3.9282	0.4999	0.4735	0.8907	**0.8925**
6. Service Culture	5	3.4159	0.6178	0.5620	0.8609	**0.8614**
7. Servicescapes	6	3.8965	0.4845	0.4714	0.8369	**0.8375**
8. Organizational Structure	7	3.6983	0.5098	0.4090	0.8448	**0.8411**
9. Information Systems	14	3.6995	0.6554	0.5324	0.9393	**0.9397**
10. Technology Management	6	3.9347	0.3365	0.4572	0.8306	**0.8398**
11. Customer Focus	9	3.9397	0.5606	0.4986	0.9091	**0.8998**
12. Key Performance	6	3.7152	0.1642	0.3365	0.7581	**0.7596**
13. Un-remunerative Obligation	10	3.9602	0.3944	0.3764	0.8521	**0.8551**
Overall Reliability	***118***	***3.8475***	***0.3726***	***0.3475***	***0.9852***	***0.9849***

None of the items are deleted at this stage, as Alpha values are reasonably high for all constructs. Before assessing the internal consistency of the measures, an item correlation matrix was constructed for each measure to examine the extent to which some common trait

was present in the items. Nunnaly (1978) indicated that low inter-item correlations indicate that the associated items are likely to have been inappropriately selected. Even an item correlation of 0.2 is considered adequate to be included in the list for further factor analysis.

In the analysis correlation of item number 5 with item 2 of Leadership and Commitment construct showed a correlation lower than 0.2, however, mean item correlation of 0.3714 for the construct is considered. Sometimes dropping some items from scales would improve the computed alpha values, no items were deleted to improve the alpha values as given in the Table 5.1 which are high and meet the criterion of exceeding 0.7 for all the scales. Also, this was done in order to ensure the content validity of each measurement scale. The reliability analysis for all constructs showed alpha (α) value of more than 0.82 except for the construct Key Performance which is 0.7596. As already noted that the computed value of an alpha is 0.70 or above is considered to be the criterion for demonstrating internal consistency of established scales. The range of computed alpha α value are 0.7581 to 0.9393 indicating that some constructs are more reliable than the others. Since the measurements used in this study are developed based on extensive literature review and organizational expert inputs, the alpha values achieved are considered to be sufficient. In addition, the constructs developed in this research are judged to be statistically reliable and hence specify that each construct is homogenous in nature.

5.4 ITEM ANALYSIS

Descriptive statistics for Item analysis for all variables considered for the research study has been done and the following Table 5.2 shows the results for individual items and also for all the constructs. Considering the mean values, one can conclude that Item 2 is the most important item that influences the construct Leadership and Commitment. Similarly item 2 for Strategic Planning, Item 2 for HRD, Item 8 for Organizational Structure; Item 9 for Process Management; Item 1 for Service Culture; Item 3 for Servicescapes, Item 1for Information Systems; Item 2 and 5 for Strategic Planning; Item 1 for Customer Focus; Item 3 for Key Performance ; and Item 10 for Un-remunerative Obligation are the most important items.

In general, item means for scale and individual item averages indicate an overall high average. The lowest mean of 3.21 for Item 5 of Strategic Planning and highest mean for Item 1 of Service Culture are noted. It is quite appropriate in that use of objective measures in planning in Indian railways is a recent phenomenon and not all levels in railways probably are very good at it. Also, highest mean of Service Culture indicate that the customer is the centre of services and that all the employees have such an orientation.

Table 5.2: Mean and Standard Deviation of All Items for the 13 Constructs

Constructs	Mean and Standard Deviation of Individual Items																
	Number Items for each column.	**Item 1**	**Item 2**	**Item 3**	**Item 4**	**Item 5**	**Item 6**	**Item 7**	**Item 8**	**Item 9**	**Item 10**	**Item 11**	**Item 12**	**Item 13**	**Item 14**	**Item 15**	**Item 16**
1. Leadership and Commitment	9	3.88 (1.07)*	4.34 (.79)	4.04 (.90)	4.07 (.88)	4.24 (.89)	4.08 (.92)	3.59 (1.03)	3.73 (.98)	4.15 (.88)							
2. Strategic Planning	8	3.98 (1.01)	4.07 (.84)	3.79 (.82)	3.35 (1.21)	3.21 (1.06)	3.82 (1.12)	3.98 (.89)	4.06 (.89)								
3. Human Resource Development	16	3.73 (1.01)	3.83 (.78)	3.82 (.97)	3.75 (1.23)	3.64 (.98)	3.24 (1.11)	3.39 (1.10)	3.67 (1.10)	3.58 (1.20)	3.45 (1.15)	3.68 (1.01)	3.67 (1.10)	3.15 (1.28)	4.05 (1.01)	3.31 (1.26)	3.31 (1.30)
4. Service Delivery	12	3.95 (1.14)	3.89 (.96)	3.74 (1.07)	3.88 (1.03)	3.97 (1.08)	3.87 (1.04)	3.96 (.99)	3.99 (1.01)	3.91 (0.96)	3.82 (1.15)	3.89 (1.00)	3.21 (1.27)				
5. Process Management	9	4.05 (1.05)	3.93 (1.05)	3.89 (1.10)	3.85 (1.10)	3.91 (0.94)	4.04 (0.98)	4.18 (0.97)	4.01 (1.03)	4.20 (1.07)							
6. Service Culture	5	4.28 (.93)	4.15 (.97)	3.70 (1.14)	3.93 (1.08)	3.84 (1.14)											
7. Servicescapes	6	3.86 (1.01)	4.01 (1.10)	4.11 (1.01)	4.06 (0.96)	3.94 (1.01)	3.93 (0.97)										
8. Organizational Structure	7	3.80 (1.14)	3.40 (1.24)	3.31 (1.19)	3.49 (1.18)	3.68 (1.23)	4.03 (0.97)	4.05 (1.08)	4.23 (1.97)								
9. Information Systems	14	4.00 (1.12)	3.77 (1.19)	3.81 (1.10)	3.56 (1.15)	3.59 (1.11)	3.64 (1.15)	3.76 (1.16)	3.85 (1.04)	3.64 (1.17)	3.86 (1.02)	3.70 (1.16)	3.44 (1.24)	3.66 (1.20)	3.62 (1.13)		
10. Technology Management	6	4.04 (0.91)	4.14 (0.92)	3.56 (1.15)	3.79 (1.02)	4.14 (0.86)	3.98 (1.00)										
11. Customer Focus	9	4.24 (0.96)	3.88 (1.02)	3.94 (1.15)	4.11 (0.97)	3.86 (1.06)	3.87 (1.06)	3.88 (1.10)	3.89 (1.11)	3.77 (1.04)							
12. Key Performance	6	3.23 (0.78)	3.53 (0.62)	3.88 (0.71)	3.79 (0.60)	3.55 (0.65)	3.79 (.68)										
13. Unremunerative obligation	10	3.95 (0.96)	4.02 (1.00)	3.98 (0.93)	4.09 (1.00)	4.11 (0.93)	3.74 (1.13)	3.73 (1.11)	3.74 (1.21)	3.88 (1.06)	4.35 (0.96)						

★ Number in the parenthesis indicates Standard Deviation

5.5 VALIDITY ANALYSIS

The face and content validity analysis is presented in the following sections. This refers to the goodness-of-fit of items within a scale. As a preliminary step to establish internal consistency validity, the mean score and the standard deviations of all items within a scale were first examined. To support the notion of Item Internal Consistency Validity, these values should be roughly equivalent for all items within a scale. Next, the Item to scale correlations was compared.

To measure the content validity Lawshe method is used and content validity ratio was obtained equal to 0.8. The computation is based on the ratings from a group of organizational experts in the field relevant to the area of research.

5.5.1 Face Validity

Any construct or criteria is considered to have face validity if the items are logically related to the perceived purpose of what it is supposed to measure. The researcher has to rely on his intuitive judgment through out the process of identifying and selecting the constructs and choosing the methods to validating them. To the researcher the first step is that of face validity i.e. by the virtue of mere appearance a measure is judged as valid or not. Through extensive literature review and expert inputs such insights are possible and further through a systematic analysis of concepts and measures of business transformation systems in organizations it is possible to arrive at useful measures.

The present research carried out a detailed analysis of review of empirical studies on organizational change and transformation in general and public sector organizations in particular assures that the thirteen constructs selected do indeed have face validity. This was further strengthened by expert inputs, both academic as well as senior railways managers closely involved in the management of IR. Based on this the thirteen construct organizational transformation model through strategic business orientation is judged to have high degree of face validity.

5.5.2 Content Validity

Development of measurement instrument for organizational transformation framework should at the first step ensure content validity. Confirmatory factor analysis approach for instrument validation is possible only if the constructs selected (a priori) and their representative scales are measuring what they are supposed to measure. If content validity is inadequate it indicates that the items of the instrument do not properly measure the construct and hence any further analysis is meaningless. Content validity is established through the selection of constructs based on a comprehensive analysis of literature review. The present research carried out an extensive research and analyzed the constructs most often implicated in research especially in empirical research on critical factors of organizational change and transformation. The instrument was developed and the items selected in that were reviewed by experts in the field of organizational transformation and IR management officials. The development of research Constructs has provided the genesis of the constructs in the present research and thus the content validity is established.

5.6 FACTOR ANALYSIS

Factor analysis was carried out for each of the 13 constructs of the study for construct validity and scale unidimensionality. Before that the communalities table for all the items were constructed. Table 5.3 presents communalities which are the proportion of each variable's variance that can be explained by the principal components. Analysis of the table presents 66.5 per cent of the variance in Item 1 is accounted for Leadership and Commitment while 69.8 per cent of variance in Item 6 is accounted for strategic planning. Over 65 per cent of the variance in item3 for Process Management, item 5 for Information systems and Technology Management and item 8 for Customer Focus is accounted for. 61.9 per cent of the variance in Item 1 is accounted for Servicesscapes. 80.3 per cent of the item 11 accounted for the measurement information and analysis. Over 70 per cent of the variance in item 2 for HRD, item 3 for Service delivery, item 5 for service culture, item 8 for Organizational Structure accounted for. Over 57 per cent of the variance in item 6 for Key Performance and item 9 for Un-remunerative Obligation accounted for.

Table 5.3: Item Wise Analysis of all Communalities

Constructs	Communalities for All Items															
	Number Items for each construct	**Item 1**	**Item 2**	**Item 3**	**Item 4**	**Item 5**	**Item 6**	**Item 7**	**Item 8**	**Item 9**	**Item 10**	**Item 11**	**Item 12**	**Item 13**	**Item 14**	**Item 15**	**Item 16**
1. Leadership and Commitment	9	0.665	0.462	0.393	0.425	0.349	0.486	0.489	0.296	0.437							
2. Strategic Planning	8	0.545	0.458	0.449	0.339	0.350	0.699	0.508	0.513								
3. Human Resource Development	16	0.716	0.719	0.498	0.519	0.506	0.487	0.667	0.729	0.599	0.665	0.499	0.638	0.617	0.479	0.645	0.569
4. Service Delivery	12	0.573	0.603	0.703	0.579	0.561	0.554	0.452	0.661	0.599	0.612	0.506	0.328				
5. Process Management	9	0.607	0.511	0.651	0.619	0.538	0.381	0.544	0.593	0.353							
6. Service Culture	5	0.596	0.597	0.658	0.643	0.733											
7. Servicescapes	6	0.619	0.538	0.502	0.508	0.577	0.578										
8. Organizational Structure	7	0.662	0.614	0.764	0.604	0.643	0.480	0.620	0.768								
9. Information Systems	14	0.695	0.696	0.719	0.652	0.702	0.826	0.554	0.700	0.776	0.598	0.805	0.706	0.796	0.703		
10. Technology Management	6	0.426	0.537	0.559	0.548	0.676	0.516										
11. Customer Focus	9	0.517	0.484	0.649	0.510	0.606	0.595	0.626	0.688	0.368							
12. Key Performance	6	0.452	0.429	0.460	0.400	0.415	0.574										
13. Un-remunerative Obligation	10	0.351	0.389	0.491	0.539	0.322	0.360	0.506	0.316	0.572	0.522						

Table 5.4 Factor Analysis Results for the 13 Constructs

Constructs	Number of Factors	Eigen Values	Factor Loadings										
			Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	% of Variance
1. Leadership and Commitment	1	3.857	0.797 (1)*	0.665 (2)	0.635 (3)	0.651 (4)	0.590 (5)	0.693 (6)	0.698 (7)	0.541 (8)	0.659 (9)		46.732
2. Strategic Planning	1	3.778	0.724 (10)	0.669 (11)	0.663 (12)	0.581 (13)	0.592 (14)	0.811 (15)	0.709 (16)	0.713 (17)			47.087
3. Human Resource Development	3	5.184 (Factor 1)	0.614 (20)	0.711 (21)	0.699 (22)	0.775 (26)	0.737 (27)	0.668 (29)	0.779 (30)	0.635 (31)	0.802 (32)	0.754 (33)	51.844
		2.379 (Factor 2)	0.686 (23)	0.859 (24)	0.785 (25)	0.745 (28)							59.481
		1.558 (Factor 3)	0.883 (18)	0.883 (19)									77.898
4. Service Delivery	2	3.892 (Factor 1)	0.742 (34)	0.753 (35)	0.828 (36)	0.726 (37)	0.744 (38)	0.742 (39)	0.677 (40)				55.615
		2.685 (Factor 2)	0.797 (41)	0.798 (42)	0.748 (43)	0.696 (44)	0.607 (45)						53.699
5. Process Management	1	4.789	0.779 (46)	0.715 (47)	0.794 (48)	0.787 (49)	0.734 (50)	0.617 (51)	0.738 (52)	0.770 (53)	0.594 (54)		53.088
6. Service Culture	1	3.221	0.772 (55)	0.773 (56)	0.807 (57)	0.802 (58)	0.856 (59)						64.399
7. Servicescapes	1	3.322	0.787 (60)	0.733 (61)	0.708 (62)	0.713 (63)	0.759 (64)	0.761 (65)					55.356
8. Organizational structure	2	3.117 (Factor 1)	0.750 (66)	0.811 (67)	0.842 (68)	0.785 (69)	0.756 (70)						62.351
		1.831 (Factor 2)	0.386 (71)	0.449 (72)	0.442 (73)								61.027
9. Information Systems	3	4.009 (Factor 1)	0.743 (76)	0.750 (80)	0.836 (81)	0.857 (82)	0.862 (86)	0.847 (87)					66.816
		3.428 (Factor 2)	0.788 (74)	0.826 (75)	0.808 (77)	0.846 (78)	0.869 (79)						68.558
		2.177 (Factor 3)	0.841 (83)	0.877 (84)	0.837 (85)								72.629
10. Technology Management	1	3.257	0.651 (88)	0.731 (89)	0.748 (90)	0.740 (91)	0.821 (92)	0.718 (93)					54.238
11. Customer Focus	1	5.026	0.717 (94)	0.69 4(95)	0.805 (96)	0.713 (97)	0.777 (98)	0.770 (99)	0.790 (100)	0.828 (101)	0.603 (102)		55.818
12. Key Performance	1	2.734	0.672 (103)	0.655(104)	0.678(105)	0.632(106)	0.644(107)	0.758(108)					43.508
13. Un-remunerative Obligation	1	4.379	0.592 (109)	0.623 (110)	0.701 (111)	0.734 (112)	0.567 (113)	0.600 (114)	0.711 (115)	0.563 (116)	0.757 (117)	0.722 (118)	43.682

Table 5.4 presents the results of the factor analysis for the 13 constructs. From the Table 5.4 we can infer that for the construct 'Leadership and Commitment", the first factor has an Eigen value of 3.857. Since this is greater than 1.0, it explains more variance than a single variable, in fact 3.857 times as much. The per cent of variance explained by this factor is 46.73%. For the construct "un-remunerative obligation' the First factor has an eigen value of 4.379. It indicates that this factor explains more variance than a single variable, in fact 4.379 times as much. In general, the percent of variance explained by the factors fell in the range of 43.508 (Key Performance) to 64.399 (Service Culture).

Taking a closer look at the factor loadings of these nine constructs, majority of the individual items are show loadings in the range of 0.6 and 0.7 which show the appropriateness of the items in the scale. Only six (6) items have factor loadings below 0.6. It can be noted that statistically 0.3 and above is considered good enough. And also it was of interest to see if the items had any specific explanatory power in the light of the results. These items in general show lower item means of Table 5.3 than other items in their respective groups. Under the Leadership and Commitment the item number 8 has 0.541 loading. One possible explanation for slightly lower loading is the possibility that management commitment to customer focus varies. Also, the fact that top, senior and middle level managers participated in the survey provided the true picture of level of implementation and hence the commitment is in reality lower than expected for achieving highest organizational transformation. Items 4 and 5 of Strategic Planning have 0.581 and 0.592. Strategic planning in railways is carried out formally in the recent years as professional management is becoming more and more common in the sector. Predictability and forecasting based on data is not so easy in the field in such a situation but the situation is fast changing as railways. One can note that sometimes the long-term plans are looked 'whimsical' on the part of the top management. Three items under 'Un-remunerative Obligation construct namely' 1, 5 & 8 have slightly lower factor loadings. It is important to note that the good intensions of railways un-remunerative equity probably will always fall short in the current economic conditions of the country.

5.6.1. Construct Validity

Construct validity measures the extent to which the items in a scale all measure the same construct. A measure is construct valid to the degree that it assesses the magnitude and direction of a representative sample of the characteristics of the construct and to the degree that the measure is not contaminated with elements from the domain of other constructs or errors. The construct validity can be evaluated by the use of CFA of factor analysis.

One of the measures to quantify the degree of inter-correlation among the variables and the appropriateness of factor analysis is the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO). A small value of KMO means each variable cannot be predicted or explained by the other variables without significant error; hence factor analysis may not be appropriate. This KMO measure varies between 0 and 1, and the closer the values to 1 are better values. As a guideline, KMO values in the 0.90s are considered as marvelous; 0.80s are meritorious; 0.70s are middling; 0.60s are mediocre; 0.50s are miserable; and below 0.50s are unacceptable (Hair et al, 1995 cited in Ang et al, 2000 pg. 57). Individual variables which have KMO values lower than 0.50 should be considered for exclusion. The overall KMO values for 13 measures are also given in the Table 5.5.

Table 5.5 Kaiser-Meyer-Olkin (KMO) Values for 13 Constructs

Construct	No. of Items	Items deleted	KMO Value
1. Leadership and Commitment	9	None	0.868
2. Strategic Planning	8	None	0.859
3. Human Resource Development	16	None	0.918*
4. Service Delivery	12	None	0.876*
5. Process Management	9	None	0.869
6. Service Culture	5	None	0.791
7. Servicescapes	6	None	0.811
8. Organizational structure	7	None	0.814*
9. Information Systems	14	None	0.919*
10. Technology Management	6	None	0.817
11. Customer Focus	9	None	0.898
12. Key Performance	6	None	0.816
13. Un-remunerative obligation	10	None	0.864

★ Constructs 3, 4, 8 & 9 did not meet the unifactorial criteria and were split in factor analysis, the factor analysis and KMOs for split factors will be shown and discussed later.

Table 5.5 analysis makes it is clear that all the constructs show KMO values more than 0.791, the construct Service Culture. The constructs Human Resource Development as well as Information Systems fall under the category of marvelous as per Hair et al's classification of measure of sampling adequacy. A large number of constructs 1, 2, 4, 5, 7, 8, 10, 11, 12 and 13 are considered meritorious and factor 6 namely Service Culture is middling. However, the value of 0.791 for Service Culture is closer to 0.8 hence can also be considered as meritorious. The range of KMO values is 0.791 to 0.919 which is considered quite high overall and hence factor analysis is a good way to verify the number of dimensions conceptualized and developed in this research.

5.6.2 Unidimensionality - Scale Measure

Unidimensionality measure is a must for constructs so that the items grouped together under each construct estimate the single variable. It is then assumed that the items within a measure share a common nucleus i.e. the characteristic to be measured. In the present research, the constructs were prespecified and hence the constructs were subjected to a tentative test of unidimensionality. Using the CFA for the constructs, each construct was subjected to an individual principle component analysis using SPSS program's data reduction analysis.

Scale unidimensionality was tested and confirmed for each scale using the data collected from managers of Indian railways. If each factor were valid as a construct, then its set of variables would form a single factor (unifactorial or unidimensional in nature). Carmines and Zeller (1979) guidelines as cited in Meyer and Collier (2001, pg. 411-412) were followed to determine the factor analysis statistics. The percent of variance explained by the first principle component of each measurement scale was considered as an important. One criterion is that the first component of each scale explains more than 40% of the variance in the items. The second criteria is that the factor loadings for items should be greater than 0.30, in fact this study considered items whose factor loadings are greater than 0.40. The two remaining criteria were considered: a large eigen values for the first component and small,

fairly equal eigen values for subsequent components for subsequent components. These were evaluated for the study data set.

The factor matrix for the 13 constructs of organizational transformation system is presented in Table 5.6. In this measure each was assumed to be a separate construct. The results show that the driving systems of Leadership and Commitment and Strategic Planning and the goals of organizational transformation system namely Customer Focus, Key Performance and Un-remunerative obligation, dimensions were unifactorial. Also, among the organizational transformation system enabling the following constructs Process Management, Service Culture, Servicescapes, and Technology Management all showed a clear scale unidimensionality. That is nine constructs out of the thirteen were clearly unidimensional in nature in this study and the four factors namely, Human Resource Development, Service Delivery, Organizational Structure, and Information Systems split into 2-3 factors each. The factors that split were again subjected to similar kind of analysis to ensure reliability and validity. These factors were sent to a panel of experts in academia and railways, independently for labeling the newly grouped items in order to ensure content validity. Through a three-stage process these were labeled a suitable name. The details of factor analysis and labeling process are discussed in the following sections.

5.6.3 Analysis of Four Split Factors

This section presents the results and discussion of four constructs which did not fulfill the criteria of unidimensionality in factor analysis and split into 2 or 3 sub-factors. Empirical research studies have shown such splitting of factors after factor analysis and the decision by researchers to include them as separate factors are based on other statistics such as eigen values, KMO values and per cent variance explained by the set of sub-factors. For instance, research by Saraph et al (1989) worked on measures for critical factors for quality management, which does not address any further steps if the performance measures under a single construct loads on to more than one factor. Items of Information Systems were not found to be unifactorial in Ang et al's (2000) study and two factors formed out of the times. However, Ang et al argued that high factor loadings in the range of 0.73 to 0.86 with a large

sample size of the study did not warrant the use of rotated solution. Similarly, in Zhang et al (2000) reported that from the construct Evaluation two factors emerged and two factors emerged from Process Control and Improvement. The researchers argued that since the aim of using service related information was to evaluate an organization's transformation management practices and that the items were carefully selected to represent the scales chosen, the factor split was not considered crucial. In fact, interpretations should be based on the total view of research contents and sampling frame. Without such caution it is possible to overstate the statistical findings. Such results warrant further research to ensure construct validity. One possibility is that this type of research work using cross sectional survey of data on railways for identification and validation of constructs for organizational transformation system is being conducted for the first in India and the transformation management practices are beginning to evolve. However, the other statistical values of eigenvalues, per cent variance explained, measure of sampling adequacy indicate that the constructs and the items are properly selected and do indicate the criticality of the constructs in question.

The following section examines the factor analysis of four constructs namely Human Resource Development (Construct 3), Service Delivery (Construct 4), Organizational Structure (Construct 8) and Information Systems (Construct 9), which did not satisfy the criteria of unidimensionality in this main study. The following section provides the results of factor analysis of the four constructs using Verimax rotation and identification of sub-factors under them.

5.6.3.1 Human Resource Development (Construct 3)

Construct 3 namely, Human Resource Development split into three components. As Tables 5.6 shows the construct number 3 namely Human Resource Development with 16 items did not satisfy the criteria of unidimensioanlity but split into three factors. This construct primarily considers all areas of Human Resource Planning, Training, Motivation and Development of employees. This construct we all know that is critical for Organizational Transformation issues in IR. Unrotated factor loadings indicate that majority of items have loadings in the range of 0.6 and 0.7. Though the factor is split one can conclude that the construct can be considered as a separate factor. Verimax rotation gives three components

with some items clearly grouped. However, items 20, 21, 27, 28, 32 and 33 were loading onto two factors and the grouping was done depending on the highest value on which the item was loading. Further, each factor was analyzed and all three factors did not split further. Each factor was again tested for reliability coefficient the Cronbach's alpha value, sampling adequacy value and the % variance explained. The reliability for split factors is high with more than 0.7 and hence found to be reliable. KMO values however for factor three is 0.496 as there are only two items under the factor. Though these items can be removed to make the overall construct single dimensional, the construct would lose important areas that the Human Resource Development should include. Also, the eigenvalues 5.387, 2.689 and 1.729 are judged to be large enough to make the factors significant as well as the % variance explained by all the three factors are high to consider all the three factors as sub-factors under the construct of Human Resource Development.

Tables 5.6: Unrotated and Rotated (Verimax Rotation) Factor loadings for the construct Human Resource Development (HRD)

Unrotated Component Matrix (a)
Construct 3:
Human Resource Development

	COMPONENTS		
	1	2	3
VAR032	0.778		
VAR026	0.759		
VAR030	0.764		
VAR033	0.749		
VAR024	0.712		
VAR027	0.733		
VAR021	0.708		
VAR028	0.689		
VAR025	0.685		-0.503
VAR022	0.675		
VAR018	0.646	0.554	
VAR031	0.624		
VAR029	0.599		
VAR023	0.589		
VAR020	0.588		
VAR019	0.525	0.596	

Rotated Component Matrix (a)
Construct 3:
Human Resource Development

	COMPONENTS		
	1	2	3
VAR029	0.799		
VAR022	0.628		
VAR030	0.625		
VAR033	0.602	0.465	
VAR031	0.599		
VAR032	0.575	0.556	
VAR027	0.579		0.568
VAR021	0.575	0.449	
VAR026	0.575	0.477	
VAR020	0.574	0.419	
VAR025		0.802	
VAR024		0.795	
VAR023		0.624	
VAR028		0.573	
VAR019			0.825
VAR018		0.484	0.688
KMO	0.918	0.789	0.478
Cronbach Alpha (α)	0.8963	0.7698	0.7006
Eigen Value	5.387	2.689	1.729
% Variance Explained	51.834%	59.471%	77.891%

5.6.3.2 Service Delivery (Construct 4)

Service delivery, Construct 4 namely split into two components. Tables 5.7 show the results of factor analysis of Construct 4. This factor measured all aspects of developing the Service Delivery aspects for organizational transformation. Experts also have indicated the importance of Service Design in general and service design and delivery in a government organization like IR in particular is of great importance. It takes into consideration customer needs; new technologies and developments in the field of signaling, accounting practices, reservation systems, and changes in the services should be provided on a continuous basis. Unrotated factor loadings indicate that majority of items have loadings in the range of 0.4 and 0.8. Though the factor is split one can conclude that the construct can be considered as a separate and a significant factor. Verimax rotation gives three components with the items clearly grouped with only two items loading on two factors.

The Table 5.7 shows that the reliability for split factors is high with alpha values with 0.8879 and 0.7909 and hence found to be reliable. The KMO values are also high with 0.878 and 0.804 values. For factor three is 0.5 as there are only two items under the factor. Also, the eigenvalues 3.901 and 2.712 are well above the usual cut off of 1 and hence the factors are judged to be significant. The % variance explained by all both the factors are high and hence it is concluded that the two factors be included as sub-factors under the construct of Service Delivery.

Table 5.7: Unrotated and Rotated (Verimax Rotation) Factor loadings for the Construct Service Delivery.

Unrotated Component Matrix (a)
Construct 4 Service Delivery

	COMPONENTS	
	1	2
VAR039	0.753	
VAR036	0.752	
VAR042	0.736	
VAR034	0.734	
VAR038	0.699	
VAR035	0.695	
VAR040	0.682	
VAR037	0.675	
VAR041	0.640	0.525
VAR043	0.598	0.527
VAR044	0.570	0.434
VAR045	0.579	

Rotated Component Matrix (a)
Construct 4 Service Delivery

	COMPONENTS	
	1	2
VAR036	0.827	
VAR035	0.764	
VAR037	0.752	
VAR038	0.724	
VAR034	0.701	
VAR039	0.546	0.523
VAR040	0.503	0.446
VAR041		0.799
VAR043		0.775
VAR044		0.696
VAR042		0.672
VAR045		0.412
KMO	0.878	0.804
Cronbach Alpha (α)	0.8879	0.7909
Eigen Value	3.901	2.712
% Variance Explained	56.625	53.727

5.6.3.3 Organizational Structure (Construct 8)

The factor analysis split the Organizational Structure (Construct 8) two components. Tables 5.8 show the results of factor analysis of Scale 8. The construct measured the areas of designing of how general administrative operations are integrated into system and employee related activities as well as the regulatory and other aspects of running the organization. In general, IR administration operations become complex in railways if organizational structure is not clear.. If administrative procedures are not well integrated and smoothly coordinated, the actual delivery of services itself might suffer.

Unrotated factor loadings indicate that majority of items have loadings in the range of 0.4 and 0.7. Though the factor is split one can conclude that the construct can be considered as a separate and a significant factor. Verimax rotation gives two components with the items clearly grouped with only one item (Item 70) loading on two components. Items loading on a factor with highest loading are considered and further, both the split factors were analyzed. Each factor was again tested for reliability coefficient, KMO value and the per cent variance explained. The results shows that the reliability for split factors is high with alpha values with 0.8672 and 0.7003 and hence found to be reliable. KMO values are also high with

0.875 and 0.679 values. Also, the eigenvalues 3.2219 and 1.9076 are well above the usual cut off of 1 and hence the factors are judged to be significant. The per cent variance explained by all both the factors are high and hence it is concluded that the two factors be included as sub-factors under the construct of Organizational Structure. The Scale items of the two components for the construct Organizational Structure are given below this component matrix Table 5.8.

Table 5.8: Unrotated and Rotated (Verimax Rotation) Factor loadings for the Construct Organizational Structure

Component Matrix(a)
Construct 8 Organizational Structure

	Component	
	1	2
VAR070	0.797	
VAR068	0.765	-0.422
VAR069	0.765	
VAR067	0.760	
VAR066	0.668	-0.465
VAR071	0.638	
VAR072	0.633	0.469
VAR073	0.468	0.741

Rotated Component Matrix(a)
Construct 8 Organizational Structure

	Component	
	1	2
VAR068	0.868	
VAR066	0.813	
VAR067	0.729	
VAR069	0.701	
VAR070	.0597	0.535
VAR073		0.875
VAR072		0.750
VAR071		0.592
KMO	0.875	0.679
Cronbackh Alpha (α)	0.8672	0.7003
Eigen Value	3.2219	1.9076
% Variance Explained	62.341%	61.025%

5.6.3.4 Information Systems (Construct 9)

Information Systems Construct split into three components. Tables 5.9 shows that this construct, number 9 did not satisfy the criteria of unidimensioanlity but split into three factors. The construct measured the areas of use of data collection, analysis and information system. Use of tools and data analysis for planning, improving, and performance improvement is the hallmark of Organizational Transformation. With the advancements in information processing capabilities with computers and networking, net work Information System has become highly sophisticated. Though railways have been earlier rather slow to

adapt, it is one area where information processing and networking continues to be very promising for communication within the departments and to enhance interfacing with various departments and groups of in the IR. Many studies on organizational transformation have clearly indicated that this construct is critical for Organizational Transformation implementation in organizations.

Unrotated factor loadings indicate that majority of items have loadings in the range of 0.7 and 0.8. Based on such high factor loadings one can conclude that the construct can be considered as a single factor even though the factor is split. Solution with Verimax rotation gives three components with some items clearly grouped. However, considering the items that were loading onto two factors and the grouping was done depending on the highest value on which the item was loading. Each factor was analyzed and all the three factors did not split further. Each factor was again tested for reliability coefficient, KMO value and the per cent variance explained. The results show that the reliability for split factors is high with more than 0.8198 and hence found to be having high reliability.

KMO values for sampling adequacy for the three factors are 0.902, 0.838 and 0.748. Also, the eigenvalues 4.106, 3.537 and 2.207 are large enough to make the factors significant. The per cent variance explained by all the three factors are above 67 are quite high and therefore, the three factors can form critical sub-factors under the construct of Information Systems. The groupings of the factors by items indicate that the three sub-factors closely measure data analysis. The scale items with verimax-rotated solution are given below and the Table 5.9 shows the unrotated and rotated solution for the Construct 9.

Table 5.9: Unrotated and Rotated (Verimax Rotation) Factor loadings for the construct Information Systems.

Component Matrix(a)
Construct 9 Information Systems

	Component		
	1	2	3
VAR082	0.856		
VAR079	0.838		
VAR081	0.769		
VAR087	0.769		
VAR078	0.763		
VAR086	0.748		
VAR075	0.749		
VAR080	0.724		
VAR084	0.723		0.533
VAR074	0.723		
VAR077	0.720		
VAR076	0.717		-0.431
VAR085	0.708		
VAR083	0.703		

Rotated Component Matrix(a)
Construct 9 Information Systems

	Component		
	1	2	3
VAR086	0.835		
VAR087	0.727		
VAR081	0.715		
VAR082	0.636		0.526
VAR076	0.604	0.595	
VAR080	0.567	0.413	
VAR074		0.747	
VAR075		0.744	
VAR077		0.710	
VAR078		0.684	0.439
VAR079		0.652	0.601
VAR084			0.825
VAR085			0.745
VAR083	.477		0.580
KMO	**0.902**	**0.838**	**0.748**
Cronbach Alpha (α)	0.8992	0.8848	0.8198
Eigen Value	4.106	3.537	2.207
% Variance Explained	67.347%	69.577%	74.688%

5.6.4 Labeling of Sub-Factors

The constructs 3, 4, 8 and 9 were split and the analysis was presented above and further it was decided to identify the sub-factors by specific labels based on the items. This was done in order to again establish the content validity as new groups of items emerged from factor analysis which was different from the original defined set of items from literature analysis and expert inputs. Like many researchers, Delphi technique was used for choosing the most appropriate label for the subfactors. The opinions of the experts in the field were sought. The experts group of sixteen number consisted on academicians and senior managers in charge of decision making were considered. The following procedure was adopted:

The steps followed were:

- The factors which were extracted during factor analysis, the four factors which did not fulfill the unidimensionality criteria and split into more than one factor, were provided a suitable label.
- Expert opinion was sought anonymously and individually through mail. They were sent the items grouped in the order and the purpose was clearly explained. Each expert was requested to provide a label to each group of factors.
- These opinions were analyzed, and again all the labels for each sub-factor were sent back and each expert was asked to select the best title label from those collected in the first round.
- Four rounds of the above process were carried out and a consensus was reached.

Based on the Delphi technique and expert opinion consensus building process, the labels for subfactors of the constructs, Construct 3- HRD (3 Sub factors), Construct 4- Service Delivery (2 Sub Factors), Construct 8 - Organizational Structure (2 Sub factors), Construct 9 – Information Systems (3 Sub factors) were emerged and utilized for the study.

5.6.5 Constructs and their Relationships

The analysis presented above validated the criticality of the 13 constructs of the Organizational Transformation framework based on the implementation levels of IR in the country with the help of a cross-sectional survey. To understand how these constructs are related to each other, it was decided to carry out a Pearson bivariate correlation analysis.

From the respondents, the senior managers who were involved in administrative activities/committees were interviewed about the various strategies they adopt for improvement and finally asked to rate the performance level among under each management strategy. A five-point Likert Scale was used to for the purpose. The rating scale used is as follows: 1-Worst; 2-Below Average; 3-Average; 4-Above Average and 5-Best in the existing setup. A total of 49 senior managers participated in this study and the ratings for each construct for all 13 constructs in all were noted. The results are presented in the Table 5.10. It is of interest to note from the rating data that the senior administrative managers rarely rated the performance as excellent for all transformation management strategies and hence were realistic in their assessment. The means for the constructs indicate that the performance level is above average for all. The standard deviations do not show unusual data deviations and are judged to be reliable.

The Table 5.10 clearly shows that all the correlations among the constructs are positive. This finding lends support to the notion that the Organizational Transformation System strategies should be implemented holistically rather than piecemeal. Correlations of 0.25 and above are considered to be good for drawing conclusions about the interactive nature of the two variables involved. Leadership and Commitment correlates well with all the constructs and therefore it can be seen as a necessary condition for ensuring various transformation management strategies in IR. The leadership in IR is taking up a proactive approach and building systems and structures for transformation. In the last two decades the success of IR have been because of partly visionary leadership, and professional management, It, however, shows a relatively low correlation with 'Service Culture' (0.3025) which indicates that Leadership and Commitment is a necessary condition but not a sufficient condition for achieving superior service. There is however, a definite recognition and realization in that commitments from various groups of people in the IR are essential for reaching excellence. Strategic Planning shows lower than desirable correlations especially with un-remunerative obligation. Presently IR is concentrating on developing their infrastructure and service capabilities. The main focus is business, making new projects viable cost wise, and it is a basic economics factor.

Human Resource Development is well correlated with Leadership and Commitment (0.468), Strategic Planning (0.464), Service Delivery (0.462), Customer Focus (0.469) and Un-remunerative Obligation (0.471). This indicates that the HRD strategy of Personnel Planning, Employee well-being, Empowerment and Training is very essential to transformation in IR. The strength of the IR in terms of highly skilled professionals are challenged by staff turnover and training requirements.

Service Delivery correlates very well with Process Management (0.612), Leadership and Commitment (0.502), Strategic Planning (0.423), Human Resources Development (0.462), Servicescapes (0.533), Organizational Structure (0.446), Technology Management (0.543), Customer Focus (0.456) and Key Performance (0.469). These results also suggest a reinforcing impact of the critical role of service delivery i.e. the technical input is attaining a superior overall service quality. Process Management in fact shows one of the best correlations with almost all other constructs and this can be said to be in synergy with services which essentially determines how well services are delivered.

Customer Focus, most important goal of any organization shows good levels of correlations with almost all constructs. Its relation to Technology Management is rather low (0.271) and it is possible that the customers are not directly judging the technology but would be interested in the overall technological services, technical and service aspects whereas its relation to transformation would be crucial. The customer focus is perceived to be more of an attitude, a behavioral aspect rather than any tangible asset driven by technology. The correlation values of Technology Management tend to support such a conclusion. Technology Management shows low correlation with Service Culture (0.151) and Information Systems (0.189). It is not clear if it is because of lower implementation levels of the strategies by themselves or the relationships themselves are of lower order.

Key Performance of organizational performance is correlated well with almost all factors and it shows the importance of integrating Key Performance into a Organizational Transformation System. Logically speaking, organizations will not implement transformation as a strategy if it does not enhance overall performance. Transformation has become an

important competitive strategy for long term survival and interviews with a large number of experts and Senior Managers in the course of the research confirms such a notion. As one takes a closer look at the table Un-remunerative Obligation is one factor that shows low correlations with Strategic Planning (0.142), Service Delivery (0.121), Servicescapes (0.215, Organizational Structure (0.173) and Technology Management (0.208). There is a possibility of a stronger commercial orientation and financial viability of IR in general in the modern competitive world and it is natural that the social orientation is not judged as important. Though all correlations are positive this factor needs to be further researched. IR service providers cannot leave out the social orientation as it is often seen as a yardstick of society's development in general. It is possible the weights that a manager assigns among organizational strategies for excellence to this factor would be low; however, the scope of the current research did not include that aspect of study.

Table 5.10. Pearson Correlation Coefficient Matrices for 13 Constructs

	Mean	Std. D	L&C	SP	HRD	SD	PM	SC	SS	OS	IS	TM	CF	KR	UO
L&C	3.7213	0.4823	1.000												
SP	3.6554	0.5001	0.698	1.000											
HRD	3.5837	0.5099	0.468	0.464	1.000										
SD	3.6536	0.4969	0.502	0.423	0.462	1.000									
PM	3.6536	0.4969	0.504	0.423	0.468	0.612	1.000								
SC	3.6535	0.4959	0.3025	0.278	0.269	0.289	0.416	1.000							
SS	3.6012	.05064	0.443	0.535	0.269	0.533	0.719	0.352	1.000						
OS	3.4024	0.5064	0.389	0.643	0.273	0.446	0.439	0.256	0.509	1.000					
IS	3.3723	0.4624	0.426	0.276	0.354	0.369	0.471	o.261	0.312	0.333	1.000				
TM	3.6014	0.5069	0.637	0.343	0.354	0.543	0.341	0.151	0.442	0.438	0.189	1.000			
CF	3.6014	0.5069	0.438	0.342	0.469	0.456	0.536	0.536	0.458	0.508	0.306	0.271	1.000		
KR	3.5932	0.5098	0.764	0.662	0.267	0.469	0.469	0.469	0.368	0.581	0.562	0.361	0.551	1.000	
UO	3.4728	0.5098	0.442	0.142	0.471	0.121	0.502	0.502	0.215	0.173	0.478	0.208	0.391	0.292	1.000

NOTE: L&C- Leadership & Commitment; SP-Strategic Planning; HRD-Human Resource Development; SD-Services Delivery; PM-Process Management; SC-Service Culture; SS-Servicescapes; OS-Organizational Structure ; IS- Information Systems; TM- Technology Management; CF -Customer Focus; KP-Key Performance;
UO- Un-remunerative Obligation

All estimates correlations are statistically significant with p<.0 05

5.7. CONCLUSION

This chapter presented and discussed the results of the statistical analysis performed on the data provided by managers in the Indian Railways for organizational Transformation system. Several data-related issues, including data collection, sample characteristics and validity and reliability were also discussed. The empirical analysis served several purposes. Analysis of goodness-of-fit was conducted to test the fit of the model to the sample data, and Pearson correlations between the variables were calculated to test the validity and reliability of each indicator and construct. Different items were grouped under thirteen organizational transformational constructs and a questionnaire was designed and administered among the railway managers. A detailed analysis of the results of this cross-sectional survey conducted for validation of constructs is described. After thorough survey of literature and examination of the relationships among the constructs, the proposed integrated framework for organizational transformation through strategic business orientation for Indian Railways is developed. The complete analysis is presented under Sample Characteristics, Reliability Analysis, Item Analysis, Construct Validity and Scale unidimensionality sections.

In-depth analysis of responses of Indian railways experts were considered for improving the Organizational Transformation system instrument for Indian railways. The scales were empirically validated. The instrument presented in this research has high external and internal validity for Indian Railways. The reason is that the data for testing and validation of the instrument typically evolved from large sample of experienced managers of all zones/divisions/departments/sections of Indian railways with a wide variety of services they handle and the experience they posses. Confirmatory Factor Analysis was followed for scale validation, which incorporates empirical confirmation of the developed scales (constructs) being valid representations of the corresponding constructs based on Ahire et al (1996). The following specific steps to validate the 13 constructs of the measuring instrument were used.

- Reliability analysis using Cronbach's alpha coefficient. Item analysis using means and standard deviation. Verifying the sampling adequacy using Kaiser-Meyer-Olkin (KMO) values.

- Using communalities from factor analysis, verification of face and content validity. Construct validity check using Principal Component Analysis
- Unidimensionality of each scale using CFA with factor analysis
- Four constructs of the selected 13 constructs, which did not fulfill the criteria of unidimensionality, were further tested for reliability and validity using the same procedure as in the original set. Verimax-rotation provided more than one factor grouping and content validity was established by a labeling procedure using Delphi technique with experts from both academics and IR. The original factors were retained with sub-factors under each of them.

Constructs validation with an appropriate methodology and confirmation of the acceptance of hypothesis namely *the framework for organizational transformations is a 13-construct structure consisting of the following constructs: Leadership and Commitment; Strategic Planning; Human Resource Development; Service Delivery; Process Management; Service Culture; Servicescapes; Organizational Structure; Information Systems; Technology Management; Customer Focus ; Key Performance; and Un-remunerative obligation"* is drawn and presented in next chapter.

CHAPTER 6
SUMMARY AND CONCLUSIONS

6.0 SUMMARY AND CONCLUSIONS

This final chapter summarizes the research, draws conclusions, and discusses implications of the findings and limitations of the study. The chapter also provides suggestions for future research.

This research is an investigation of identifying the variables for the organizational transformation of Indian Railways. The transformation is viewed as a process of thoughtful and fundamental change that orients an organization in a new direction and takes it to completely different level of performance. It is noted that organizational transformation has not been widely studied in India, especially in government organizations. Not many prior research have examined Indian Railways organizational transformation issues by defining a measuring instrument through constructs for organizational transformation process and, much less the effects of these variables on their strategic business orientation.

On the basis of theoretical and empirical literature, a strategic management framework was developed to guide the research. The framework links perceived factors which influence the organizational transformation of Indian railways. These factors were well tested initially by forming a fundamental hypothesis concerning the relationships between these factors in the context of Indian Railways. A well structured exhaustive questionnaire was developed to measure the variables. It was administrated on 318 officers at the facility level at Railway Staff College, Vadodara, Gujarat, where officers of all departments in railways from new recruits to the highest level of General Managers come for in-service training interventions. By performing extensive literature review and after analysis and synthesis of information from experts, thirteen constructs were identified as critical to transformation for Indian railways. The content analysis of the information collected from this study was done to check the appropriateness of these thirteen constructs. The statistical analysis proved the appropriateness of inclusion of these constructs. The analysis included the internal consistency using cronbach alpha reliability coefficient and item analysis, Kaiser-Meyer Olkin (KMO) Measure of sample adequacy and construct validity for checking the

unidimensionality of the factors with the help of Principle Component Analysis. The Labeling of the sub factor emerging from the factor analysis was done using Delphi Technique which was executed with academicians, management consultants and senior railway officers. Further, the relationship between these thirteen variables was analyzed using Pearson bivariate correlation results. Analysis of goodness-of-fit was conducted to test the explanatory power of the constructs. Pearson correlations were calculated to test the validity and reliability of each item and construct. Further analysis was conducted to test the hypotheses that "*The framework for Organizational transformation is a 13-construct structure consisting of the following: Leadership and Commitment; Strategic Planning; Human Resource Development; Service Delivery; Process Management; Service Culture; Servicescapes; Organizational Structure ; Information Systems; Technology Management; Customer Focus; Key Performance; and Un-remunerative obligations"*.

Positive correlations among these variables have shown that these variables are interrelated and can be combined in a holistic manner in order to propose an integrated framework of organizational transformation..

6.1. AN INTEGRATED AND HOLISTIC FRAMEWORK FOR ORGANIZATIONAL TRANSFORMATION OF INDIAN RAILWAYS

The instrument developed to measure the organizational transformation process solicited the Indian Railway's employee respondents' perceptions, which have vast actual ground level experience, with respect to the defined items measured on a five-point Likert scale. The items were arranged in a random order in the questionnaire to avoid any bias in the responses. The present research identified the following 13 constructs of organizational transformation as critical for the organization.

1. ***Leadership and Commitment***
2. ***Strategic Planning***
3. ***Human Resource Development***
4. ***Service Delivery***

5. ***Process Management***
6. ***Service Culture***
7. ***Servicescapes***
8. ***Organizational Structure***
9. ***Information Systems***
10. ***Technology Management***
11. ***Customer Focus***
12. ***Key Performance***
13. ***Un-remunerative obligations***

The items of the questionnaire were grouped according to these thirteen constructs and analysis was conducted. These constructs will form the basis of an integrated frame work for holistic transformation of Indian Railways through strategic business orientation.

Any transformational process has to be directed to achieve certain goals. Most obvious process for such process will be to improve the key performance of the organization on which its survival depends. The Indian Railway being a service organization improving service delivery also will be one of the goals of the process. Railways always were an instrument for regional development and social cause. It does not function purely as a profit centric entity thus investments have to go into certain strategic needs, regional and social requirement, even if these are not financially viable. Indian railways have to remain viable and yet fulfill unremunerative obligations. Thus meeting unremunerative obligations is also considered to be one of the goals to be achieved. The constructs, Key performance, Service delivery and unremunerative obligations were identified as goals for the transformation process of Indian railways.

To achieve goals, system needs driver which can drive necessary change in all parts of organization. These drivers should have strong correlation with all other variables to be capable of influencing these variables holistically in the desired direction to bring about

change and achieve stated goals. From the bivariate correlation matrix analysis presented in chapter 5, it is seen that Leadership and commitment and strategic planning have strong correlations with all other constructs. Thus these constructs were identified as part of driver system.

Any driver system has to operate on variables which will enable the desired change to attain the goals. These constructs will form the enabler system. As the remaining eight constructs have strong inter-correlations with all other constructs, as brought in chapter five, these have been considered as part of enabler system.

Based on the above discussion a holistic framework for transformation of Indian railways has been evolved. This framework identifies various constructs forming part of driver system, enabler system and goals based on analysis of data and discussion with experts of Indian railways. The constructs were classified as under.

Goals : Key Performance; Service Delivery; Unremunerative obligations
Driver System : Leadership and Commitment; Strategic Planning
Enabler System: Customer Focus, Service Culture;
Servicescapes; Information System;
Human Resource Development; Technology Management;
Process Management and Organizational Structure

These constructs were placed in the framework based on their inter correlations. These constructs have to act synergically to achieve a successful transformation. The relationship among various contrasts in terms of drivers and goals has been analyzed in context of Indian railways by the bivariate correlation matrices for the constructs. It is seen that leadership and commitment significantly driving all other constructs.

The key performance is indicated to be influenced more significantly by strategic planning, organization structure, and information systems in place, technology management, and

customer focus and also by service delivery, process management and service culture. It is seen that key performance is not perceived to be directly related to human resource development. Strategic planning is perceived to be strongly correlated to most of the other constructs. However it shows unremunerative obligation construct haven indicated to be uncorrelated with strategic planning construct. It is easily understood because such obligations are due to considerations other than strategic requirement. It is seen that leadership and commitment and strategic planning are strong drivers for any transformation on Indian railways.

Indian railways being primarily an operation lead organization this can be understood, as human resource development activities are not directly seem to be involved in operation. On the other hand, to achieve customer focus the respondents are considered that organizational structure, service culture, service delivery and human resource development will have significant influence on customer focus which is very logical for Indian railways. Unremunerative obligation doesn't have very strong correlation with strategic planning. Service delivery, organization structure and technology management constructs. The above framework was presented in the following Figure 6.1.

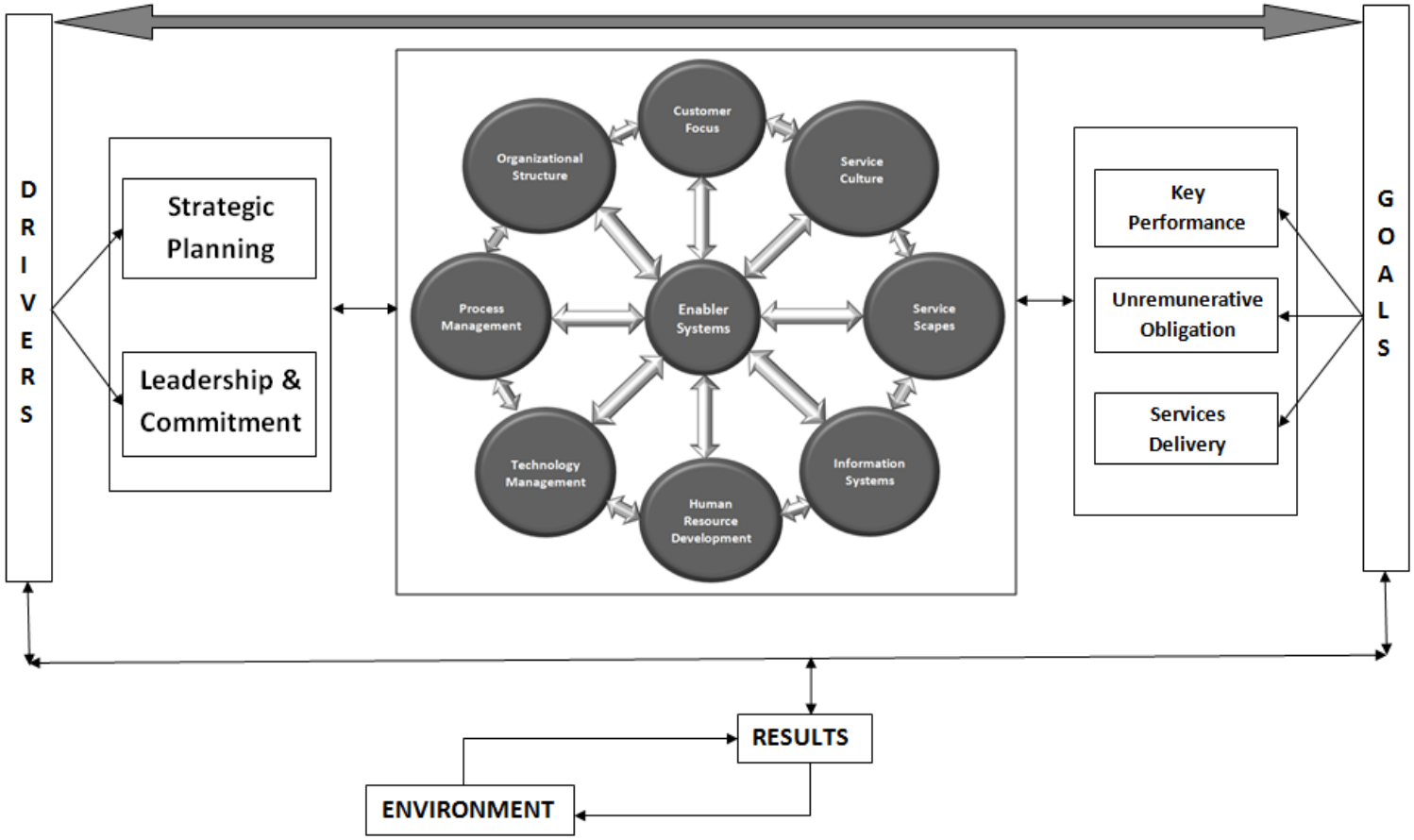


Figure 6.1. : An Integrated and Holistic Framework for Organizational Transformation for Indian Railways

6.2. IMPLICATION OF RESEARCH

The study has identified a comprehensive list of thirteen factors for organizational Transformation for Indian Railways addressing the entire range of transformation system. The strength of this framework is based upon, first an extensive literature review in organizational change and designing the measuring instrument for organizational change through constructs and their validation and second experienced professionals' involvement in answering the questionnaire during cross sectional study period time and later their participation in naming the labels as per academic literature. Multidisciplinary approaches for enriching the subject of theory building have been used because of the limited empirical research in the context of organizational transformation of public sector organization, especially Indian Railways. The constructs suggested for the framework were well tested and validated. An integrated framework for implementation has been proposed which explains the relationship among the constructs which are essential for the organizational transformation for Indian Railways.

This research is a sincere attempt to add to the knowledge of organizational transformation issues in government organizations in India, especially Indian Railways, a very prominent sector in country's economic development. This would hereafter provide the future researchers and practitioners with information in the field of organizational transformation practices.

6.3. LIMITATIONS

The major limitations of the study are as under:

- This study has covered only IR in India. To test the wider validity of the instrument, similar studies need to be conducted across a larger number of public or Government organizations specially service sector organizations. Further, to test its robustness, studies should also be carried out in different countries. One of the limitations involves the generalization of the results. This study is organization specific, so the

results may not reflect any other organizations in industry in India besides government organizations. Generalization can be achieved by repeating measures across different contexts. Thus, it is recommended that the model developed in this study be applied in future studies in which efforts are made to use truly representative samples and in which a data are collected from various Indian organizations.

- Another limitation of this study is the subjective nature of some data present in the data analysis; in particular items were measured by respondents' satisfaction level. That is the important issue is the development of the transformation constructs. These constructs were developed based upon information from the respondents. The items in the questionnaire are subjective in nature. Respondents were asked to rate items based on their perception, as to the extent to which the items were applicable in their respective areas. Hence, the lack of objective measures might introduce certain amount of bias into the data collected. Utilizing objective data combined with subjective data may provide a better understanding of the relationships among antecedent constructs and the ultimate dependent construct of transformation.
- In Indian Railways Quality and Quality Improvement, Benchmarking, Passenger Satisfaction, Social Responsiveness and Resource Allocations are very important constructs. The study didn't consider items which can measure those aspects.
- Factor analysis has resulted in sub factors of the variables. Therefore, there is a possibility of confounding of factors in those variables. It is plausible that certain factors may have a larger impact on the success of management practices than others. However the instrument reported here assigned equal weight to each of the factors and did not investigate whether assigning different weights to different factors would improve the quality of assessment of the practices.
- It is also recognized that construct validation based on factor analysis has its limitation. Carmines and Zeller (1979) pointed out that the wordings of the respective items might have certain impact on the results of factor analysis. Items worded in a similar manner will tend to load together as a single factor.

In spite of its limitations, this study contributes to the understanding of the strategic management process of organizational transformation, the relationships among the constructs in the process, and the effects of these constructs in the process. The findings of this research will be of benefit in planning and implementing strategy by practitioners in Indian railways.

6.4 SPECIFIC CONTRIBUTION

- The study of Indian railways, a government organization of large size, vast diversity and multiplicity of tasks it performs is a significant contribution in the field of organizational transformation.
- This research study is based on the analysis of 13 constructs with 118 items. This makes it extensive study leading to a robust model. Reliability Analysis, Item Analysis, Construct Validity, sampling adequacy using Kaiser-Meyer-Olkin (KMO), check on communalities, face and content validity and Scale unidimensionality tests were conducted and the questionnaire was found to be reliable valid. The scales were empirically validated. The multiple test performed ensured the instrument presented in this research has high external and internal validity for Indian Railways.
- This study is an attempt towards refinement of transformation variables for Indian railways from a managerial perspective and validating the same by using statistical methods. The research has identified a comprehensive list of transformation variables addressing an entire range of dimensions of Indian railways. The strength of the framework is based on analysis and synthesis of existing extensive academic and practitioner strategic business transformation management literature.
- An Integrative framework for Indian railways has been proposed which portrays relationship among the variables. The empirical research and statistical analysis lend credence to the so developed framework based on the criticality of the variables chosen. The study provides researchers and practitioners with objective information that would enhance the understanding of intricacies and relevance of the various aspects of transformation in railways. The work adds to the management literature especially of Indian Railways in the Indian context wherein there is a paucity of research.

6.5 FUTURE SCOPE OF RESEARCH

- In service organizations constructs like Quality and Quality Improvement, Benchmarking, Passenger Satisfaction, Social Responsiveness and Specific Resource Allocations and organizational transformation systems go together. An attempt can be made by researchers to integrate these aspects.
- Relationship between the defined thirteen constructs considered in the thesis supported the interactive nature of transformation management strategies. Further simulation modeling methods could be used to establish the casual relationship among these constructs.
- This study could be repeated out at different points of time and to validate the findings of this study in changing environment.
- Organizational transformation studies of this type can be carried out in other sectors and the results can be compared to get a generalized framework.
- Increasing the sample size could increase the external validity of the instrument. The Framework adopted could be made applicable to other industry also with respect to industry specific needs and also other service oriented organizations.

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APPENDIX – A
Survey Questionnaire - 1

ORGANISATIONAL TRANSFORMATION THROUGH STRATEGIC BUSINESS ORIENTATION

A CASE STUDY OF INDIAN RAILWAYS

Sunil Goyal
Railway Staff College
Vadodara.

QUESTIONNAIRE

NAME (Optional) - ……..		**DESIGNATION - …….**	
SERVICE / DEPARTMENT		**YEAR OF JOINING RAILWAYS**	
1.	**Did you join IR as Group'A' officer**	**Yes** ☐	**No** ☐
2.	**If not, then number of years of service in**	**Group 'A' ……**	**Group 'B' ……..**

TOTAL NUMBER OF YEARS OF SERVICE IN DIFFERENT ZONES				
CR …….	**ER …….**	**NR ……**	**NER ……**	**NEFR…….**
SR …….	**SCR……..**	**SER……**	**WR ……..**	**NEW ZONES ……**
RDSO …….	**RSC & OTHER TRAINING INSTITUTIONS ……**		**PU …….**	**ON DEPUTATION ……**

CONTACT PARTICULARS (Optional)		
PHONE – (O)	**DOT**	**RLY**
- (R)		
E- MAIL ADDRESS		

- **<u>PLEASE PUT A CROSS MARK (X) IN APPROPRIATE BOX AGAINST THE GIVEN STATEMENTS</u>**

This questionnaire is divided into seven sections, each of which relates to a specific orientation towards organizational transformation at IR.

Section I **It relates to changes in both internal and external environment experienced by IR <u>over the last 5 years</u>**

Section II **It relates to the same parameters of changes, which may be faced by IR <u>over the next 5 years</u>**

Section III **It relates to the extent of relevance of these changes/parameters in IR's case. You may consider that certain issues are extremely relevant, whereas in some cases you may see them as not relevant**

Section IV **While in the previous sections, you might have considered these changes/parameters as relevant and important for the future, this section requests for your views whether IR will be able to make them happen.**

Section V **This section asks for your views on what should IR do/carry out as a part of the transformation agenda. It seeks your opinion on specific transformation moves at IR.**

Section VII **It relates to 4 critical points, which underpin the transformation strategy.**

I. ***Since 1999, Indian Railways have seen many changes in both, internal and external environment. Here are some statements regarding organization wide transformation efforts at IR. Kindly indicate extent of your agreement / disagreement about each statement.***

S. No.	Statement		Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over last five years,							
1	For the Customers of Indian Railways transportation costs have become more important due to increased competition						
2.	The Customers of Indian Railways have started expecting						
	1	Flexible pricing in off-season					
	2	Reduced transit time					
	3	Guaranteed delivery					
	4	Simplification of procedures					
	5	User-friendly staff					
	6	Higher punctuality					
	7	On-demand availability					
	8	better security					
	9	increased safety					
	10	Customized package					
	11	Prompt grievance redressal					
	12	Transparent grievance redressal					
3.	Indian Railways have lost market share in						
	1	Passenger segment					
	2	Bulk freight segment					
	3	Piece-meal freight segment					
4.	Indian Railways have faced increased competition from						
	1	Roads					
	2	Pipelines					
	3	Coastal shipping					
	4	Inland waterways					
	5	Airlines					
	6	Telecommunication					
5.	IR's competitors are giving more importance to						
	1	Pricing					
	2	Customer care					
	3	Quality of service delivery					
	4	Punctuality					

S. No.	Statement		Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over last five years,							
6.	Indian Railways have faced increased competition due to						
	1	Reduced budgetary support					
	2	Dictated pricing					
	3	Cross subsidy from freight to passenger business					
	4	Failure to choose good projects					
	5	More un-remunerative projects					
	6	Heavy investment in roads					
	7	Dictated employee wages					
	8	Privatization of air traffic					
	9	Own policies to increase business					
7.	Indian Railways had access to the stat-of-the-art technology in						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
8.	Indian Railways have chosen appropriate technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
9.	Indian Railways have absorbed the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
10.	Indian Railways have built a system to choose the appropriate technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					

S. No.	Statement		Strongly Disagree	Disagree	Don't I Know	Agree	Strongly Agree
Over last five years,							
11.	Indian Railways have trained the man-power for the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
12.	Indian Railways have developed indigenous support for the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
13.	Indian Railways have						
	1	Reorganized itself to reduce departmentalism					
	2	Improved efficiency with addition of more divisions/zones					
	3	Better service delivery with creation of various corporations (e.g. IRCTC, RailTel, RVNL, etc.)					
	4	Delegated more authority to divisions/zones					
	5	Separated non-core from core activities					
	6	Out-sourced non-core activities					
14.	Indian Railways have						
	1	Improved recruitment procedure					
	2	Made transfers transparent					
	3	Created consistent basis for promotions					
	4	Enhanced training facilities					
	5	Reduced inter-departmental conflicts					
	6	Shifted towards performance oriented ACR					
15.	On Indian Railways, Role of finance has been better understood by						
	1	Finance department itself.					
	2	User departments.					
16.	On Indian Railways						
	1	Accounting / financial reporting systems have improved decision making.					
	2	Budgetary control systems have led to cost reduction, making IR more competitive.					
17.	On IR, improvements in material management system have resulted in						
	1	Reduced cost of material.					
	2	Improved material quality.					
	3	Improved availability.					

II ***As we make an attempt to look into the future, we find*** that many changes are waiting to take place. Kindly indicate extent of your agreement / disagreement about the likely areas of these changes indicated below.

S. No.		Statement	Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over next five years,							
1.		For the Customers of Indian Railways transportation costs will become more important due to increased competition					
2.		The Customers of Indian Railways will increasingly expect -					
	1	Flexible pricing in off-season					
	2	Reduced transit time					
	3	Guaranteed delivery					
	4	Simplification of procedures					
	5	User-friendly staff					
	6	Higher punctuality					
	7	On-demand availability					
	8	Better security					
	9	Increased safety					
	10	Customized package					
	11	Prompt grievance redressal					
	12	Transparent grievance redressal					
3.		Indian Railways will lose market share in					
	1	Passenger segment					
	2	Bulk freight segment					
	3	Piece-meal freight segment					
4.		Indian Railways have faced increased competition from					
	1	Roads					
	2	Pipelines					
	3	Coastal shipping					
	4	Inland waterways					
	5	Airlines					
	6	Telecommunication					
5.		Indian Railways competitors will give more importance to					
	1	Pricing					
	2	Customer care					
	3	Quality of service delivery					
	4	Punctuality					

S. No.		Statement	Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over next five years,							
6.	Indian Railways will face increased competition due to						
	1	Reduced budgetary support					
	2	Dictated pricing					
	3	Cross subsidy from freight to passenger business					
	4	Failure to choose good projects					
	5	More un-remunerative projects					
	6	Heavy investment in roads					
	7	Dictated employee wages					
	8	Privatization of air traffic					
	9	Own policies to increase business					
7.	Indian Railways will have access to the stat-of-the-art technology in						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
8.	Indian Railways will choose appropriate technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
9.	Indian Railways will absorb the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
10.	Indian Railways will build a system to choose the appropriate technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					

S. No.		Statement	Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over next five years,							
11.	Indian Railways will train the man-power for the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
12.	Indian Railways will develop indigenous support for the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
13.	Indian Railways will						
	1	Reorganize itself to reduce departmentalism					
	2	Improve efficiency with addition of more divisions/zones					
	3	Give better service delivery with creation of various corporations (e.g. IRCTC, RailTel, RVNL, etc.)					
	4	Delegate more authority to divisions/zones					
	5	Separate non-core from core activities					
	6	Out-source non-core activities					
14.	Indian Railways will						
	1	Improve recruitment procedure					
	2	Make transfers transparent					
	3	Create consistent basis for promotions					
	4	Enhance training facilities					
	5	Reduce inter-departmental conflicts					
	6	Shift towards performance oriented ACR					
15.	On Indian Railways, Role of finance will be better understood by						
	1	Finance department itself.					
	2	User departments.					
16.	On IR						
	1	Accounting / financial reporting system will be able to improve decision making.					
	2	Budgetary control systems will lead to cost reduction.					
17.	On IR, improvements in material management system will result in						
	1	Reduced cost of material.					
	2	Improved material quality.					
	3	Improved availability.					

III ***For transforming Indian Railways, change processes indicated here might have varying degree of relevance. Kindly indicate your agreement / disagreement about the relevance of issues involved.***

S. No.	Statement		Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over next five years, it is relevant for IR to,							
1.	Help the customers to reduce transportation costs to face increased competition						
2.	Meet the customer expectation in terms of						
	1	Flexible pricing in off-season					
	2	Reduced transit time					
	3	Guaranteed delivery					
	4	Simplification of procedures					
	5	User-friendly staff					
	6	Higher punctuality					
	7	On-demand availability					
	8	Better security					
	9	Increased safety					
	10	Customized package					
	11	Prompt grievance redressal					
	12	Transparent grievance redressal					
3.	Increase market share in						
	1	Passenger segment					
	2	Bulk freight segment					
	3	Piece-meal freight segment					
4.	Prepare to face competition from						
	1	Roads					
	2	Pipelines					
	3	Coastal shipping					
	4	Inland waterways					
	5	Airlines					
	6	Telecommunication					
5.	Whether, IR's competitors give importance to the following or not, will be relevant to IR						
	1	Pricing					
	2	Customer care					
	3	Quality of service delivery					
	4	Punctuality					

S. No.	Statement		Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over next five years, it is relevant for IR to,							
6.	Prepare to face increased competition due to						
	1	Reduced budgetary support					
	2	Dictated pricing					
	3	Cross subsidy from freight to passenger business					
	4	Failure to choose good projects					
	5	More un-remunerative projects					
	6	Heavy investment in roads					
	7	Dictated employee wages					
	8	Privatization of air traffic					
	9	Own policies to increase business					
7.	Have access to the stat-of-the-art technology in						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
8.	Choose appropriate technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
9.	Absorb the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
10.	Build a system to choose the appropriate technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					

S. No.		Statement	Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over next five years, it is relevant for IR to,							
11.	Train the man-power for the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
12.	Develop indigenous support for the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
13.	Indian Railways to						
	1	Reorganize itself to reduce departmentalism					
	2	Improve efficiency with addition of more divisions/zones					
	3	Give better service delivery with creation of various corporations (e.g. IRCTC, RailTel, RVNL, etc.)					
	4	Delegate more authority to divisions/zones					
	5	Separate non-core from core activities					
	6	Out-source non-core activities					
14.	Indian Railways to						
	1	Improve recruitment procedure					
	2	Make transfers transparent					
	3	Create consistent basis for promotions					
	4	Enhance training facilities					
	5	Reduce inter-departmental conflicts					
	6	Shift towards performance oriented ACR					
15.	For Indian Railways to have better understanding of role of Finance by						
	1	Finance department itself.					
	2	User departments.					
16.	IR to have						
	1	Accounting / financial reporting system that help in improved decision making.					
	2	Budgetary control systems that result in cost reduction.					
17	IR to have material management system leading to.						
	1	Reduced cost of material.					
	2	Improved material quality.					
	3	Improved availability.					

IV ***It appears that IR may have to face major changes in the coming years. Please indicate your agreement / disagreement regarding IR's capability to effect the following changes over next five years.***

S. No.		Statement	Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over next five years, IR will be able to,							
1.		Help the customers to reduce transportation costs to face increased competition					
2.		Meet the customer expectation in terms of					
	1	Flexible pricing in off-season					
	2	Reduced transit time					
	3	Guaranteed delivery					
	4	Simplification of procedures					
	5	User-friendly staff					
	6	Higher punctuality					
	7	On-demand availability					
	8	Better security					
	9	Increased safety					
	10	Customized package					
	11	Prompt grievance redressal					
	12	Transparent grievance redressal					
3.		Increase market share in					
	1	Passenger segment					
	2	Bulk freight segment					
	3	Piece-meal freight segment					
4.		Indian Railways have faced increased competition from					
	1	Roads					
	2	Pipelines					
	3	Coastal shipping					
	4	Inland waterways					
	5	Airlines					
	6	Telecommunication					
5.		Indian Railways will be able to adjust to competitors strategy with regard to					
	1	Pricing					
	2	Customer care					
	3	Quality of service delivery					
	4	Punctuality					

S. No.	Statement		Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over next five years, IR will be able to,							
6.	Face increased competition due to						
	1	Reduced budgetary support					
	2	Dictated pricing					
	3	Cross subsidy from freight to passenger business					
	4	Failure to choose good projects					
	5	More un-remunerative projects					
	6	Heavy investment in roads					
	7	Dictated employee wages					
	8	Privatization of air traffic					
	9	Own policies to increase business					
7.	Have access to the stat-of-the-art technology in						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
8.	Choose appropriate technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
9.	Absorb the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
10.	Build a system to choose the appropriate technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					

S. No.	Statement		Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Over next five years, IR will be able to,							
11.	Train the man-power for the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
12.	Develop indigenous support for the chosen technology for						
	1	Traction					
	2	Signaling					
	3	Communication					
	4	Permanent way					
	5	Rolling stock					
	6	Bridges					
	7	Computers					
13.	Indian Railways will be able to						
	1	Reorganize itself to reduce departmentalism					
	2	Improve efficiency with addition of more divisions/zones					
	3	Give better service delivery with creation of various corporations (e.g. IRCTC, RailTel, RVNL, etc.)					
	4	Delegate more authority to divisions/zones					
	5	Separate non-core from core activities					
	6	Out-source non-core activities					
14.	Indian Railways will be able to						
	1	Improve recruitment procedure					
	2	Make transfers transparent					
	3	Create consistent basis for promotions					
	4	Enhance training facilities					
	5	Reduce inter-departmental conflicts					
	6	Shift towards performance oriented ACR					
15.	IR will be able to develop better understanding of finance department by						
	1	Finance department itself.					
	2	User departments.					
16.	IR will be able to have						
	1	Accounting / financial reporting system to improve decision making.					
	2	Budgetary control systems that will reduce costs making IR more competitive.					
17.	IR will be able to improve material management system resulting in.						
	1	Reduced cost of material.					
	2	Improved material quality.					
	3	Improved availability.					

V ***This section presents a set of initiatives, which could be carried out as a part of the organization wide transformation effort on IR. Kindly state your extent of agreement with the statements given below.***

S. No.	Statement		Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
Indian Railways should							
1.	Become a total transport solutions provider						
2.	Become a commercial/ business enterprise						
3.	Have an arms-length relationship with government						
4.	Immediately close all non-earning businesses						
5.	Continue on the present path for the future						
6.	Have more public-private partnerships						
	1	With private finance and railway management					
	2	With private finance and private management					
	3	With railway finance and private management					
7.	Have partnership in development of infrastructure of						
	1	Roads					
	2	Ports					
	3	Pipelines					
	4	Inland waterways					
	5	Airports					
	6	Telecommunication					
8.	Aggressively use Information Technology for						
	1	Public information (e.g. train arrival /departure etc.)					
	2	Passenger ticketing/reservation					
	3	Freight operations (FOIS)					
	4	Long range planning					
	5	Payroll / PF / Leave, etc.					
	6	Knowledge management					
	7	Budgeting / Expenditure control					
9	Go back to piece-meal loading						
10.	Consider flexible pricing, to combat competition						
	1	for freight based on local demand conditions					
	2	for passengers based on nature of service rather than only distance.					
	3	for passenger based on last minute availability.					
	4	.for freight based on delivery time, to combat competition.					
11.	Not change to its existing structure, to meet future challenges.						

S. No.	Statement		Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
12.	IR should modify its structure						
	1	From department based to process based (type of service like freight, passenger, parcel etc)					
	2	From dual command (technical & administrative) to unitary command system.					
	3	By slackening at HQ / RB control to give more financial & administrative autonomy to field units.					
	4	To permit lateral entry at senior levels for attracting talent from other industries.					
	5	To a flatter one by reducing number of reporting levels.					
	6	To convert Divisions / PU / WS etc. in to SBUs , accountable for financial performance.					
13	IR should establish special focus groups, headed by experts, to advise the main stream managers in areas such as						
	1	IT applications & deployment.					
	2	Knowledge management.					
	3	Strategic alliances.					
	4	Cooperate governance.					
	5	Total Service Quality Management.					
	6	Business development & marketing.					
14	IR leadership should						
	1	Encourage bold, calculated risk taking by field managers.					
	2	Empower field managers by making available adequate resources.					
	3	Evolve a suitable system to promote innovation / new ideas.					
15	Considering IRs unique characteristics, preferred leadership style should be						
	1	Do it the way I tell you (Coercive)					
	2	Firm but fair (Authoritative)					
	3	People first, task second (Affiliative)					
	4	Participative (Democratic)					
	5	Do it myself (Pacesetting)					
	6	Developmental (Coaching)					
16	For effective transformation at IR, technology management is the most important driver.						
17	For above purpose, indigenous technology is adequate.						
18	IR should consciously develop a plan to enhance R & D efforts to strengthen indigenous technology.						
19	Identification / selection of appropriate technology is more important than its time bound implementation.						
20	It is more important to ensure proper absorption of technology in any field rather than to choose the best available technology.						

S. No.	Statement		Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
21	In the IR transformation process, main role of technology will be.						
	1	To reduce maintenance costs.					
	2	To reduce manpower.					
	3	To improve information flow in the organization.					
	4	To improve service quality to the customer.					
22	In view of reduced government funding, IR should increase reliance on market borrowing to fund its developmental projects.						
23	Financially un-remunerative projects should not be undertaken even if justified on						
	1	Social consideration.					
	2	Strategic consideration.					
24	IR should establish a price regulator to respond to changing market conditions.						
25	IR should redesign its accounting / reporting systems as per GAAP / trade practices to ensure transparency to the stake holders.						
26	Suitable costing system for individual services should be introduced for effective cost management / pricing.						
27	IR should consider adding to its revenue streams through new initiatives such as						
	1	Utilization of spare land by private enterprises.					
	2	Use of communication infrastructure for other than railway use.					
	3	Use of spare maintenance and manufacturing capacity for other railway use.					
	4	Use of railways real estate (like railway station) for commercial purposes.					
28	There is no need for IR to change its present service mix.						
29	IR should, to broaden its range of services, introduce						
	1	High speed (200 – 250 Kmph) passenger trains.					
	2	High speed (150 Kmph) freight trains.					
	3	Customize services such as for tourism etc.					

VI ***Against each statement five possible options have been indicated. Please rank them in the order of your preference from 1 to 5. No two or more items may be given the same rank. 1-represents highest and 5-represents lowest.***

1. It is generally accepted that Indian Railways needs to transform itself to align effectively with the changing environmental context. The following are significant transformation objectives for any organization.

a.	To reduce the operating deficit / improve financial viability of the organization.	
b.	To change the basic orientation from social service to being a business/commercial enterprise	
c.	To build stronger customer orientation	
d.	To become the most preferred multi-modal transportation solution provider in India	
e.	To re-organize internally / re-engineer processes to become more efficient and effective.	

2. Key enabling conditions, which must be addressed for transformation are -

a.	Pro-change organization culture	
b.	Ensuring a sense of urgency to change by bringing about an attitude of challenging the status –quo.	
c.	Appropriate leadership involvement and commitment	
d.	Government Support including financial support	
e.	Ability to model the transformation process and a comprehensive change strategy.	

3. Typical transformation process should include the following in the agenda -

a.	Change in the IR organization structure	
b.	Revamping of operating, administrative and financial systems	
c.	Change Management Training for Human Resource	
d.	Change in market orientation with customer focus	
e.	Better Technology Management	

4. The following approach is best suited for effective transformation at IR –

a.	Slow, incremental but organization-wide approach leading to transformation over a long period of time	
b.	Identification of few select areas of transformation and working on them	
c.	Comprehensive, time bound approach with fast results, otherwise it may be too late	
d.	Transformation as per the recommendations of external consultant	
e.	Need to transform is a hype and we should approach change as we have been doing in the past	

APPENDIX – B

Survey Questionnaire - 2

Survey Questionnaire components

Constructs and Items Focused –

- **13 Constructs**
- **118 items**

Sl No.	***Items***	
1. Leadership and Commitment		
1	Vision, Mission and Policy. Senior executive are involved and committed to all activities	
2	Our senior executives focus on improving IR, growth and development of all employees,	
3	Trustee for the interests of all stakeholders of Indian Railways	
4	Set strategic directions for IR, altruistic, ethical, idealistic management	
5	Our Zone/division/department heads are responsible for leading improvements in operations, innovation and creativity	
6	Has inclination to allocate adequate resources and time for improvement efforts.	
7	Employees can articulate the IR's mission and vision, professionalism	
8	Our customer focus originates from within management, respect for seniors, old traditions	
9	We use performance feedback to improve systems, highly professionalized, systems oriented management	

Sl No.	***Items***	
2. Strategic Planning		
10	Strategies address both short term and long term planning.	
11	Our strategies address best service aspects and performance as both a provider and a business organization.	
12	Strategies are translated into actions. Reflect flexibility, adaptability, informality and resourcefulness	
13	Support, innovation, forward and backward integration, Joint ventures, partnerships with other businesses etc.	
14	All strategic decisions are evaluated with objective measures.	
15	Strategic plans are translated into specific requirements for each work unit in IR.	
16	Our strategic plans include reducing waste and capacity building, competing on the basis proving best service with low cost	
17	Competitive strategy/ long term strategies include projections of how IR services and efforts compare with key competitors. (on basis of excellent "add on" services, high quality of service. profit centers and divisions)	

Sl No.	*Items*	
3. Human Resource Development		
Alignment of human resource plans with IR's strategy		
Derive employee recruitment, outsourcing activities and development objectives from strategic plans		
Union and Labour/Management relationships are supportive.		
We motivate employees for improve performance		
Personnel are given a broad range of tasks/work.		
Employees are given decision-making responsibility.		
Employees are recognized and rewarded for learning new skills and for improved performance.		
We use education and training to build the capabilities of our employees.		
Frontline employees are trained and positioned how to handle work and service failures		
All employees are trained including supervisory, managerial and are encouraged for team involvement and team building actions for better.		
Evaluate the benefits of employee training by measuring changes in performance, additional skill and behavior.		
Our work environment supports the well-being and development of all employees.		
Adopt different methods and systems to measure employee satisfaction levels and involved participation		
Work to improve employee health and safety systems continuously		
Provided sufficient career development opportunities		
Employee performance and turnaround is evaluated at each level, unit, department, division, zon level		

Sl No.	*Items*	
4. Service Delivery		
34	Extensive review and analyze the output before introducing new systems, new technologies, new standards, new accounting, new information systems etc.	
35	Government approval and feedback systems are analyzed when designing new and revised ones	
36	Standards for new services are addressed during the design and testing phase at IR specific institutions and design centers	
37	Design requirements are considered by all appropriate departments to ensure integration	
38	Provision for continuous improvements for design process	
39	Evaluation on the basis of efficiency, including cost and timeliness, development oriented	
40	Evaluation on the basis of effectiveness, involvement of all, including appropriateness and risk	
41	Procedures and possible outcomes are reported and evaluated and made transparent	
42	Measurements/observations of patient services will indicate when corrective actions are needed.	
43	Service delivery indicators are used extensively at all stages	
44	Outcomes/results are measured internally and evaluated critically by all.	
45	Measurement and analysis of outcomes/results which are evaluated is used to improve system.	

Sl No.	*Items*	
5. Process Management		
46	Standardized, simplified and documented processes for many key processes.	
47	We keep track and maintain the key processes that are critical to successful running of railways	
48	Zone/division/department protocols process systems are well developed and documented/shared	
49	Systematic procedures for investigation of causes of failure and succeeding corrective actions are well established.	
50	Emphasize mostly on developing procedures for reducing the overall service-delivery issues	
51	Use number of ways to improve our service related delivery processes like audit etc	
52	Internal and external requirements are addressed in the design of support services in IR	
53	Continuously measure the performance of our support services and improve for best services	
54	Collect feedback on every process at different levels of work and support services from people involved and improve further.	

Sl No.	*Items*	
6. Service Culture		
55	All the employees realize and committed to basic purpose of their work - service to customers	
56	Trust, openness and good relationships among all employees. Share common vision and safety culture	
	Flexibility to maintain and establish organizations own culture, institute terms and conditions consistent with the desired culture	
57	Our employees have a strong belief in the philosophy of "Right the first time" and "Right every time".	
58	All employees have strong feeling such as ‘my Indian Railways’, and commitment and work towards its excellent performance, image and service.	
59	Strong "team spirit" is highly prevalent across the organization	

Sl No.	*Items*	
7. Servicescapes		
60	Ensures that there is a positive impact of the prevailing physical environment	
61	The ambient conditions are reasonably comfortable to customers	
62	The signboards, symbols, advertisements and advt. boards, pamphlets and other artifacts in are appealing to the customers and look realistic	
63	The equipment, physical facilities and the materials associated with services are appealing to the customers.	
64	Housekeeping of the physical environment is kept as a priority of the highest order and well communicated and good efforts are made to ensure that	
65	Platforms, Physical environment, furnishings and other related equipment facilitate interactions among customers.	

Sl No.	*Items*	
8. Organizational Structure		
66	Organizational Structure- front line supervision, support functions and corporate services	
67	Levels of Centralization, functional specialization, bureaucratic and effects on organizational performance	
68	Levels of hierarchy, chain of command and Span of control, utilization of performance indicators for planning	
69	Employees - extent of staff constrained by budget and other than budgetary support	
70	Structure – relationship of Zone, divisional and department structure linked to institutional lines/ functional lines and its behavior	
71	Special resources distribution and working of special resources model	
72	Joint ventures, conglomerates and/or complex groups and organizations handling systems a	
73	Feedback system flow- administrative and technical services both internal and external environment , monitor regulatory reviews of various committees	

Sl No.	*Items*	
9.Information System		
74	Organizational planning is based on objective data, which we have collected and analyzed through our information systems	
75	Our information systems are well standardized across all zones, divisions, departments and offices	
76	information systems and technology are integrated across departments	
77	Information systems hardware and software, networking are highly reliable	
78	Information systems are used to revaluate the programs and processes	
79	We have adequate sources of benchmarking information in different segments	
80	Identify areas that need improvement through our information systems time to time	
81	We have information on performances by our other competitors, road and air transport	
82	Use objective data to identify our competitive advantage	
83	Our Information systems is a mission critical system	
84	Information security program and procedures	
85	Training costs can be linked to positive changes in performance (finance and technical) and productivity	
86	project management techniques and system development life cycle processes used to guide efforts at acquiring and implementing new system and technology	
87	We use data to identify trends that help us set priorities in how our resources are used, use a number of statistical tools to analyze data in a number of areas	

Sl No.	*Items*	
10. Technology Management		
88	Rail control Systems technology area including Security system aspects, strategic new technologies: new generation of ERTMS, CBTC, Supervision systems, Cyber-Security	
89	LOC and rolling stock technology area, New TCMS solutions, breakthrough traction technologies, bogies and brake systems, auxiliary equipment, maintenance	
90	Freight technology area : Low noise wagons and brakes, Automatic coupling/driving, technology for longer trains, security for freight,	
91	Infrastructure technology area, strategic new technologies: Energy generation and efficiency, upgrading signaling, ticketing and accounting , Asset Management, Fleet monitoring and rolling stock management	
92	Educate all stakeholders about technology aspects and provide special assistance, involve specific groups in designing new and revised services related technology	
93	Clear specifications regarding technology and technology rating system	

Sl No.	*Items*	
11. Customer Focus		
94	We identify and manage customer oriented operations successfully	
95	Employees care about meeting the expectation of all internal and external customers and exhibit enjoyable and courteous behavior toward different groups of customers.	
96	We measure and value customer-feedback truthfully and regularly	
97	Overall satisfaction of customers and loyalty of railways is very high.	
98	Customer opinions are valued high and grievance redressal has a well-developed set of procedures and processes, immediate action to eliminate causes of problems.	
99	Easy access to information for customers and other stakeholders.	
100	Customer is well aware of setting of funding and priorities of rail investment , joint ventures etc.	
101	We are fully aware of customer-focused actions taken and policies implemented that have produced positive business results.	
102	Customer focus and quality are driving forces behind day-to-day operations	

Sl No.	*Items*	
12. Key Performance		
103	Operational and Financial Performance, and Profitability	
104	Increase in number of customers base, efforts for weaning customers back to railways	
105	Reputation of Indian railways	
106	Customer care and safety results are satisfactory	
107	Employee performance and satisfaction levels are high.	
108	Promote and introduce new services, Resource mobilization successfully.	

Sl No.	*Items*	
13. Unremunerative Obligations		
109	Performance improvement efforts and Public Responsibility aspects highly integrated	
110	All Personnel follow a recognized code of moral values.	
111	Continuously efforts are made to perk up community development and services including education and other social development programs	
112	Well prepared for community emergencies.	
113	Excellent services at reasonable cost without compromising best service quality	
114	Partnerships with other organizations to improve societal development services & programs.	
115	The performance of IR societal development services and programs are measured.	
116	To the deserving and underprivileged, the best concessions for services. support and help are provided. Free passes scheme and privilege order tickets are provided to certain specific customers.	
117	Actively promote and allow stakeholder's participation in various education & training programs for different groups of customers.	
118	Address ethical, patriotic, development, environmental, other issues with appropriate measures	

Table: Literature Stressing the Significance of use of constructs in different Setting

Sl.No.	Construct	Other Setting	Service Setting
1.	**Leadership and Commitment**	Kwai-Sang Chin,1999; Epstein ,1996; Saraph et al., 1989; Lakhe and Mohanty, 1994; Harrington, 1995; Ahire et al., 1996; Black and Porter, 1996; Wellburn, 1996; Harrington, 1997; Garside, 1998; Ang et al., 2000; Zhang et al., 2000; Flynn and Saladin, 2001 (MBNQA); Motwani, 2001; Sureshchandar et al., 2001a, b; Silvestro, 2001; Sila and Ebrahimpour, 2003; Li et al., 2003; Tarì, 2005; Kit Fai Pun,2002;	Zutshi Ambika,2004; Karles James, 2003 Kohli et al., 1995; Short & Rahim, 1995; Anderson et al., 1996; Huq, 1996; Mohanty et al., 1996; Aggarwal & Zairi, 1997; Nwabueze and Kanji, 1997; Poirier and Moran, 1998; Castle, 1999; Applebaum and Wohl, 2000; Kunst and Lemmink, 2000 (EFQM); West, 2001; Jackson, 2001; Meyer and Collier, 2001 (MBNQA); Zairi and Jarrar, 2001; Chow-Chua and Goh, 2002; Aghazadeh, 2002; Kanji and SÁ, 2003; Ovretveit & Gustafson, 2003; Ehigie and Akpan, 2004; Yee Soo Wee,2003; and Rondenelli, 1998;

Sl. No.	Construct	Other Setting	Service Setting
2.	**Strategic Planning**	Kit Fai Pun,2002; Yee Soo Wee,2003; Lakhe and Mohanty, 1994; Harrington, 1995; Ang et al., 2000; Zhang et al., 2000; Flynn and Saladin, 2001 (MBNQA); Senthil et al., 2001; Silvestro, 2001; Li et al., 2003; Tarì, 2005; Berry and Rondenelli, 1998 Kwai-Sang Chin,1999 Epstein ,1996	Zutshi Ambika,2004; Short & Rahim, 1995; Anderson et al., 1996; Huq, 1996; Aggarwal and Zairi, 1997; Applebaum and Wohl, 2000; West, 2001; Kunst& Lemmink, 2000 (EFQM); Jackson, 2001; Meyer and Collier, 2001 (MBNQA); Aghazadeh, 2002; Chow-Chua and Goh, 2002;

Sl. No.	Construct	Other Setting	Service Setting
3	**Human Resource Development**	Saraph et al., 1989; Ahire et al., 1996; Black and Porter, 1996; Ang et al., 2000; Zhang et al., 2000; Harrington, 1997; Lindberg, 2002; Flynn and Saladin, 2001 (MBNQA); Harrington, 1995; Sila and Ebrahimpour, 2003; Khoo and Tan, 2003; Krüger, 2001; Lakhe and Mohanty, 1994; Magd and Curry, 2003; Tarì, 2005; Silvestro, 2001; Li et al., 2003; Allen and Killman, 2001; Sureshchandar et al., 2001a, b;	Kohli et al., 1995; Sanderson, 1995; Short & Rahim, 1995; Anderson et al., 1996; Huq, 1996; Mohanty et al., 1996; Aggarwal & Zairi, 1997; Nwabueze and Kanji, 1997; Chassin & Galvin, 1998; Gupta, 1998; Klien et al., 1998; Poirier and Moran, 1998; Zabada et al., 1998; Brooks and Zeitz, 1999; Ho, 1999; Proctor and Currie, 1999; Applebaum & Wohl, 2000; Eaton, 2000; Kunst & Lemmink, 2000 (EFQM); Theodorakioglou & Tsiotras, 2000; West, 2001; Meyer and Collier, 2001 (MBNQA); Zairi and Jarrar, 2001; Aghazadeh, 2002; Chow-Chua and Goh, 2002; Adinolfi, 2003; Arya et al., 2003; Kanji and Moura E SÁ, 2003; Ovretveit & Gustafson, 2003; Yang, 2003; Downey-Ennis et al., 2004

Sl. No.	Construct	Other Setting	Service Setting
4.	**Service Delivery** (Correspondingly Product/Service Design from other literature)	Saraph et al., 1989; Ahire et al., 1996; Black and Porter, 1996; Harrington, 1997; Kaulio, 1998; Zhang et al., 2000; Motwani, 2001; Silvestro, 2001; Li et al., 2003; Sila and Ebrahimpour, 2003;	Bharat, 1994; Macdonald, 1994; Aggarwal & Zairi, 1997; Boyce, 1997; Buchan, 1997; Nwabueze and Kanji, 1997; Thomson & Hudgson, 1997; Bharat et al., 1998; Chassin & Galvin, 1998; Ray, 1999; Carman, 2000; Singhal et al., 2000; West, 2001; Kunst and Lemmink, 2001; Vij et al., 2001; Meyer and Collier, 2001; Bedi et al., 2004; Gupta & Kant, 2002; Verma and Sobti, 2002;Sutcliff, 2004;

Sl. No.	Construct	Other Setting	Service Setting
5.	**Process Management** (Important Support Services)	Saraph et al., 1989; Lakhe and Mohanty, 1994; Harrington, 1995; Black and Porter, 1996; Harrington, 1997; Flynn and Saladin, 2001 (MBNQA) Motwani, 2001; Sureshchandar et al., 2001 a & b; Zhang et al., 2001; Li et al., 2003; Sila and Ebrahimpour, 2003; Tarì, 2005;	Macdonald, 1994; Kohli et al 1995; Anderson et al., 1996; Nwabueze and Kanji, 1997; Klien et al., 1998; Moody et al., 1998; Poirier and Moran, 1998; Applebaum & Wohl, 2000; Kunst and Lemmink, 2000 (EFQM) Verghese, 2001; Walter and Jones, 2001; Aghazadeh, 2002; Chow-Chua and Goh, 2002; Martin and Huq, 2002; Kanji and Moura E SÁ, 2003; Reddy & Acharyulu, 2003 Dhanjal. 2001 Das et al., 2001
Sl. No.	**Construct**	**Other Setting**	**Service Setting**
6.	**Service Culture**	Collins, 1994; Lakhe and Mohanty, 1994; Taylor and Pearson, 1994; Hind, 1996; Garside, 1998; Mandal et al., 2000; Jabnoun, 2001; Silvestro, 2001; Sureshchandar et al., 2001 Sila and Ebrahimpour, 2003;	Anderson et al., 1996; Huq, 1996; Mohanty et al., 1996; Aggarwal & Zairi, 1997; Nwabueze and Kanji, 1997; Zabada et al., 1998; Ho, 1999; Rodger et al., 1999; Aghazadeh, 2002; West, 2001; Kanji and SÁ, 2003; Øvretveit & Gustafson, 2003;

Sl.No.	Construct	Other Setting	Service Setting
7.	**Servicescapes**	Sureshchandar et al., 2001 a & b;	Mohanty et al., 1996; Aggarwal & Zairi, 1997; Rodger et al., 1999; Bharadwaj, 2001; Kant & Gupta, 2002 ; Verma & Sobti, 2002 ; Bedi et al., 2004 ; Ramesh & Singh, 2004
Sl. No.	**Construct**	**Other Setting**	**Service Setting**
8.	**Organizational Structure**	Meyer and Collier, 2001	Lin and Clousing, 1995; Mohanty et al., 1996; Aggarwal and Zairi, 1997; Bharat et al., 1999; Meyer and Collier, 2001
Sl. No.	**Construct**	**Other Setting**	**Service Setting**
9.	**Information Systems**	Saraph et al., 1989; Ahire et al., 1996; Black and Porter, 1996; Harrington, 1997; Ang et al., 2000; Flynn and Saladin, 2001 (MBNQA); Motwani, 2001 Silvestro, 2001; Sureshchandar et al., 2001 a & b; Sila and Ebrahimpour, 2003; Tarì, 2005;	Bluementhal. 1994; Heinbuch, 1995; Short & Rahim, 1995; Gupta, 1995; Kohli et al., 1995; Huq, 1996; Aggarwal & Zairi, 1997; Klien et al., 1998; Moody et al., 1998; Poirier and Moran, 1998; Asubonteng Rivers and Bae, 1999; West, 2001; Meyer and Collier, 2001 (MBNQA); Aghazadeh, 2002; Hartman et al., 2002; Benneyan et al., 2003; Herbert et al., 2003; Ovretveit & Gustafson, 2003; Øvretveit and Gustafson, 2005; Tata Business Excellence Model
Sl. No.	**Construct**	**Other Setting**	**Service Setting**
10.	**Technology Management**	Saraph et al., 1989; Ahire et al., 1996; Black and Porter, 1996; Harrington, 1997; Ang et al., 2000; Motwani, 2001; Silvestro, 2001; Khoo and Tan, 2003; Li et al., 2003;Sila and Ebrahimpour, 2003; Tarì, 2005;	Huq, 1996; Meyer and Collier, 2001

Sl.No.	Construct	Other Setting	Service Setting
11	**Customer Focus**	Lakhe and Mohanty, 1994; Harrington, 1995; Ahire et al., 1996; Harrington, 1997; Ang et al., 2000; Mandal et al., 2000; Pun et al., 2000;Zhang et al., 2000; Flynn and Saladin, 2001 (MBNQA); Motwani, 2001; Silvestro, 2001; Sureshchandar et al., 2001 Khoo and Tan, 2003; Li et al., 2003;	Gaucher & Coffey, 1993; Holloway and Mobbs, 1994; Kohli et al., 1995; Madsen, 1995; Short & Rahim, 1995; Huq, 1996; Aggarwal & Zairi, 1997; Boyce, 1997; O'Keeffe & O'Sullivan, 1997; Brown and Bell, 1998; Buchan, 1998; Poirier and Moran, 1998; Carman, 2000; Ho, 1999; Ennis & Harrington, 1999 a & b; Koeck, 1999; Kunst and Lemmink, 2000 (EFQM); Bharadwaj et al., 2001; Mahapatra et al., 2001; Meyer and Collier, 2001 (MBNQA); Aghazadeh, 2002; Chow-Chua and Goh, 2002; Verma and Sobti, 2002; Adinolfi, 2003;

Sl.No.	Construct	Other Setting	Service Setting
12.	**Key Performance**	Harrington, 1995; Harrington, 1997; Ang et al., 2000; Flynn and Saladin, 2001; Silvestro, 2001; Magd and Curry, 2003;	Kohli et al., 1995;Kumar et al., 1997; Moody et al., 1998; Kunst and Lemmink, 2000 (EFQM); West, 2001; Meyer and Collier, 2001; Raju and Lonial. 2002; Chow-Chua and Goh, 2002; Kara et al., 2003; Tata Business Excellence Model

Sl.No.	Construct	Other Setting	Service Setting
13.	**Unremunerative Obligation (Social and other change obligations)**	MBNQA (Part of Leadership) Sureshchandar et al., 2001 a & b; Sila and Ebrahimpour, 2003 ; Khoo & Tan, 2003; Tarì, 2005;	Mohanty et al., 1996; Dur´an-Arenas et al., 1997; Nicholas et al., 1997; Kunst & Lemmink, 2000); Meyer & Collier, 2001

Biography of the Candidate

Sunil Goyal currently working as Chief Electrical Engineer, Western Railways. He is Electrical and Electronics Engineering graduate from Birla Institute of Technology & Science, Pilani. He secured first rank in his batch. Thereafter, he completed her MBA with specialization in Finance. He had undergone trainings at United Kingdom on Maintenance Management, at HEC, Paris and other European nations in leadership.

He Worked in Defense Research Laboratory, DRDL Hyderabad and Indian Telephone industry in R & D Section at Bangalore and NAINI, Allahabad before joining Indian Railways. He is also attached with BITS as an Adjunt Faculty at BITS, Pilani

He stood first in IES examination conducted by UPSC and joined Indian Railways in 1979. He has been working at Indian Railways for more than thirty three years during which he has worked in various capacities in the field of Rolling Stock Maintenance and Operations, Traction Distribution and Asset Construction. Some of his assignments include Additional Division Railway Manager (ADRM) at Bhopal, Division Railway Manager (DRM) at Jaipur, Senior Executive Director at RDSO, Lucknow, He worked Senior Professor at Railway Staff Coleege , Vadodara, a premier Institution for training of railway managers. He has also taught two courses to the MBA students of MS University, Vadodar for more than three years. Currently he is working as Chief Electrical Engineer, Western Railways at Mumbai.

He conducted courses for Civil Services Probationers and senior Railway Managers. He was Course Director for a workshop meant for railway managers. His areas of interest include courses Technology Management, Organizational Behavior, R & D Management, Transport Economics and Maintenance and Facility Management.

Biography of the Supervisor

Dr. N.V.M Rao is Professor in the Department of Economics and Finance at Birla Institute of Technology & Science (BITS), Pilani (Rajasthan), where he has been since 1994 and he has involved in all the four fold activities of the Institute teaching, research, consultancy and institutional development. He has headed the Student Welfare Division and Educational Hardware Division in the capacity of the Dean for these two divisions at BITS, Pilani. He has taught seventeen courses and guided four Ph.D. students. He has also served as Guest Editor for the renowned journal Elsevier and Elsevier- Procedia, for conference proceedings. At present three Ph.D. students are doing research under his supervision. His research interests include Environmental Economics, Econometric Methods, Health Economics and Policy, Microeconomic Analysis, Financial Economics, Financial Markets and Financial Engineering. He is life member of Indian Economic Association, The Indian Econometric Society, Indian Society of Labor Economics and Association of Management Scholars International. He has more than forty research papers published in national and international journals of repute to his credit. He had presented papers more than fifteen national and international conferences.