# Perspectives in improving the management of railways

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**The background to the present organizational structure of the Indian Railways has been described. Its strengths and weaknesses are discussed together with an analysis of the measures taken internally to improve its management. In the context of the Prakash Tandon Committee report, the areas where attention should be paid in the future have been highlighted.**

TWENTY five years after the first railway line was operated in Britain, railway services commenced in India along the short stretch between Bombay and Thane in 1853. Since then, the Indian Railways has grown to be one of the world's largest railway systems with a route length of 62,500 km. Organized into 9 zonal railways, the system serves over 7,000 stations across the country. The multigauge system is being converted into a unigauge broad gauge system and the main trunk routes are now electrified. The fleet of about 3,000 diesel and 2,000 electrical locomotives is used to haul 25,000 passenger coaches and 400,000 freight wagons to move over a million tonnes of freight and ten million passengers everyday. An intensively used suburban rail system serviced by 3,000 electrical multiple units provides the backbone for suburban transport in Mumbai, Calcutta and Chennai. The Indian Railways has seven production centres with an annual output of 300 electric and diesel locomotives, over 2,000 passenger coaches and major sub-assemblies such as wheelsets, bogies and spare parts. The total system is operated with about 1.6 million people making the Indian Railways the world's single largest employer[1].

## Background to the organization structure of the Indian Railways

The Indian Railways was built by a combination of private and public financiers and, till the early 1950s, remained the principal mode of transport. With the growth of national highways, the trucking industry grew in the private sector and the monopolistic position of the railways began to decline. The management was unable to respond to the competition and the railway mode is no longer the predominant player in the transport scene since it now carries about 40% of long distance freight and less than 20% of the passenger transport.

However, railways have some inherent advantages as a mode of mass transport in comparison to other modes. These have been outlined in some detail by Lowe[2]. A summary is attached in Annexure I. Some of these conditions such as better fuel efficiency, reduced pollution, reduced land use for the same volume of transport and reduced levels of accidents are well known. The inability of the railway organization to convert these fundamental advantages into a competitive edge can be traced to major organizational and managerial inadequacies.

Historically, railways developed as monolithic organization. Since they operated in a monopolistic situation, the government thought it is necessary to have an Act that would ensure that the services provided were subject to some measure of regulation. The Indian Railway was governed by the Indian Railway's Act of 1890. A century later, in 1989, the Act was modified. However, the railways now found themselves in competition with the road transport. Road transport, being in the private sector, had flexibility, entrepreneurship and innovative features by which they provided cost effective services. It is not surprising that the railways, with its rigid organizational structure and inflexible rules and regulations, did not exhibit the entrepreneurship necessary to deal with the competition even though it was widely accepted that the railways had to operate in a commercial environment. The first recognition of this was evident in 1924 when the Acworth Committee's[3] recommendations were implemented. The following observations of the Committee are particularly relevant:

'We do not think that the Indian Railways can be modernized, improved and enlarged, so as to give to India the service of which it is in crying need at the moment, nor can the railways yield to the Indian public the financial return which they are entitled to expect from so valuable a property, until the whole financial methods are radically reformed. And the essence of this reform is contained in two things (1) the complete separation of the Railway Budget from the General Budget of the country, and its reconstruction in a form which frees a great commercial business from the trammels of a system which assumes that the concern goes out of business on each 31st March and recommences *de novo* the 1st April, and (2) the emancipation of the railway management from the control of the Finance Department[1]'.

And, 'We assume that in future the Railway Commission will be responsible for its own administration, will itself fix scales of pay and conditions of services for its own staff, and be free to engage and dismiss them as it thinks proper; will prepare its own program of work and expenditure, and within the limits of its budget, as approved by the Government of India and the Secretary of State and accepted by the Legislative Assembly, will carry it into effect; that, in a word though remaining an integral part of the Government machine and subject to control on broad questions of policy and major questions of finance on which policy must depend, it will be an independent Administration'.

However, even this autonomy granted to it to fulfil its commercial responsibilities, has gradually been taken away from the Indian Railways who are less capable today than they were in the past, to deal with the increasing challenges from the road sector. A monolith which operated under regulatory conditions framed when railways had a monopoly in transportation, found itself in a competitive environment but still shackled by century old legislation marginally modified a few years ago.

This dilemma in which the organization found itself has led to considerable introspection over the years. Several committees and commissions have discussed changes needed for the system. These include the Wanchoo Enquiry Committee on Railway Accidents 1968, Administrative Reforms Commission 1970, Expert Group on Restructuring of Capital on Railways 1978, Rail Tariff Committee 1980 and Railway Reforms Committee 1984. However, none of these committees were specifically assigned to look into organizational and managerial issues.

## Railways in other countries

At this point it would be interesting to take a quick glance at the developments which took place in the railways of the developed world. The railways of Europe had gone into a steady decline after World War II and were in dire financial straits in the eighties and in real danger of being wiped out of existence. The American railways, which played such a dominant role in the last century, were, by 1950, facing severe competition from several modes of transport.

The absence of indigenous sources of energy led to innovations and progress in the European railways especially in France, where the lack of oil and coal led to electrification of the railways. However, the bureaucratic organizational structure and management style of the system threatened to negate all the contributions of technology. It was in the early eighties that the top management of the European railway systems, with encouragement from the International Union of Railways, began a programme of reform. This led to a more transparent analysis of the railways' strengths and weaknesses and, after considerable introspection and trials, the major systems in Germany, France, UK and Sweden embarked on institutional reform. Each followed a path suited to its own political and environmental situation and before the end of the decade, restructuring was well on its way.

The private railroads in USA reformed even faster, triggered by the rising cost of fuel oil, and are now dominant players in freight transport. The monolith railways in these countries were whittled down to size, split into corporate entities and major human resource development exercises undertaken to shed the cultural baggage of several decades of bureaucratic functioning. Entrepreneurship, flexibility and a commercial out-look characterize the functioning of these railways.

## Changes and developments in the Indian Railways since independence

It is pertinent to examine Indian Railway's track record in managing change over the last few decades. One way would be to look at initiatives taken to reduce expenditure and increase revenues. An examination of the expenditure incurred by the railways reveals that almost 60% is spent on staff wages and pensions. The balance is spent almost equally between energy and materials. In 1989 it was decided to look at the manpower of the railways which at that time stood at about 1.75 million people. A major exercise of developing yardsticks, simulating scenarios of financial positions with different staff strength positions, identifying possible improvements in productivity and making inter railway and inter departmental performance comparions over the years, resulted in drawing attention to the emerging financial crisis if staff were allowed to grow unchecked. With an annual retirement of 3% of the staff strength accounting for up to 45,000 people a year, it was decided to limit fresh intake to 1% in order to achieve an annual reduction of about 30,000–35,000. Through this strategy the railways were able to reduce its strength by about 150,000 over the last 7 seven years, representing an annual recurring saving of over Rs 700 crores. But for this planned effort at reducing staff strength (which was contrary to the trends in other government undertakings) the railways would have faced a severe financial crisis. However, the railways still has surpluses in several areas such as track maintenance, non-core activities such as running outmoded printing presses, a huge protection force and an army of cleaners using inefficient and antiquated manual systems. Many of these activities should be contracted out to reduce their costs and improve quality.

On the income side of the balance sheet, the railways decided to concentrate on full trainloads realizing that

numerous goods collection centres, yards and train formation activity led to unacceptably high costs. The system capacity had not expanded to deal with the rapid growth in the infrastructure areas such as power, steel and industry and it became clear that the railways would have to pull out of freight business other than those in the rake loads just to ensure supplies of coal to the steel and power plants. Thirteen commodities now account for about 96% of the freight carried by the railways.

Soon, however, it was realized that the high value traffic that yielded greater profit margins was going away from the railways. The Container Corporation of India, a subsidiary of the Indian Railways, was then activated to capture long distance high value cargo. There has been spectacular growth in container traffic and it is expected that if capacities can be provided, the railways will be in a position to enhance its income significantly through specialized point to point container services. However, the key to this lies in entering into partnership with road transporters and industry to create and operate intermodal terminals.

Further improvements in railway efficiency and productivity lie in the organization distancing itself from government and realizing that they are not in the railway business but in the business of transportation. The need to invest in the infrastructure areas has been emphasized in the India Infrastructure Report[4]. In the transportation infrastructure plan developed in the report, no mention is made of railways. The railways appear to have opted out of the national debate on upgrading infrastructure. The insularity of the organization does not help it in playing an important role in the national transportation infrastructure where it has obvious advantages of energy efficiency, safety and cost effectiveness in comparison to road transport. Indian Railways would need to find ways to work in partnerships with private enterprises to run operations in a manner which reduces the gap between what the railways offer and what the customers want[5]. Private capital will bring in specialized management capabilities that are essential inputs to create an innovative and flexible organization. The inherent strengths of the system and the fact that there is a huge demand arising out of the rising rate of economic development, makes the railways an attractive target for institutional investors. The railways should leverage its purchasing power, its large land holdings and its capacity for efficient project execution to attract the large investments required to increase capacity.

As an organization, it has developed the capacity to perform the functions related to manufacture, maintenance, administration and operations without much help from the outside. The organization has created a pool of managers with considerable practical experience. This became evident in the 50s and 60s when the railways embarked on a process of modernisation, boldly replacing steam locomotives with diesel and thereafter by electric locomotives. The technology chosen then was current and the terms of technology transfer were sufficiently challenging for the railway engineers, who embarked on building a sustainable fleet of over 3000 diesel locomotives and 2000 electric locomotives.

At the same time bold initiatives were taken to electrify the railway system using 25 kV single phase 50 cycle industrial frequency. At the time when this decision was taken, only France had the technology which later on became a world standard. A programmed approach has led not only to the electrification of 20% of the route carrying 50% of the traffic but also to building a pool of engineers and project managers to carry out this task. Projects to introduce modern signalling using centralized traffic control were commissioned in the remote north east region and functioned well. However, the absence of a programme to modernize signalling along the lines of the electrification programme resulted in piecemeal inputs with little advantage to the system as a whole. In all it could be said that quantum leaps were made in the 'hard' areas of technology induction.

The same enthusiasm was not evident in improving the organizational and managerial environment. A militaristic style of management based on rigid controls functioned for quite some time after the British left. However, the increasing power of trade unions coupled with the inability of the management to put in place an appropriate human resource development programme, led to the benign neglect of motivational and oranizational issues thrown up in a democracy. Maintenance of the *status quo* became the order of the day and management was increasingly governed by code books that had lost their relevance. Meanwhile the demand for transport was increasing at an average rate of 9% during the 80s while the railway increased their output by an average of only 3%, thereby steadily losing their share of the market.

It was not till the early eighties when the first management development programmes were introduced that the 'soft' areas of organization and management were finally given attention. The management development programme began as a mid career input consisting of an eight-week course in which business management was taught to middle level managers. While this continued as a regular activity for some years, it was quickly realized that the middle level manager was not able to communicate well with his senior managers. The problem was more severe at the top levels since many had reached an age where they felt that they knew all that there was to be learnt, and in some cases many had lost their learning abilities. The increasing use of information technology also alienated several of the senior managers who found themselves incapable of understanding the use of computers.

It was then decided to make management education available from the beginning of an officer's career and continue providing inputs till the end of his career. Par-

ticular mention needs to be made of a six-week strategic management programme aimed at those who were likely to occupy the key position of Divisional Railway Manager and were slated to became General Managers and Members of the Railway Board. The programme ran for six years from 1989 at Manchester Business School and covered 108 of the top managers who now occupy senior positions in the hierarchy. A programme of mentorship of Railway Staff College faculty and a collaborative agreement with the Indian Institute of Management, Ahmedabad was also put in place in order to continue the programme in future. It could thus be said that there exists a critical mass among the top management of the railways who are capable of managing the changes necessary to transform the Indian Railways into a business-like agency in the field of transportation.

Simultaneously several other initiatives were taken to deal with specific thrust areas of the railway's corporate goals to achieve efficiency, quality and increase in capacity. The strategies to achieve the corporate goals were: Business-led management, market orientation, investment optimization, cost reduction, safety, reliability, heavy haul and higher speed.

Several projects were conceptualized and implemented by teams assisted by national and international experts. The projects were designed with predetermined outputs that would help in achieving the corporate goals of the organization and the overall objective of providing transportation at minimum cost to the society. Many of these projects were launched with help from funding agencies such as United Nations Development Programme, The World Bank, Asian Development Bank, German, Swedish and British Governments and other bilaterial agencies.

The projects covered the 'soft' areas under which organizational and managerial aspects and also the 'hard' technology areas such as rolling stock acquisition.

Some of the 'soft' areas covered were:

Defining a new relationship between the state and railways.

Introducing marketing as a function at different levels in the organization.

Introducing a financial information system that could help in introducing the cost and profit centres.

Developing a project management system which could incorporate the past experience and knowledge gained by the organization in executing large projects such as the Konkan railway.

Designing of motivational packages for the operations staff who are subject to considerable stress and a hostile operating environment.

Introduction of total quality management initially at the production units and then to be extended into the service sector.

Improving productivity and quality in maintenance management.

Meanwhile, after the initial burst of technology induction in the 50s and 60s, the Indian railways lapsed into a *status quo* in these 'hard' areas. The design of locomotives, coaches and wagons remained virtually unchanged for 30/40 years. The increasing demands on the railway system in India remained unsatisfactory owing to the inability of the management to take timely decisions on technology changes. It was not until a couple of years ago, that the railways decided to induct modern technology for its locomotives and coaches.

However, in the all important areas of signalling and telecommunications which present the most effective method of improving capacity, the railways have yet to take up a system upgradation programme. There were sporadic efforts to introduce elements of improved signalling. These have, by and large, been too thinly spread out to have an impact. The tracks are getting busier and dependence on manual operations of these systems is resulting in enormous stress on the operating staff such as Station Masters, Cabinmen and Drivers. The system capacity remains stagnant and when such systems are operated continuously at peak capacity, the chances of human error increase with tragic results. It is now being realized that the capacity demands on the railway has assumed proportions which cannot be dealt with unless appropriate technologies are inducted and made operational in a sustainable way. Our busiest mainline railway routes run less than 60 trains each way in a day. Modern signalling and operating systems could double this capacity with greater in-built safety.

In the area of information technology, the railways were pioneers in introducing computers. The computerized passenger reservation system stands out as an example of the widespread and sustainable use of computers and communications to provide better customer service. The inability to provide a similar freight operation system stands out in stark contrast. After the initial steps to computerize the accounting and personnel activity, there has been a slow down. Projects to introduce efficiency through computerization and communications are few.

As an example, statistics of the railways are available for use a full year after the relevant period comes to a close. A project to computerize and link the railways to a database is an urgent necessity. Similarly the monitoring systems put in place by each of the ten functional departments contains duplications and there is scope for an independent project to merge the systems and provide comprehensive information with much greater efficiency. The organizational structure does not yet recognize the role played by the information systems manager. Thus the use of information technology in assisting the decision making process is just beginning to

be understood with the development of the Long Range Decision Support System at the Railway Board.

## The Prakash Tandon Committee

Sensing the need for changes, the railways organized, in 1990, a path-breaking seminar on *Management of Change in the Railway Business*. For four days, the railway's top management, present and future, discussed all issues frankly with their peers from the German, British, French and Swedish railway systems. Major thrust areas were agreed upon, but little action followed. The seminar, however, served to introduce a sense of disquiet and dissatisfaction with things as there were and also legitimized the questioning of existing roles, regulations, attitudes and systems which have had long remained areas where discussions were frowned upon. In the years that followed, Indian Railways organized several programmes to introduce managerial and strategic thinking at all levels. Ultimately in 1993, the Ministry set up a Committee under the Chairmanship of Prakash Tandon, former Chairman of the Hindustan Lever and an acknowledged management expert with vast experience in the public sector as well. They were asked to look into, and recommend the organizational and managerial changes necessary to prepare the Indian Railways to function in an increasingly commercial environment. This initiative became particularly relevant since by then the country itself had embarked on the path of deregulation and economic liberalization.

Even as the major efforts in the 'soft' and 'hard' areas were being organized, the Prakash Tandon's Committee[6] submitted its report in March 1994 and recommended setting up 14 separate Task Forces to specifically address organizational and managerial issues to make the railways market-oriented and enable them to play their role effectively in the transport sector.

The Committee also suggested that while Task Forces would address these issues and deal with implementation over the next year or two, there were certain decisions that could be taken immediately. Some of these recommendations had also been made by earlier committees. The government and railways needed to take quick decisions in several matters including tenures in senior managerial positions, appointment of persons in key field management positions at a younger age, creation of an unified Indian Railways Service with a development and selection process to groom people and changing Board level responsibilities to business centres rather than departmental functions. Four years after the Committee's recommendations were made, Task Forces have worked on several of the recommendations and have effected some changes. However, most of the crucial matters have yet to be implemented.

The key to changes in infrastructure management were clearly brought out during a retreat for Secretaries to the Government of India organized at the Administrative Staff College in January 1994. The theme of the retreat was 'Managing the Economic Reform Process'. The group of Secretaries identified the major constraints faced by the railways. These were not very different from the conclusions of the Tandon Committee.

Clearly, there is understanding of the major issues at the highest level and while there is some movement to improve efficiency, the pace appears too slow. Indian Railways has often been described as a country within a country. Political patronage and entrenched bureaucratic interests are omnipresent and all pervading. It would require political will of the highest order to make significant changes. It is also important to point out that during the discussions on organization changes, the trade union leadership has shown a degree of opennes to the changes proposed that in many ways was in stark contrast to the insularity exhibited by some in top management positions. It should also be acknowledged that, but for the pragmatic approach of the top union leadership, the reduction of staff strength would not have been possible. In retrospect, their wisdom in accepting the cuts has led to a reasonably healthy financial situation in the railways.

## Conclusions

The general philosophy of the Indian Railways has been to encourage incremental changes in the 'soft' areas and quantum changes in the 'hard' areas of technology. However, the pace of change has accelerated world-wide and if we are to integrate with the world economy, in order to survive it would be necessary to move quickly in the 'soft' areas and to reduce the time period between the quantum leaps in technology. Meanwhile, the railway management is now well equipped with the necessary skills and attitudes to give confidence to the political leadership that, if it moves on a path of reform and radical restructuring, managers will not be found wanting.

The future should see the railways moving to improve its financial position and serving the transport infrastructure of the country by:

Raising finances by leveraging its vast land holdings and efficient project management.

Developing its human resources.

Creating intermodal services through joint ventures.

Introducing cost effective technologies to enhance throughput.

Moving away from direct government control to public–private partnerships to enhance managerial effectiveness.

**Annexure 1.** Excerpts of Rail Benefits from *Back on Track: The Global Revival* by Marcia D. Lowe

| Benefit | Description |
|---|---|
| Greater energy efficiency | An inter city passenger train is three times as energy-efficient as commercial air and six times as efficient as a car with one occupant.* |
| Less dependence on oil | Switching 5% of US highway driving to electrified rail would save more than one-sixth the amount of oil imported annually from the Middle East. |
| Less air pollution | For every ton of goods moved one kilometre, freight rail emits one-third the nitrogen oxide and carbon monoxide, and one-tenth the volatile organic compounds and diesel particulate emitted by heavy trucks. |
| Lower greenhouse emissions | For every ton of goods switched from road to rail the amount of carbon emitted per kilometre would drop by 88%. |
| Less air traffic congestion | Conservative estimates suggest that without Amtrak (the US intercity passenger railroad), air passengers on the New York City/Washington, DC route would increase 36%. |
| Fewer injuries and deaths | Between 1964 and 1992, more than 3 billion trips were made on Japan's bullet trains without a single fatality, the equivalent volume of road travel over that period killed nearly 2,000 people. |
| Less land use | Two railroad tracks can carry as many people an hour as sixteen lanes of highway. Some 500 km of the French TGV high-speed rail system could fit into the area occupied by a single large airport. |
| Local economic development | In the Washington DC area during the eighties, 40% of new building space, worth $3 billion, was built within walking distance of a Metro (subway) stop. |
| Sustainable land use | Rail corridors help encourage compact, efficient land use. Rail based cities such as Paris, Stockholm and Toronto have accommodated new growth while remaining livable and avoiding sprawl and excessive car dependence. |
| Greater social equity | The majority of the world's people can afford neither an automobile nor an airline ticket, rail is a vital option for people who are disabled or too young or old to drive. |

*Measured by the energy required to move one passenger one kilometre under US commuting conditions.


1. *Indian Railways Year Book 1994–95*, Government of India, Ministry of Railways.
2. Marcia D. Lowe, *Back on Track: The Global Rail Revival*, World Watch Paper.
3. *Report of the Acworth Committee (1920–21)*, Government of India.
4. Neil E. Mayer and Luis, S. Thompson, *Option for Reshaping the Railway*, World Bank Working Paper.
5. *India Infrastructure Report*, Ministry of Finance, Government of India and NCAER, 1996.
6. Report of the Prakash Tandon Committee on *Organisational Restructuring and Management Ethos of Railways*, Government of India, Ministry of Railways, 1994.