**Case study on ERP system of ROLLS ROYCE**

**Abstract:**

Enterprise resource planning (ERP) results have been applied by many companies rather than system development on the potential of improving processes and reasonable benefits for organizational strategy. Typical feasible benefits comprise an embracing of global standards and processes through a proven integrated system, continuous improved upgrading by vendors, and thus relatively easy system maintenance for better economic benefits. This paper gathers literature that highlighted possible references to critical success factors for ERP implementation of projects. The objective of this research is to propose a conceptual framework of ERP implementation process and identify the critical issues and factors for the successful upgrade of packaged ERP solutions for ROLLS ROYCE incorporate. Based on the case study of ROLLS ROYCE organization that have experienced ERP system upgrade employment, five critical factors for successful system upgrade has been identified as follows: (1) clear goal statement, (2) good coordination and communications with implementation partners, (3) thorough management of customization history, (4) preparation for system requirements, and (5) role redefinition between business and IT departments. The case study also focus at the implementation time scales and evaluates the advantages from the project both tangible and intangible form.

**Keywords:**

Enterprise resource planning, critical success factors, failure factors, Supply chain management systems, post implementation strategies.

# **Introduction:**

An enterprise resource planning (ERP) system is typically defined as a packaged business software system that facilitates a corporation to manage the efficient and effective use of resources (materials, human resources, finance, etc.) by providing a total integrated solution for the organization’s information-processing requests, through a process-oriented view consistent across the company (V. Botta-Genoulaz et al. / Computers in Industry 56 (2005) 510–522).

The globalized nature of modern marketplace needs active participants to internationalize their operations. In the past, companies were used to challenging based on one or two competitive performance objectives such as selling cost and quality. However, present markets demand both selling price and quality in addition to greater flexibility and receptiveness and thus today’s organizations must strive based on all competitive objectives. In order to achieve such streamed value in performance objectives, some organizations have decentralized their operations by global outsourcing of activities. This place enormous challenge on companies to achieve a coordinated and integrated supply chain. The rise of various information technologies such as the Internet, electronic data interchange (EDI) and WWW facilitate the attainment of an integrated supply-chain and in turn flexibility and responsiveness in meeting changing market requirements and customer satisfaction. Information systems such as manufacturing resource planning (MRP-II) 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 organizations and to re-engineer their business processes (Y. Yusuf et al. / Int. J. Production Economics 87 (2004) 251–266). ERP system as a bundled software has the advantages of optimal cost, rapid implementation, and high system quality (Lucas et al., 1998). 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 organizational change initiatives rather than as a software installation effort. Such IT-driven initiatives require change of the organization’s socio-economic system, which is intertwined with technology, task, people, structure, and culture. Thus, organizational resistance to change is identified as a critical success factor for ERP implementation (Jaehoon Whang 2003). Organizational 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, customization is a important, lengthy, and costly aspect in the successful implementation of ERP system, and has, accordingly, become a major specialty 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 customization.

###### **1.1 Company profile:**

###### Rolls-Royce is one of the most famed British luxury car producers which, however, also manufactured aero-engines from 1914 until 1973. The brand’s history intertwines with that of Bentley, especially after 1931. But its early history and development of the brand was a result of a vision of two men - Charles Rolls and Sir Henry Royce.( about Rolls Royce http://www.rolls-royceandbentley.co.uk/

* Public Company
* Incorporated:1884 as F.H. Royce and Company
* Employees: 36,100
* Sales: £6 billion ($11.12 billion) (2015)
* Stock Exchanges: London
* Ticker Symbol: RYCEY
* NAIC:333611 Turbine and Turbine Generator Set Unit Manufacturing; 335312 Motor and Generator
* Manufacturing; 336412 Aircraft Engine and Engine Parts Manufacturing ( additional information, reference for business [http://www.referenceforbusiness.com/history2/44/Rolls-Royce-Group-PLC.html#ixzz4esL44qMG](http://www.referenceforbusiness.com/history2/44/Rolls-Royce-Group-PLC.html%22%20%5Cl%20%22ixzz4esL44qMG))

## **Literature review**

### **2.1 Defining ERP:**

In back 1990s innovations and advancement in information technology directed to the development of a wide range of software deployment meant at integrating the stream of information all over a company, and these commercial software packages were known as Enterprise Systems. During this era, one specific enterprise system called ERP trapped the consideration of some of the world’s leading companies. It has been projected that businesses around the world have been investing almost $10 billion per year on ERP systems. ERP aims to assimilate business processes through the support of an integrated computer information system CIM. (O’Brien,1999).

ERP permits 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 substitute their existing information technology systems and also help to standardize the drifted flow of management information and have been stared as the next step in the evolution of MRPII. The MRPII model actually formulates the basic core of ERP and uses similar modules, however some ERP systems do comprise 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, V. Botta-Genoulaz 2005).

#### **2.2 Implementing ERP:**

The implementation of ERP systems has been one of the basic task depicted by the literature on the subject. This area remains very proficient over the last 2 years, as it is stated in [F.R. Jacobs, E. Bendoly, Enterprise resource planning: developments and directions for operations management research, European Journal of Operational Research 146 (2) (2003) 233–240.,] where two distinct research streams are detected from the literature, the first one focuses on the fundamental corporate capabilities driving ERP as a strategic concept, the second on the details associated with implementing information systems and their relative success and cost. Based on this difference, this section has been divided in sub-sections taking into account the problems of sociological and cultural factors inducing the implementation success, the implementation steps, the business process alignment phase and the factors of success/reasons for failures for ROLLS ROYCE. (Y. Yusuf et al. / Int. J. Production Economics 87 (2004) 251–266).

##### **Study statement and objective:**

Purpose of this case study is to provide a brief glimpse over the ERP system implemented at the regional and more precisely on the global basis for ROLLS ROYCE. The main idea is to provide a best solution and customer satisfaction at market level. Typical possible benefits comprise an embracing of global standards and processes through a proven integrated system, continuous improved upgrading by vendors, and thus relatively easy system maintenance for better economic benefits. This paper gathers literature that highlighted possible references to critical success factors for ERP implementation of projects in ROLLS ROYCE.

1. **Existing ERP system of ROLLS ROYCE:**

For ERP architectural design of ROLLS ROYCE we would have consider the following capacities of the system with greater consideration Rolls-Royce has nine principal business processes, which when taken together describe everything the company does. Fig. 1 is a schematic representation of the business processes and the interfaces.

Resolve customer problems

Create customer solution

Build customer relationships

Plan the business

Resource the business

Fulfil orders

Generate orders

Manage Cash

Satisfy the shareholder

**Figure 01:** Business process model of ROLLS ROYCE (Y. Yusuf et al. / Int. J. Production Economics 87 (2004) 251–266)

Different categorization has been made for implementation of ERP module. Following suits has been developed for ROLLS ROYCE.

Plan supply chain

Enterprise level

SUIT-01

Master schedule key program

Factory level and SAP

Plan and schedule organization

SUIT-02

Schedule the shop

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SUIT-03

SFDM and SAP

Operate the factory

**Figure 02:**  diagram of suit implementation (Y. Yusuf et al. / Int. J. Production Economics 87 (2004) 251–266)

|  |  |  |
| --- | --- | --- |
| **Finance*** Core Organization & Finance Structure
* Asset Management
* Accounts Payable
* Accounts Receivable
* Product & Inventory Accounting
* Profitability Analysis
 | **Programme Management*** Research & Development
* Series Production
* Spares & Other
* Profit & Cost Accounting
* Staff Work Booking
 | **Human Resources*** Resourcing
* Compensation & Benefit
* Payroll
* Health & Safety
* Organization Development
* Employee Development
* Pensions
 |
| **Product & Process****Development*** Assembly Configuration
* Component Configuration
* Assembly Process Planning
* Component Process Planning
 | **ERP (SAP R/3)*** Integrated Business
* Processes &Systems Applications
 | **Supply Chain Planning*** Sales & Operations Planning
* Demands Management
* Master Production Scheduling
* Material Requirements Planning
* Forecasting & Provisioning
* Supply Chain Optimization
 |
| **Procurement & Inventory*** Sourcing
* Procurement
* Inventory Management(Manufacturing)
* Inventory Management(Assembly)
* Warehouse Management
 | **Manufacturing & Assembly*** Execution
* Manufacturing Execution
* Assembly Operations
* Tool Management
* Plant Management
 | **Order Management*** Sales Order Administration
* Service Management
 |

**Financial**

**Consolidation**

bill of material

**Product Data**

**Management**

Material master basic data

As product

data

 Kits and tool routing work

 launch

 requirement work station

**Assembly Instruction & Control**

**Process Planning**

**Execution**

**Manufacturing**

**Execution**

**Facilities & Services**

**Management**

**Figure 03:** existing architecture of ROLLS ROYCE ERP

1. **ERP Success stories:**

ROLLS ROYCE familiarity with SAP and Oracles technology due to earlier Oracle usage made it easier to complete a solution. It offered large data hosting, seamless migration of old data, easy [scalability](http://www.investopedia.com/terms/s/scalability.asp), multiple modules addition as needed and centralized access and control. ROLLS ROYCE hired Oracle Consulting to build a single centralized system which integrates available Oracle HR modules for uniform use at global level as well as public level, thereby replacing location specific system dependency.

The [ERP solution](http://www.top10erp.org/oracle-e-business-suite-lg-electronics-case-studies-22%22%20%5Ct%20%22_blank), which included a data mart, [performance management](http://www.investopedia.com/terms/p/performance-management.asp) system, staff portal, and e-learning application, enabled the following benefits for ROLLS ROYCE:

* Centrally managed a single system with negligible maintenance costs
* Transparency in the enrollment and employee judgement processes which enabled hiring, engaging and rewarding act based on the right capabilities and confirmed performance
* Tangible time reporting for higher management and pursuing of set goals and objectives
* Informed decision making due to readily accessible [real time](http://www.investopedia.com/terms/r/real_time.asp) reports
* Centralized control over HR processes, with region level elasticity to implement localized changes
* Efficiency improvement for HR roles and processes
* Cost savings due to not having to sustain multiple systems
* Easy sharing of best practices across the various centers
* Easy access self-service function made available for employee self-help
* Easy learning facilitated for common tasks through document sharing and online tutorials, resulting in time and cost savings
* Increased employee morale, productivity and engagement (success stories of ERP <http://www.investopedia.com/articles/investing/111214/rollsroyce-case-study-successful-enterprise-resource-planning-system>)
1. **ERP failure stories:**

Failure stories of ERP can be viewed by following data in terms of planning;

* Poor selection of the Software
* No consideration of other consultants’ advice
* Lack of contingency planning
* No end user involvement

Failure in terms of implementing ERP can be regarded as follows;

* No restructuring of the business process was done
* Insufficient testing
* Over-ambitious project scope
* Dominance of IT specialists’ personal interest
* Poor Management support
* Lack of end-user cooperation

The above stories of failure are cited in foxmayer industry. FoxMeyer was the fifth largest drug wholesaler in the United States (1995) with annual sales of about 5 billion US$ and daily shipments of over 500,000 items. The business of the company was principally in healthcare services. (Annual Report on American Industry, Forbes, Jan 1997)

1. **Proposed Ideal ERP system:**

An ideal ERP system includes all the module of working in all respective scenarios of industry and it contain all module of software in real time system.This software must include the following real time data of the system.

**7.1. manufacturing MODULE:**

In engineering module, the software must include the function of engineering, capacity, workflow, management, quality control the most important module of this software, bill of material (BOM) and manufacturing process and all its related process.

**7.2. supply chain management MODULE:**

Supply chain management must include the inventory status, supply chain planning, supplier scheduling, claim processing order entry and purchasing modules

**7.3. Project MODULE:**

In project module, it must include coting billing, activity management, time and expenses must be included.

**7.4. Customer relationship Management MODULE:**

In the customer relationship management, it must include sales and marketing, services, commission, customer contact, call center support for higher rate of customer satisfaction.

**7.5. Data Warehouse MODULE:**

This module is normally accessed organizational customer, supplier for procurement and employee of specified organization

1. . **Conclusion:**

Rolls-Royce has a large complex business process and the project has had to assess the effects throughout the whole business, which is equivalent to ten medium sized companies pulling together as one. This has caused administrative difficulties, particularly in the first phase of the project, whilst setting the strategy and overall direction. Rolls-Royce decided to make these radical changes to their business, in response to increased orders from the market place, and also from the fact that ERP has become a standard solution world-wide within the Aerospace and Defense industry. Accurate information systems and direct communication with suppliers are vital when offering customers, a committed promise to deliver best. The team has used the specialist skills of consultancy specialists. The partnership with EDS has produced a sound architectural framework for the project, thus allowing Rolls-Royce to concentrate its efforts on manufacturing turbine engines. A project of this size would never run smoothly and difficulties have occurred throughout the implementation and will no doubt occur in the future.

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