A Study of Information Systems in Indian Railways with Specific Reference to Konkan Railway Application Package

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ABSTRACT

The railroads sector in the developing countries like the other services sectors (i.e. electricity, post, and telegraphs, health, and transport) are still administered by the government in many counties. Organizations providing these services have a large geographical spread, an assured market, and an administered price regime. The organizations function under the twin pressures. One being to function as an entity with commercial goals thereby being financially self-sufficient; a compulsion imposed on the organizations as a result of the financial squeeze faced by the governments that support these organizations through budgetary grants. The second pressure being to support a large public service obligation; a constraint imposed by a large population with low income levels. Information Technology Management in such organizations evolves in a scenario marked by such conflicting pressures. The chapter takes a look at the evolution of the information technology applications in Railroads of select countries. A particular focus is given to the Indian Railways in an attempt to cull out the issues of Information Systems for the same. Further specific reference is the Konkan Railways enterprise systems which led to some learning for development and implementation of large information systems in the railroads. The learning could be of substantial value in developing a sound theoretical framework for information technology management practices in the services sector in the developing countries.
INTRODUCTION

The public services sectors in advanced countries that are administered by the government include primarily the defense forces and the police. In the developing countries that have a large proportion of the population below the poverty line, the public services include postal services, transport services, telecommunication services and even the basic services like electricity, health care, education, water supply and sanitation facilities.

There have been very few studies in the implementation of information systems in the public services sector in India specifically in the area of the transport sector and within the transport sector the railroad sector has still fewer studies. With economic structure in most parts of the world shifting from predominantly primary sector based to one that has a predominance of the tertiary sector the traditional markets for railway services is on the decline. As a result, rail systems need to explore new areas through more advanced services and technologies like information systems. Also to cope with an ageing business model, railway providers are undergoing a radical change to adapt to a more competitive model. The focus of this article is information systems development in the Indian Railroads performing in the ambit of the government sector and the concomitant pressures.

Organisations like the railways are characterized by large number of assets and a large workforce; both are dispersed across a large geographical area. Large resources are required to develop and implement information systems in such organisations. For an organization to accomplish this objective, it requires a clear focus and a sustained effort without which the resources allocated for information system development and sustenance and use them efficiently. The aim of this study is to develop a framework for identification of suitable work systems for development and implementation of information systems in such large organisations.

The study begins with the literature survey pertaining to the information systems developed and implemented in the railways of different countries worldwide. Then a framework is developed in which the information systems in the railways are classified based on work systems of use. Further the framework classifies the main drivers of information systems development in the organizations and tries to establish through the case studies method as to how these drivers propel the development of information systems in the organization under study.

INFORMATION SYSTEM ISSUES: A BRIEF REVIEW

Globally, irrespective of the industry, the organizations are in competition with one another to gain a foothold in the industry – the battle being played this time is using ‘Information Technology’. Information technology has been the harbinger of many changes. They have varied from modification in the operations, changes in the processes, alteration in the value chains to repositioning of the firm in different market segments. The pace of changes in the organizations in the Northern hemisphere has been in tandem with the progress in the field of information technology. In fact, there has been a positive synergy between the two.

However in the Southern hemisphere the impact of information technology started to be felt in the late eighties. The information technology in most of these organisations is still hovering around the second level of the Nolan’s model. Nolan (1979) identified six stages of growth of information systems in his research based on the growth of Electronic Data Processing (EDP) facilities in
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