ERP and Best of Breed: a Comparative Analysis

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Abstract

Enterprise Resource Planning (ERP) software is the dominant strategic platform for supporting enterprise-wide business processes. However, it has been criticised for being inflexible and not meeting specific organisation and industry requirements. An alternative, Best of Breed (BoB), integrates components of standard package and/or custom software. The objective is to develop enterprise systems that are more closely aligned with the business processes of an organisation. A case study of a BoB implementation facilitates a comparative analysis of the issues associated with this strategy and the single vendor ERP alternative. The paper illustrates the differences in complexity of implementation, levels of functionality, business process alignment potential and associated maintenance.

Keywords: Enterprise Resource Planning Systems, Best of Breed, IS Implementation, Business Process Reengineering, Business Process Redesign.

Introduction

Single vendor based Enterprise Resource Planning (ERP) systems dominate the IT landscape but have proved problematic for some organisations. ERP systems are generally implemented to overcome the maintenance difficulties associated with custom developments as they offer a clean slate through a common data set and suite of integrated applications (Holland and Light 1999a, Davenport 1998, Appleton 1997). If however, organisations

implement an ERP system but change the implicit business model, by modifying source code, this recreates the legacy problems and disregards the advantages of a standard package based IT strategy. Standard packages for example, can increase development speed, reduce development staff requirement, and offer a constant state of the art IT capability through upgrades (Pricewaterhouse 1996). Whilst these benefits are debatable, radically changing standard software will:

- increase development time;
- increase staff requirement during and after implementation;
- reduce capability to take upgrades;
- counteract the standardisation and system integrity that was originally required.

Furthermore, the business processes implicit with the ERP system are purported to represent best practice and a more competitive business model. Although the proceeding issues offer support for organisations to reengineer work in line with standard software this can increase the complexity of implementation (Holland and Light 1999b, Davenport 1998). Organisations also argue that ERP software functionality is often lacking, the implicit business model does not represent their own and therefore reengineering business processes in line with this presents major difficulties. For example, Reebok has worked with SAP to overcome these problems but still cannot migrate to a single vendor solution (Stedman 1999a, 1999b, 1999c, Orenstein 1998). IT and business managers also argue that ERP suites tend only to have one best in class application. Peoplesoft is linked with a good Human Resources module and Oracle with Financials for example. Furthermore, organisations may be left waiting for the next upgrade from their ERP software vendor when they require further functionality. Customer relationship management and e-commerce concepts have been a key concern in recent years for instance, and ERP vendors are just getting to grips with the ideas. Consequently, some organisations have developed their own customised suite of enterprise applications known as a Best of Breed (BoB) IT strategy. The promise is greater flexibility and closer alignment of software with the business processes of the organisation. The latter can ease implementation of the IT system and associated business process reengineering (BPR). The paper uses this background, an overview of BoB IT strategy and a case study of a BoB implementation for a comparative analysis of the approaches. The analysis is particularly

concerned with the implications for BPR. It is acknowledged that other issues, such as those concerned with technology and cost, are important but it is not feasible to discuss these in any great depth in this paper.

Best of Breed IT Strategy

BoB and the emergent strategy of different applications and platforms being used throughout an organisation are different. BoB is a stated strategy; the aim is for enterprise integration and a process orientation. In contrast, the emergent strategy is often technically and organisationally fragmented leading to the reinforcement of functional silos. BoB is based on the integration of standard software from a variety of vendors. For example, General Motors has linked the SAP financial and Peoplesoft human resource applications (Zygmont 1999). Some companies, such as the case reported in this paper, have also developed custom components due to the absence of best in class standard software. The strengths of BoB centre on the ability of organisations to benefit from the most appropriate software functionality (Kara 1999). The approach also provides an infrastructure that accommodates the implementation of new or improved applications and business processes thereby providing companies with a constant state of the art capability. A final benefit of BoB is the extent to which it can facilitate BPR. It is widely cited that BPR is a contextually influenced concept (Broadbent et al 1999, Galliers 1998, Bashein et al 1994). Many problems associated with single vendor ERP projects originate from a shift back to the clean slate ideas of BPR as proposed by (Hammer 1990). In contrast, BoB recognises context as key to successful BPR. This is because organisational members can select IT components on the basis of how well they think they will support business processes. By making the selection, the organisational members may be broadly satisfied with the new systems being implemented and the required BPR employed on this basis.

Research Method

The case was compiled on the basis of material from two person interviews with the key personnel of a BoB project in a global entertainment's company. Interviews lasted two to three hours and were conducted at 6 monthly intervals over two years. The interview data were supplemented

with documentary evidence including IT and business plans and annual accounts. Collecting data from a variety of sources acted as a method of triangulation that strengthened the internal validity of the data. However, the case is not presented as the results of a longitudinal study. The author's aim is to present selected case data at a macro level to support the theory that there is an alternative to ERP systems (Eisenhardt 1989). The issues associated with ERP systems have been drawn from the academic and business literatures and the extensive prior research of two of the authors, Holland and Light. This approach allows comparisons between ERP systems and the BoB approach, particularly in respect of the impact on business processes and BPR implementation.

A Case Study of Global Entertainment

The case study provides an introductory background to the situation but focuses upon the strategy and implementation aspects of the project. This focus offers the greatest potential for the examination of the differences between ERP and BoB strategies, particularly when considering the impact on BPR implementation.

Background

The case is about the Operations division of a global entertainment group's record company - 'Global Entertainment'. The company's turnover is in the region of US$3 billion and it holds over 10,000 different stock keeping units. Competition in the industry is based on a company's artist profile. Over the past decade retailers of Global Entertainment's products have increased the sophistication of inventory management requesting less stock, more often. The product lifecycle has also reduced and a range of niche markets have emerged such as those for Indie and Dance music.

There are two company divisions. Record Marketing manages the signing of artists and marketing the resulting hard products such as compact disks. Operations deliver the hard products to the consumer. Operations were, and are still, not a core competence although management recognised that it was important. Operations were function rather than service driven and teams worked in departmental silos. The dominant historical preferences and needs of the respective functions meant that many different software

applications and platforms were in existence. There was also a lack of project management and systems development standards throughout the IT function. The result was five disparate IT units and strategies.

Management realised that re-engineering the IT infrastructure of Operations was only part of the work required. The company wanted to encourage a group focus and overcome the historical tendency for individualism. It was decided to develop a process orientation. This would also improve service levels and cost efficiency. Global Entertainment decided to implement an integrated common system to support this. The intention was to reduce multiple hardware platforms to two or three, move to standard software and implement custom developments where necessary. A BoB strategy was chosen due to the demanding functionality requirements of business functions. Single vendor systems were considered preferable, and evaluated, but they did not support the functionality and business process requirements. The ERP packages were perceived as being aimed at specific functions which had been expanded to enterprise systems and that they were weak as a result. The IT Director stated that the company would have to build around an ERP system in order to satisfy functionality demands. He also felt it would be easier to generate consensus to migrate to a specific package if it were perceived as fulfilling the functionality and business process requirements of the individual business area.

The Project Management Strategy

The IT Director balanced the use of external and internal expertise. To keep costs to a reasonable level and to ensure that a skill base for future project management and implementation could be developed in-house, the IT Director decided against using consultants from the big accountancy firms. The additional technical skill was sourced from the respective component vendors. This ensured familiarity with the software and alleviated the problems the IT Director had observed in single vendor ERP implementations where consultants often had little product experience. A small number of contract programmers were also used. Internal personnel managed organisational change, as they knew the culture.

The Business Process Reengineering Strategy

Global Entertainment's aim was to develop a process orientation based upon a common and improved business process map across a global business. Underpinning this, was the idea that the company would reengineer its processes in line with package software as required. As a result of the complexity of the BoB project the company made the decision to change incrementally rather than overnight. Initial changes were made on a site by site basis rather than simultaneously across the organisation. As the project achieved momentum and trust, simultaneous implementation was performed.

The IT Strategy

The IT Director agreed an 80/20 rule approach with senior business mangers in order to create buy-in to the project and ensure a good business fit with the resulting IT infrastructure. That is, packages would be implemented where possible and that when this was the case, the software would meet 80% of desired functionality. The remaining 20% would be met by additional MIS developments outside of the package. The IT Director strongly believed that modifications to the source code of packages must be kept to a minimum. The components that comprise the BoB system (see Table 1) were integrated using IBM's MQ series.

Business Function	**Application Component**
Product Data & Release management	Custom
Order Processing	BPCS
Planning & Scheduling	Rhythm (i2)
Assembly & Manufacturing	Ratio (JBA)
Finance & Procurement	Lawson
Invoicing	Custom
Copyright & Royalties	Custom

Table 1. The Components of the BoB System

The Implementation Process

The implementation began in January 1995 with an organisational analysis exercise aimed at building a business process map against which prospective applications could be evaluated. This ensured that components

were aligned with business needs given the 80/20 approach. Business processes were documented based upon the functional areas listed in Table 1. The organisational analysis identified unique and complex areas such as product data and release management, copyright and royalties and invoicing. Software suppliers were invited to tender and had to differentiate mandatory functionality. Reference site visits were then carried out. Once the software was selected, conference room pilots were set up to test the software against the business processes and interfacing requirements were identified. The unique and complex areas had to be supported by custom components.

As multiple suppliers were involved, multiple graphical user interfaces were present and this necessitated a large amount of user training. IT staff also experienced a steep learning curve. However, it is expected that the requirement for IT staff will shift from programmers to business analysts. The IT Director stated that business analysts were building up an understanding of how the business process cycle operated. He also said that this allowed them to add considerable value in new projects by challenging user requirements from a more informed knowledge base. Global Entertainment ensured that no modifications were made to the package software now constituting the majority of the systems makeup. Package vendors have been contracted to maintain and upgrade the systems as necessary and a small group of programmers have been retained to service the custom developments. A plus 80% fit was achieved for each component and because several were used, the company is not dependent on one supplier. Global Entertainment also fast-tracked implementation. The IT Director stated that this was facilitated by the component approach allowing the company to treat a large ERP project as a number of small, tightly focused projects. The overall implementation timeframe is comparable with that of a similarly sized full functionality implementation of a single vendor ERP system. This approach caused less upheaval due to its incremental nature and because the users were confident they were getting an application that fully met their needs. Where business processes were changed, the company felt this had probably been easier to accomplish than would have been the case if business processes were being changed in line with a piece of ERP software which did not possess the required functionality.

The application development and implementation began in 1996. Each functional area was treated as a single project and the implementation of

applications was phased by site. The main body of the project has taken around 3 years but the strategy allows for rolling development and so is a series of projects rather than one large effort. The business and technology is constantly evolving and, as such, does not have a specific end date.

Discussion

The major differences between the two strategies are shown in Table 2 and discussed in greater detail thereafter.

Best of Breed	**Single Vendor ERP**
Organisation requirements and accommodations determine functionality.	The vendor of the ERP system determines functionality.
A context sympathetic approach to BPR is taken.	A clean slate approach to BPR is taken.
Good flexibility in process re-design due to a variety in component availability.	Limited flexibility in process re-design, as only one business process map is available as a starting point.
Reliance on numerous vendors distributes risk as provision is made to accommodate change.	Reliance on one vendor may increase risk.
The IT department may require multiple skills sets due to the presence of applications, and possibly platforms, from different sources.	A single skills set is required by the IT department as applications and platforms are common.
Detrimental impact of IT upon competitiveness can be dealt with, as individualism is possible through the use of unique combinations of packages and custom components.	Single vendor approaches are common and result in common business process maps throughout industries. Distinctive capabilities may be impacted upon.
The need for flexibility and competitiveness is acknowledge at the beginning of the implementation. Best in class applications aim to ensure quality.	Flexibility and competitiveness may be constrained due to the absence or tardiness of upgrades and the quality of these when they arrive.
Integration of applications is time consuming and needs to be managed when changes are made to components.	Integration of applications is pre-coded into the system and is maintained via upgrades.

Table 2. Comparison of the Major Differences between ERP and BoB.

Single vendor ERP systems promise multiple synergies. High levels of technical integration are created and the large scale reengineering that often accompanies implementation improves organisational cohesion. Furthermore, vendors of ERP software state that companies will have current technologies through upgrades and a reduced reliance on the internal IT function. However, as the ERP market has matured, problems with the implementation process and system functionality have arisen. ERP systems have generally cost more than predicted and the associated levels of organisational trauma have caused difficulties. A key factor has been the need for BPR implementation, often in one step shift exercise. Organisations are questioning whether single vendor ERP systems represent best practice in core functional areas and perhaps more importantly are beginning to realise 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 amongst organisations is adopted (Porter 1996)[1]. Consequently, some organisations are implementing 'Beyond ERP' strategies such as customer relationship management systems and web enabled developments that aim to support innovation and facilitate differentiation (Holland et al 1999, Light 1999, Li 1999). Organisations at this stage need to decide if they stay with the single vendor approach. If the vendor offers a product, organisations need to assess its strength. If a product does not exist, do organisations wait for the product to be launched or implement a component from another source? BoB aims to account for this and single vendor ERP systems are being componentised in order to allow for integration with this strategy. Global Entertainment has built an architecture with these issues in mind – it is individual and has evolution capability.

BoB offers other 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 organisation to smaller amounts of change thereby reducing organisational trauma. BoB also increase flexibility in business process (re) design. As demonstrated at Global Entertainment, companies have a wider

[1] The authors recognise that competitiveness does not solely originate from business processes impacted upon by IT based systems. This comment merely highlights the potential impacts of an ERP strategy upon competitiveness.

range of applications to align with their existing or improved business process map. At Global Entertainment, this impacted upon the facilitation of the implementation process – the barons bought into the implementation as the system met their needs. Moreover, the multi-vendor approach distributed the risk associated with long term support for the system. That is, if a vendor falls out of the market, the whole system is not necessarily affected. Global Entertainment still has to decide if it continues to support the application in-house for example, or source a new component from another vendor.

The main difficulties of BoB relate to the complexity of implementation and the likely costs of future ownership in terms of the maintenance of the links between the software. The case of Global Entertainment also highlights the implementation difficulties in terms of the extensive training required and development of the necessary interfaces amongst the suite of applications. A further potential problem, not identified in the Global Entertainment case, is that of trying to make too many accommodations as a result of being context sympathetic. This has been shown to be problematic for global single vendor implementations such as that described by Holland and Light (1999b) where the drive for consensus increased the length, and cost of the project. A key point in respect of the Global Entertainment case that may have dealt with this problem was the 80/20 rule that was used to drive the project.

Conclusion

Single vendor ERP and BoB based enterprise system strategies represent a range of implementation challenges. Both approaches are undoubtedly complex due to their scale, scope and BPR requirement. ERP requires a clean slate approach, whereas BoB offers the chance for organisations to recognise existing ways of work and make trade offs with stakeholders. This is an important distinction as the BPR associated with BoB can facilitate implementation and the management of complexity. Another important difference is that 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 degrees of maintenance due to the 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 highlights an alternative approach to enterprise IT infrastructure development. The differences between BoB and single vendor ERP approaches have been discussed and the issues organisations need to consider when deciding upon a strategy have been shown to centre on the complexity of implementation, required levels of business process alignment and maintenance. Further research in this area is essential due to the criticality of enterprise systems to organisations and also the limitations of what can be presented here. The implications of various strategies upon systems development approaches, the IT function and competitive advantage are excellent starting points.

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