

# EFFICIENCY OF RAILWAY MANAGEMENT

<sup>1</sup>Chan Jin Yong and <sup>2</sup> Mr. Nizamuddin B. Dato' Hj. Zainuddin

<sup>1</sup> College of Business, School of Technology Management and Logistics,  
University Utara Malaysia, 06010, Sintok, Kedah, Malaysia

<sup>2</sup> Department of Logistics & Transportation, School of Technology Management & Logistics,  
University Utara Malaysia, 06010, Sintok, Kedah, Malaysia  
Email: <sup>1</sup>197150@student.uum.edu.my, <sup>2</sup>nizamuddin@uum.edu.my

## ABSTRACT

Basically, the railroad network is a national asset that could be used to reduce the costs of transportation. The paper has two aims which the first is to describe the efficiency improvements that the railroad industry itself has made. The second is to describe the role that rail network could play in a more efficient overall national transportation system. The paper uses a secondary data or quantitative grounded theory research methods to investigate the efficiency of Malaysia's railways since quantitative way are more naturalistic. Author found that there was substantial inefficiency in the industry with no sign of reduction over time. Author's main conclusion is that principal agent problems were pervasive in railway management. Research results suggest that private ownership in the railway industry can promote efficiency and should be supported by competition for franchises and price-capping regulation as well. There are two formal economic aspects of efficiency. Productive efficiency occurs when an economy cannot produce more of one good or service without producing less of another. It generally occurs when firms produce at minimum average total cost. Allocate efficiency occurs when the economy cannot raise one consumer's satisfaction without lowering another's. It occurs when price signals to consumers are based on marginal costs. The focus of research is on techniques of improving rail network performance. Author is concerned with the productive efficiency of railroad firms. Author is asking what needs to be done to enable railroads to provide service at the minimum average cost that is technologically possible. The allocate efficiency of the transportation system within which railroads operate is also important.

### Keywords

Allocate efficiency, productive efficiency, grounded theory, franchises, and privatization

## 1 INTRODUCTION

Privatization of state-owned enterprises improves their performance are support by large empirical literature (Megginson and Netter, 2001). In some cases it has been argued that change of ownership is all that matters (Ehrlich et al., 1994) but in the presence of agency problems there are reasons to believe that better results will be achieved if competition is intensified or strong regulatory incentives to productivity improvement are applied (Vickers and Yarrow, 1988)

In the case of railways is characterized by natural monopoly and high entry barriers with weak contestability. Regulation is the order when railways had been privatized. The objectives of privatization of railway was organized so as to produce competition for the market in the form of bidding for franchises for train-operating companies which were then subject to regulation in the form of price-capping. Author's comment will focus on improve the efficiency of rail by several way such like privatization.

### 1.1 Problem Statement

The research focuses on the efficiency of railway management. In particular, for each train an itinerary through the track topology with passing times at each relevant point has to be determined. Furthermore, safety restrictions, driving behavior of the trains and interconnections have to be considered. By applying efficient and scalable algorithms, we want to find feasible train schedules for the trains. Current transport inefficiencies have significant negative impacts on the economy, society and the environment:

- Congestion, particularly through increasing private car usage in town, causes a loss of millions to the provincial economy.

- Congestion contributes over 50% of the atmospheric emissions in cities – the highest source of pollution.
- High accident rates involving pedestrians and high numbers of fatalities increase the burden on hospitals and on medical and social services and decrease economic productivity.
- The high cost of transport disembowels marginalized communities due to travelling distances and the lack of an adequate and integrated transport system.
- Safety and security problems deter people from using public and private transport.
- Limited access for persons with special needs to transport and the associated infrastructure further isolates already vulnerable individuals in communities.
- Increasing backlogs in maintenance of transport infrastructure hamper economic activity.
- The lack of formalized institutional arrangements to assist in coordination and delivery on an integrated transport mandate includes a fragmentation of functions relating to transport safety.

## 1.2 Objectives

1.2.1 To identify the factor of inefficiency of railway management.

1.2.2 To identify how does it affect the railway management

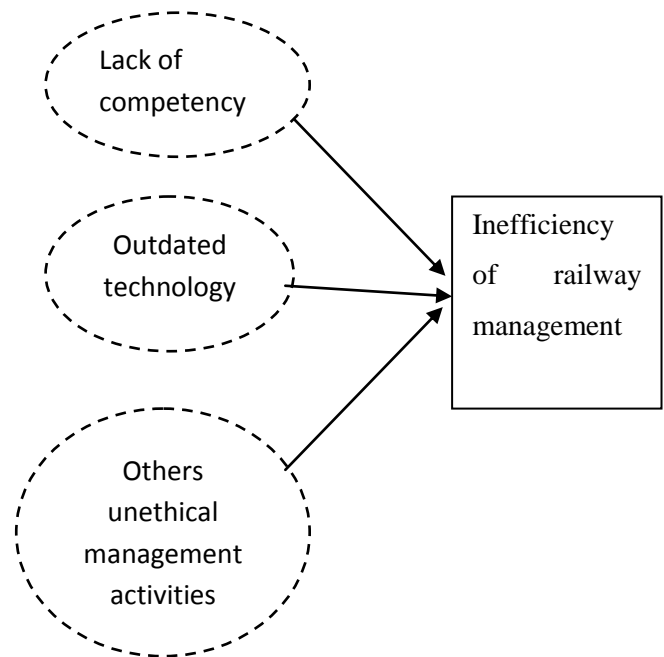
1.2.3 To identify the kind of solution should be implementing to overcome that impact.

## 2 LITERATURE REVIEW

Regarding to the inefficiency of railway management, it appears that people respond with feeling of inefficient and rejection. Mulatu & Crafts (2005) examined the privatization and competition can improve efficiency of railway operation. Thus, a Mulatu & crafts are get rid it by privatization and competition.

In the others hand, the outdated of Malaysian railway operation always been critic. Woodroffe, Ash & Champion (2000) stated that, only utilized labor usage and improve technology on operation system can improve efficiency of railway. In their study, efficiency is more based on statistical variable in control. Thus, I will conduct from their empirical study and research to do a more naturalistic research.

## 2.4 Theoretical Framework



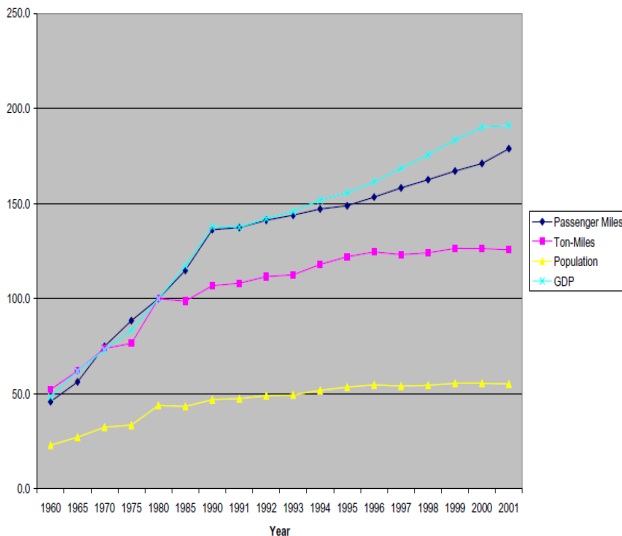
The lack of competency environment with outdated technology and others unethical management activities caused inefficiency of railway management.

## 3 METHODOLOGY

Data were collected from the relevant on efficiency of railway. The study is using qualitative grounded theory. Grounded theory is the way to look at fields notes, then name them and code them on document; compare codes to find consistencies and differences (Ratcliff, 1993). The analysis answer questions about how and why. The main advantage of this new technique is that it permits combination of the intensity derived typically from qualitative methods with the larger number of observations that is normally used in quantitative methods. The analysis had done by searching the main affect and solution.

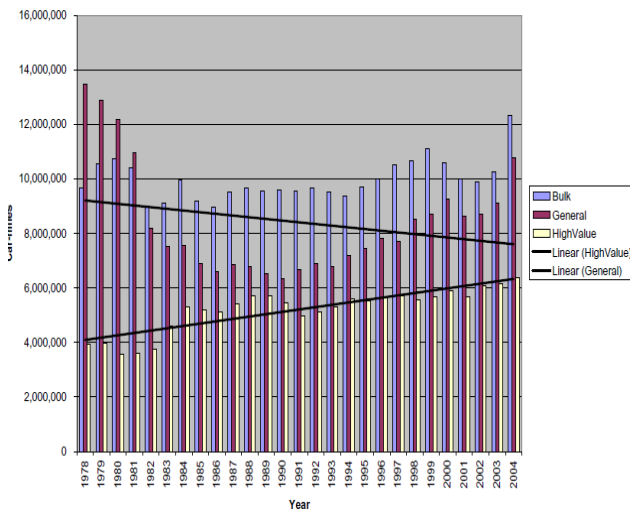
## 4 FINDINGS

**Figure 1.** Transportation and Economic Activity



The role of transportation in fostering economic growth may have been exaggerated by highway builders and others who benefit directly from transportation spending. It is analytically difficult to disentangle the extent to which transportation investment generates economic activity or economic activity spurs transportation investment. Nevertheless, there is a close connection between transportation activity and economic activity. Clearly, transportation is an important constituent of economic activity.

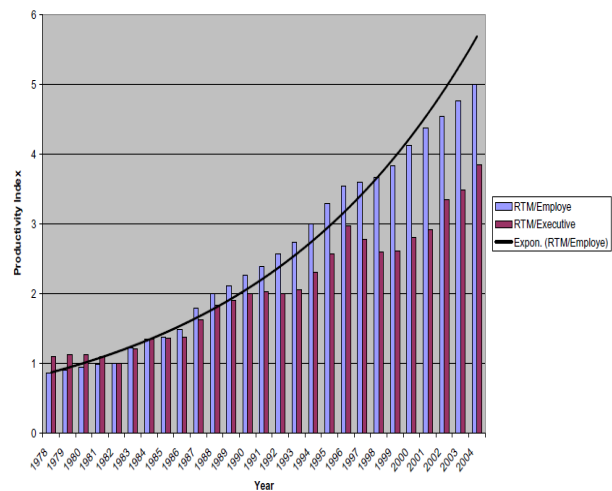
**Figure 2.** Car-miles by Car-type



The railroad manager discretion to use pricing and service levels to affect the composition of rail

output. Changes in output composition, along with line abandonments and a significant degree of industry consolidation, have led to higher traffic densities, longer lengths of haul, and a significant shift in the train operations. The changes in the composition of rail output are illustrated in Figure 2. In 1978 the Class I industry generated about 13.5 billion loaded and empty general car-miles, but by 2004 the number had dropped to 10.8 billion. In the high value market, on the other hand, intermodal and multi-level auto carrier car-miles grew from 3.9 billion in 1978 to 6.4 billion in 2004. Loaded and empty bulk car-miles, meanwhile, grew from 9.7 billion to 12.3 billion.

**Figure 3.** Revenue Ton-miles per Employee



The operational changes have been dramatic. The Analyses show that between 1978 and 2004 revenue ton-miles per mile of road have grown from 4.5 million to 12.2 million, average lengths of haul have increased from 617 miles to 902 miles, and the percent of train-miles completed in unit trains has expanded from 7 percent to 37 percent. Operational changes have been accompanied by various technological improvements including higher adhesion locomotives, re-engineered rails and cars, better maintenance of way equipment, and automated inspection techniques. The overall effect has been a much higher level of productive efficiency in the rail industry. Labor output has grown from 1.8 million revenue ton-miles per employee in 1978 to 10.5 million in 2004.

## 5 DISCUSSIONS

Evidence suggests that inefficiency in the railway industry was pervasive, persistent and pronounced. Results are in sharp contrast with those that have emerged from similar analyses of the recently-privatized railways for the period 1995 to 2000. Affuso et al. (2002) undertook a comprehensive

Data Envelopment Analysis of 25 train-operating companies. Found that the average DEA score rose from 0.698 in 1995 to 0.877 in 2000 “associated with an impressive reduction in real operating costs. Nine of the eleven companies with an initial score of less than 0.7 improved by at least 0.1 in the three years from 1997 to 2000. Kennedy and Smith (2003) found that the average net efficiency score in their DEA analysis of the divisions of rail track rose from 0.881 in 1995/6 to 0.923 in 1999/00. They note that firm-wide productivity was growing at 6.8 per cent per year pre-Hatfield. These modern studies find much lower inefficiency scores than we estimate for the distant past together with a clear tendency for organizational slack to fall over time and substantial progress by the initial laggards. This is perhaps not surprising given the enormous difference in the regulatory environment between the two eras. Competition for franchises saw train-operating companies committing themselves to sharply decreasing subsidies over time with franchises to be contestable again after 7 years in most cases (Shaw, 2000, pp. 107-9).

In contrast, the key features of the regulatory situation a hundred years ago were as follows. First, incumbent companies did not have to compete for franchise renewal and were not involved in bidding to operate with lower subsidies. Second, charges for freight traffic were capped under the Railway and Canal Traffic Act of 1894. By 1899 it had become clear that this amounted to a price freeze (Cain, 1988). As costs increased after 1900, this led to pressure on profits but this was modest in the low inflation era of the Gold Standard. Third, the Cheap Trains Act of 1883 imposed strong tax incentives to keep fares for 3rd-class passengers below 1d per mile and required some workmen’s trains to be run at reduced fares . There was no parallel to the concept of a periodic price review or price caps based on scope for productivity improvement. Thus the regulatory regime in Edwardian Britain appears to have offered much weaker incentives to productivity improvement than that of the late 1990s. There was little but shareholder power to energize sleepy management but the diffuse structure of shareholding in these large joint-stock companies mitigated against this while hostile takeovers were unknown in this era. These were privately-owned firms with significant agency problems, as Cain (1988) points out. Vickers and Yarrow (1988) were sceptical of the case for privatization of British rail, mindful of failures to establish effective competition or regulation in a number of early privatizations. As it turned out,

their message that rail privatization would need to be accompanied by an appropriate regulatory regime was largely heeded and our comparison between the two eras suggests that this was important in improving rail efficiency post-privatization. Change of ownership on its own might have achieved much less. This is not to suggest that the privatization of rail was perfectly designed or implemented. There are many reasons to doubt that, not least the question of the appropriate degree of vertical integration of the industry. Nevertheless, privatization succeeded in precluding a return to the wasteful practices of Edwardian days and its design deserves some credit for that.

## **6 CONCLUSION & RECOMMENDATION**

The analysis of the performance of the major private railway companies has revealed that in most cases costs were much higher than the efficient level. Standing the obvious caveats relating to differences in the operating environment, an average excess cost of 59 per cent in 1912 surely confirms Cain’s judgement that ‘there was waste and inefficiency in the railway system’ (1988, p.120). This verdict is strengthened by our finding that inefficiency was increasing rather than decreasing in the early twentieth century. The railway system of a century ago was privately-owned but weakly-regulated with high barriers to entry and no mechanism to provide competition for the market. The performance of the railway companies in that environment strongly suggests that private ownership per se is not the key to efficient operation but needs to be complemented with competitive pressure and well-designed regulation.

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