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Best of breed: a step ahead of ERP

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ABSTRACT

Enterprise Resource Management (ERP) software was considered a cure for all ailments by organizations for some time before its official demise news given by Gartner Inc, which had coined the term in the first place in the 1990s. This was due to several problems encountered by organizations during the implementation of ERP software, including inflexibility in meeting organizational specific needs. This paper proposes the Best of Breed (BoB) Strategy which involves integrating number of standard package and/or custom software as a better alternative to single vendor developed ERP system. The study is based on two case studies, one case representing ERP implementation and another one representing a BOB strategy. This was followed by an in depth analysis of the two approaches using Questionnaire and personal interview. The study concludes that though traditional single vendor ERP systems, provide several benefits by integrating the Information system silos throughout the organization, but the Best of Breed provides another approach in which greater flexibility and competitive advantage can be obtained coupled with faster implementation. The paper also highlights the differences in complexity of implementation, levels of functionality, business process alignment potential and associated maintenance, between the two strategies.

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Introduction

The role of Information Systems in effective management of organizations has been since a long time. From merely crunching numbers, to helping taking strategic decisions, Information Systems have come a long way today. Enterprise Resource Planning (ERP) system, a term coined by Gartner Research firm in the beginning of 1990s, was one such IS application that marked the beginning of a new age of enterprise wide computing.

ERP History

The evolution of ERP took place slowly and gradually from the 1960s. In the 1960s, very few companies could afford to own a computer. Therefore, both manufacturing and inventories were handled on the basis that companies must hold enough stocks to satisfy customer demand, and that customers would order what they had ordered in the past.

In the 1970s and 1980s, when computers became small and affordable, attention was focused on Material Requirements Planning (MRP) and Master Production Schedule (MPS). MRP started as a system for planning raw material requirements based on the MPS. Soon it developed into Manufacturing Requirements Planning (MRP II), which used the MRP system as the basis and added scheduling and capacity planning activities. In the early 1990s MRPII was further extended into Enterprise Resource Planning (ERP), incorporating all the MRPII functionality, in addition to Finance, Supply Chain, Human Resources and Project Management functionality.

What is ERP ?

Enterprise Resource Planning (ERP) system is a business management system that comprises integrated sets of comprehensive software, which can be used, when successfully implemented, to manage and integrate all the business functions within an organization.

Benefits of ERP

The benefits of implementing an ERP are many fold. In general, these systems help companies replace old and fragmented legacy systems, integrate data and applications, provide greater access to information, adopt best practices in organizational processes, link employees, partners and customers, improve on time delivery, reduce working capital, lower inventory level and lead to better resource management. In the manufacturing sector, ERP implementation has reduced inventories anywhere from 15 to 35 percent (Gupta, 2000).

The Pitfalls of ERP

Although ERP systems have certain advantages, they have some disadvantages also due to the tight integration of application modules and data, huge storage needs, networking requirements and training overheads. ERP projects are large, costly and difficult and they require large investment in capital and staff and management time. Implementation of an ERP project is painful, and customization is costly and time-consuming.

ERP or Best of Breed (BOB)

One of the most important question faced by an organization while deciding to go for an ERP system implementation is to whether select and implement an ERP including all the modules required by the organization, from a single vendor, or, to select different applications from different vendors and integrate them together as in a best of breed (BOB) strategy.

While ERP requires a clean slate approach, BOB offers a chance for organizations to recognize the existing ways of work and make trade-offs with stakeholders. ERP systems do not offer the same levels of flexibility, and the responsiveness associated with BOB. On the other hand, BOB approaches have the

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potential to require higher degree of maintenance due to the complex connections between different components.

Review Of Literature

Light, et al. (2001) distinguish between the ERP and best of breed strategy in terms of complexity of implementation, levels of functionality, business process alignment potential and associated maintenance with the help of a case study. Best of Breed means integrating components of standard package and/or custom software. According to the authors, the objective of using a BOB strategy is to develop enterprise systems that are more closely aligned with the business processes of an organization. Single vendor ERP systems promise multiple synergies. High levels of technical integration are created and the large scale reengineering that often accompanies implementation improves organizational cohesion. Furthermore, vendors of ERP state that companies will have current technologies through upgrades and a reduced reliance on the internal IT function. ERP requires a clean slate approach, whereas BOB offers a chance for organizations to recognize existing ways of work and make trade-offs with stakeholders. ERP systems do not offer the same levels of flexibility and potentially the responsiveness associated with BOB. However, the trade off is likely to be concerned with the future maintenance requirements. BOB approaches have the potential to require higher degree of maintenance due to complex connections made between different components, whereas maintenance of components and connections between components of single vendor ERP systems is largely outsourced to the vendor. This paper thus highlights BOB as an alternative approach to ERP systems with the use of a case study.

Nah and Lau (2001) have come up with a total of 11 critical success factors for ERP implementation, based on a review of the ERP literature. These are:

- a) ERP teamwork and composition
- b) Top management support
- c) Business plan and vision
- d) Effective communication
- e) Project management
- f) Project champion
- g) Appropriate business and legacy systems
- h) Change management program and culture
- i) Business process reengineering (BPR) and minimum customization
- j) Software development, testing and troubleshooting
- k) Monitoring and evaluation of performance

Research Objectives

The major objectives of the present study were to identify the major issues involved in the ERP implementation as compared to a BOB implementation, and finding the organizational settings most applicable to each of the approach.

The detailed objectives were:

1. Finding the major issues in ERP implementation project and comparing these with BOB implementation issues.
2. Finding the cases in which ERP implementation is more suitable compared to BOB approach, and also the cases in which BOB approach is more favorable compared to an ERP implementation.

The Primary data for the study is based on the interaction with IT department heads and/or ERP Project Champions of two organizations, wherein one has implemented a BOB and another organization has implemented a single vendor ERP system.

Research Design

The effort of this study was essentially a non-experimental Case study research. Since every ERP project is unique, therefore it is most appropriate that it be studied through a case

study methodology. We have selected one case representing ERP implementation and another one representing a BOB strategy. This was followed by an in depth analysis of the two approaches.

Research Tools

The Schedule of interview and the Questionnaire for interaction with the ERP project Champions and/or IT heads of the selected Organizations was prepared after an extensive review of literature on ERP and its related issues.

ERP Implementation Case: Eicher Tractors

Eicher began its business operations in 1959 with the roll out of India's first tractor. Today the Eicher Group is a significant player in the Indian automobile industry with a gross sales turnover of over INR 19,000 million (424 USD Mn) in the year 2005-06.

The Eicher Group has diversified business interests in design & development, manufacturing and local/ international marketing of Trucks & Buses, Motorcycles, Automotive Gears and components.

In addition to this, Eicher has also invested in the potential growth areas of Management Consultancy Services, Customised Engineering Solutions, City Map & Travel Guides.

Eicher Tractors

Eicher Motors Limited disinvested the businesses of Tractors & Engines to TAFE Motors and Tractors Limited (TMTL) in June 30, 2005. Tractors and Farm Equipment Limited (TAFE) is a part of the Chennai based Amalgamations group, a US\$ 1 Billion light engineering group with diverse interests in Tractors and their aggregates, Diesel Engine, Automobile Components, Engineering Tools, Paints, Plantations etc. TAFE acquired Eicher Tractor business in June 2005 through a wholly owned subsidiary, viz., TAFE Motors and Tractors Limited (TMTL).

Thus, today Eicher Tractors is a 100% subsidiary of Tafe Ltd, the flagship company of Amalgamation Group. Tafe is ranked as one of the top 2 Tractor Mfg Company in India with a market share of 27%.

ERP Project at Eicher Tractors:

Business Case Rationale

Prior to ERP, Eicher Tractors had several home grown solutions based on Oracle in various departments such as Materials, Finance etc. These were not integrated with each other. Due to less data transparency and fragmented data, there were inefficiencies arising. There was a need to put into place a more robust system that would handle all this data inconsistency.

The Eicher Tractor plant at Faridabad and Bhopal had quite similar products and there was a need to integrate these plants also so as to have more coordination and data transparency.

The other reason for implementing an ERP was the need to link to the suppliers as well as customers for increasing organizational productivity and profits. This wasn't possible until and unless a unified view of the business was available to one and all. This led to the top management decision to implement an ERP system. The impending Y2K problem was another reason seen for making changes to the IT infrastructure.

Pre-evaluation Screening and Package evaluation

In 1997 the ERP selection process at Eicher Tractors, began with the selection of IBM as the implementation partner. RFP was created by the project team which was matched with the product offerings of several ERP players such as MFG PRO, BAAN and SAP. The main points considered to evaluate and compare the various packages with each other were things such as volume of data to be handled, ease of use, the product flexibility, name and experience in the automotive sector. On the

basis of these criteria, the company selected SAP Enterprise 3.0 as the right solution. The company chose 6 modules of SAP 3.0, FI, MM, PP, QM, CO and SD for implementation.

Project Planning Phase

It was in this phase that Eicher selected the Chennai office, where Enfield Bullet was being manufactured, as the Pilot Site because of its much smaller size compared to other sites as well as the presence of Skill Sets at Chennai site.

Gap Analysis

It has been estimated that even the best ERP package, custom tailored to a company's needs, meets only 80% of the company's functional requirements. The remaining 20% of these requirements present a problematic issue for the company's BPR. The filling of this gap is involved in gap analysis.

At Eicher Tractors one of the major problems encountered in the software was that it did not comply with the Indian taxation laws. Thus the company had to implement an in house taxation module along with SAP. The company also has an in house module on Plant maintenance and an SD application of Warranty module. The SD Warranty module application handles those Eicher Tractor's information which have been sold under and are repaired or returned within the warranty period,

Configuration

When organizations implement ERP systems, there is often requirement for configuration in order to make it more suitable for the specific organizational requirements. On the other hand, successful ERP implementations are often the result of minimal customization as customization is usually associated with increased IS costs, longer implementation time, the inability to benefit from vendor software maintenance and upgrades, etc.

At Eicher Tractors also, this was the guideline. The modules were configured at the pilot site, that is the Chennai office and the change management process was devised, with 95% of the structure being retained and only 5% of customization done to the SAP software.

Implementation Team Training and End User Training

Eicher picked up domain experts from different fields and different sites and trained them at the Chennai office. For example the VP Manufacturing at Bhopal was the domain expert in MM module and was trained for this module so that he would be the project champion and guide for the MM module at the three plants of Bhopal, Faridabad and Alwar. Similarly a designated Manager from Parwanoo was the Trained Domain expert for PP module and a designated manager from Pithampur, Indore was to be trained as the domain expert for SD module. These domain experts then provide training to selected managers at each site and thus the user training was done in a very systematic manner.

Going Live

The first rollout of SAP 3.0 was done in Chennai plant in December 1998, whereas the rest sites implemented the software almost in a Big Bang strategy, with Faridabad going live in April 1999, Alwar going live in May 1999 and Bhopal going live in June 1999. The complete process of ERP selection and implementation thus took around 15 months which was justifiable, since it involved purchase and training of around 500+ user licenses. According to the project estimates, the ERP project was implemented before time and it quite complied to the budget as well.

Post implementation (Maintenance mode)

Due to the use of a well designed formal implementation plan and presence of adequate top management support and commitment, the company easily got over implementation problems such as lack of proper in house expertise in ERP. Unsuitability of hardware was done away with the purchase of

adequate hardware required for 500+ user licenses. Due to well designed training program, and thus proper communication with the end user, resistance to change was minimum.

Today after 10 years of ERP implementation, the IT Manager, considers the ERP project to be very successful. The ERP led to quicker response time, improved on time delivery, lower inventory levels and better overall resource management.

Also, the ERP data helps in providing BI capability as well; though SAP has inbuilt BI facility some amount of off SAP BI is also performed by Eicher Managers. Eicher Tractors is further considering implementing several other applications such as Data warehouse, Advanced planning and scheduling system, supply chain management software based on this ERP data.

BOB Case: Bridgestone

Founded way back in 1931, in Japan, Bridgestone is a tyre manufacturer with 75 years of experience. Today Bridgestone is globally the No. 1 tyre and rubber manufacturer and it sells its tyres and products in more than 150 nations, employing more than 110,000 people.

Bridgestone controls 18.2% of global market. The company has 47 tyre plants, and 93 non-tyre plants, 3 technical and research and development centers and 10 proving grounds.

Bridgestone India

The first plant was established at Kheda (Madhya Pradesh) with a paid up capital of Rs 2753 million. It was officially inaugurated on 12th November, 1998. They have today established themselves as the leader in Radial tyres, producing around 2.7 million tyres per year. Their products include Passenger steel belted radial tyres and tubes and Light commercial vehicle steel belted radial tyres and tubes.

BOB Project

The BOB project was begun with a need to integrate the various departments. Thus it was originally an ERP project, but later on shifted to BOB strategy.

Business Case Rationale

When Bridgestone India Pvt Ltd was established in 1996, the company had already begun thinking of putting its IT infrastructure in place. In house development was not possible because there were only 3 employees in the IT department. Since budget was not a constraint, and no BPR was required since processing had not begun yet, the best option available was to implement an ERP.

The main reason for implementing an ERP system was thus business process related, that is, to improve the control of information resources by integrating functional area's information systems.

The best part of the project at Bridgestone India was that it was a Greenfield project and therefore did not require any Business Process Reengineering.

Selection of Consultant

The BOB process at Bridgestone India started with a one day meeting with 7 consultants including PWC, IBM Consulting and ISCC Consultants, at the Mumbai Office. The selection criteria for the consultant were twofold.

First the consultant should have a good knowledge of Tyre industry and second, the consultant should be unbiased that is they should not be in favour of one particular ERP package. This led to the selection of ISCC as the ERP project consultant at Bridgestone.

Requirements Analysis

At Bridgestone, ISCC consultants recommended a feasibility study. This led to the formation of a multi functional team of individuals from Production, Procurement, Finance, Sales and Distribution and Inventory Control; that would study and analyze which ERP was to be installed in Bridgestone.

In the requirement analysis by this multifunctional team, a few things were discovered as things unique to Bridgestone. There were multiple currencies and multiple financial years. As far as the manufacturing process is concerned, Tyre manufacturing is a hybrid manufacturing process, not discreet. In Green tyre making, some stage is batch and some part is discreet. In discreet manufacturing it is easy to make BOM and thus easy to implement an ERP.

Package Evaluation

Simulation of requirements was done in BAAN system and it was found that BAAN was more suitable for the discreet manufacturing.

The Selection criteria for the package were:

1. Product should be present in Tyre industry
2. Product should have a global presence.
3. Hardware platform should be robust.

On the basis of following three criteria, 3 products were selected:

1. Prism
2. Ramco Marshal
3. J D Edward

At that time Prism was being used by South Asia Tyre Ltd and Birla Tyres, Ramco Marshal was being used by J K Tyres and Apollo Tyres (Not successful) and JD Edwards was being used by Bridgestone Brazil. MRF was not using any ERP.

The feedback of JD Edwards was not very positive. A RFP was prepared by Bridgestone for each module and was discussed by RAMCO and PRISM. The Implementation Partner for PRISM, DSQ Software, collected the RFP and simulated it on PRISM so did, RAMCO MARSHAL people. Most of the non IT people at Bridgestone were in favour of RAMCO MARSHAL because of the GUI interface.

Since PRISM was available on IBM Ace 400, the hardware platform that was most reliable, it was selected in May 1997.

Best of Breed Solution

As the ERP market has matured, problems with the implementation process and system functionality have arisen. A key factor has been the need for BPR implementation, often in one-step shift exercise. Organizations are questioning whether single vendor ERP systems represent best practice in core functional areas and, perhaps more importantly, are beginning to realize their strategic consequences. The implementation of single vendor systems results in broadly similar business process and IT infrastructures. This has considerable implications for competitive advantage if the theoretical perspective that competitiveness stems from differences among organizations is adopted.

ERP at Bridgestone India is a wonderful example of using a Best of Breed solution instead of a one company based ERP solution like SAP, BAAN etc. While the Resource management (Inventory Management) and Customer Order module have come from PRISM, the Finance module (Accounts Receivable, Accounts Payable, General Ledger) have come from MAPICS. The fourth module that is, the Procurement module has been taken from AVANTIS.

MAPICS is a commercial ERP Software package used to control the operations of manufacturing companies. Its name is an acronym for Manufacturing, Accounting and Production Information Control Systems. MAPICS was created by IBM, International Business Machines, but the product is now owned by Infor Global Solutions and has been rebranded 'Infor ERP XA'.

In November 1997, Bridgestone signed up with PRISM and started the process of Hardware, Software and Networking. By August 1998, process was finished in a phased manner.

Implementation

In the first phase, the Finance, Inventory and Procurement modules were installed. For Taxation, EXVAT module developed by DSQ Software was connected with PRISM. In the second phase Sales and Marketing and HR module called SAPICS (both developed by DSQ) were implemented. By August 1998 the process was finished.

In 1998, Internet was not in place. The two options available otherwise were VSAT and Leased Lines, both costing around Rs. 10 Lakh per location, therefore not feasible.

DSQ Software developed a PC based software, Branch Automation System(BAS) for C&F operations, which consisted the Inventory module, Customer order processing, Accounts Receivable and Claim handling (After Sales) module. Sales and Marketing used BAS for 3 years. In 2002 Bridgestone implemented the Customer Order Management at head office for finished goods.

IT Systems Galore

BRAIN (Bridgestone All India Network) was implemented at the Head Office and was implemented across 35 C&F Agents from 2004-2006. It consists of Finance, Purchase, Inventory, Logistics, Finished good, Raw material, Sales and Distribution, HR and Taxation.

BRAS (Bridgestone after sales support) is the claim handling system which was developed in house is a customized module integrated with BRAIN, and is used when some problem arises in the guarantee period of the product sold.

Spice Project (Spare parts inventory control for engineering) is the RM module extended to Spare parts and helps in the day to day control of spare parts. All spares are purchased and managed by the Spice project.

Post-Implementation

The BOB project not only improved on-time delivery and lowered inventory levels, but also led to better resource management and quicker information response time. Data inconsistencies are not found and the system is very reliable due to use of mature products.

BOB outperforms ERP

Best of Breed (BOB) offers several advantages over single vendor systems. Each BoB component can be implemented as a stand-alone application. The rapid delivery of functionality can mean a payback from the project throughout implementation rather than at the end. The incremental approach also subjects the organization to smaller amounts of change, thereby reducing organizational trauma. BoB also increases flexibility in business process (re)design.

On the other hand, the implementation of single vendor systems results in broadly similar business process and IT infrastructures. This has considerable implications for competitive advantage if the theoretical perspective that competitiveness stems from differences among organizations is adopted.

Recommendations and Findings

A few recommendations of the following study are:

1. Prior to making the choice of the vendor from whom the ERP will be bought, every organization should undergo a deep study and analysis of its business processes to determine if a single vendor solution would be more suitable for it, or a best of breed solution will be more appropriate.
2. In case, of business processes that do not have differentiation feature compared to competitors, it is much better to implement an ERP from a single vendor since it is much easier to manage in the post implementation phase.

3. In case of rapid delivery of functionality and increasing flexibility in business process re-design; it is more appropriate to implement a BOB solution rather than a single vendor ERP package.

Conclusion:

Traditional single vendor ERP systems, provide several benefits by integrating the Information system silos throughout the organization, but the Best of Breed provides another approach in which greater flexibility and competitive advantage can be obtained coupled with faster implementation. The choice between the two approaches should be made based upon the organizational business process study.

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