Enterprise information systems project implementation: A case study of ERP in Rolls-Royce

Yahaya Yusuf[a,*], A. Gunasekaran[b], Mark S. Abthorpe[c]

[a] Business School, University of Hull, Hull HU6 7RX, UK
[b] Department of Management, University of Massachusetts, 285 Old Westport Road, North Dartmouth, MA 02747-2300, USA
[c] Department of Mechanical and Manufacturing Engineering, Nottingham Trent University, Burton Street, Nottingham NG1 4BU, UK

Abstract

Economic globalisation and internationalisation of operations are essential factors in integration of suppliers, partners and customers within and across national borders, the objective being to achieve integrated supply chains. In this effort, implementation of information technologies and systems such as enterprise resource planning (ERP) facilitate the desired level of integration. There are cases of successful and unsuccessful implementations. The principal reason for failure is often associated with poor management of the implementation process. This paper examines key dimensions of implementation of ERP system within a large manufacturing organisation and identifies core issues to confront in successful implementation of enterprise information system. A brief overview of the application of ERP system is also presented and in particular, ERP software package known as SAP R/3, which was the ERP software package selected by Rolls-Royce plc. The paper takes an in-depth look at the issues behind the process of ERP implementation via a case study methodology. It focuses on business and technical as well as cultural issues at the heart of the Rolls-Royce implementation. The case study also looks at the implementation time scales and assesses the benefits from the project both tangible and intangible.
© 2003 Elsevier B.V. All rights reserved.

Keywords: ERP; Information systems; Implementation; Success factors; Rolls-Royce

1. Introduction

The global nature of modern marketplace requires active players to internationalise their operations. In the past, companies were used to competing based on one or two competitive performance objectives such as price and quality. However, present markets demand both price and quality in addition to greater flexibility and responsiveness and thus today's organisations must compete based on all competitive objectives. In order to achieve such simultaneity in performance objectives, some organisations have decentralised their operations by global outsourcing of activities. This places enormous challenge on companies to achieve a co-ordinated and integrated supply chain. The emergence of various information technologies such as the Internet, electronic data interchange (EDI) and WWW facilitate the attainment of an integrated supply

---

*Corresponding author. Tel.: +44-1486466933; fax: +44-1482466216.

E-mail address: yahaya.yusuf@hull.ac.uk (Y. Yusuf).

chain and in turn flexibility and responsiveness in meeting changing market requirements. Information systems such as manufacturing resource planning (MRPII) and enterprise resource planning (ERP) in particular have gained ground in providing support for achieving an integrated supply chain.

Firms around the world have been implementing ERP systems since the 1990s to have a uniform information system in their respective organisations and to re-engineer their business processes (Rajagopal, 2002). ERP system as a packaged software has the advantages of reduced cost, rapid implementation, and high system quality (Lucas et al., 1988). Although application packages have these benefits over custom design software, packaged software have problems of uncertainty in acquisition and hidden costs in implementation. Successful ERP implementation must be managed as a program of wide-ranging organisational change initiatives rather than as a software installation effort. Such IT-driven initiatives require change of the organisation's socio-economic system, which is intertwined with technology, task, people, structure, and culture. Thus organisational resistance to change is identified as a critical success factor for ERP implementation (Hong and Kim, 2002).

Organisational fit and adaptation are important to implementation of modern large-scale enterprise systems that are built with pre-determined business process methodology. As a result, customisation is a crucial, lengthy, and costly aspect in the successful implementation of ERP system, and has, accordingly, become a major speciality of many vendors and consulting companies. Gefen (2002) examines how such companies can increase their clients' perception of engagement success through increased client trust, that is brought about through respective and dependable customisation.

Considering the importance of ERP in SCM, an attempt has been made in this paper to analyze the implementation issues of ERP in a major UK company. The lessons learned from this company would be useful for other companies in their efforts to successfully implement modern ERP system.

2. Enterprise resource planning

In the 1990s innovations in information technology led to the development of a range of software applications aimed at integrating the flow of information throughout a company, and these commercial software packages were known as Enterprise Systems. During this period one particular enterprise system called ERP caught the attention of some of the worlds largest companies. It has been estimated that businesses around the world have been spending almost $10 billion per year on ERP systems. ERP aims to integrate business processes through the support of an integrated computer information system (O'Brien, 1999).

ERP allows the corporate management of a business, and aims to integrate individual functional systems such as manufacturing, finance, procurement and distribution. The systems allow companies to replace their existing information systems and also help to standardise the flow of management information and have been regarded as the next step in the evolution of MRPII. The MRPII model actually forms the basic core of ERP and uses similar modules, however some ERP systems do contain certain modules that were not originally used within MRPII such as computer aided design (CAD), distribution resource planning (DRP), tool management systems (TMS), and product data management (PDM) (Yusuf, 1998; Prasad et al., 1999).

ERP uses Internet technologies to integrate the flow of information from internal business functions as well as information from customers and suppliers. The system uses a relational database management system, within client/server network architecture, to capture valuable management data. The key principle behind the system involves entering the data from a series of modular applications only once. Once stored, the data automatically triggers the update of all related information within the system. The systems can support virtually all areas of an organisation, across business units, departmental functions and plants. The development of an ERP system within a large manufacturing organisation requires the integration of working practices and the