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Best Of Breed IT Strategy: An Alternative To Enterprise Resource Planning Systems

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[*]**Abstract - Enterprise Resource Planning (ERP) software has become the dominant strategic platform for supporting enterprise-wide business processes. However, single vendor ERP software systems have been criticised for not meeting specific organisation and industry requirements. An alternative approach 'Best of Breed (BoB)', integrates components of software from multiple standard package vendors, and in some cases custom components. The objective is to develop enterprise systems that are more closely aligned with the requirements of an organisation. Although this approach may not be common at present it is likely to grow in importance due to business needs and technology advances such as the componentisation of ERP software. A case study analysis of a BoB implementation at a global entertainment's company is used as a platform for the discussion of the issues associated with this strategy and a comparison is made with the single vendor ERP alternative. The analysis centres on the complexity of implementation, the differences in the levels of functionality and business fit and the maintenance requirements.**

INTRODUCTION

A radical shift in corporate IT infrastructures is taking place. Standard package software has rapidly become favoured in many, if not most industries, over custom developments for core enterprise data and information processing. The dominant choice is for single vendor Enterprise Resource Planning (ERP) systems. ERP software automates core corporate activities such as finance, human resources and logistics. One of the major reasons for the shift towards ERP/standard packages is the need to deal with legacy systems. Historically, most international firms have managed their IT systems on a country by country basis with a few notable exceptions such as Hewlett Packard [1] and Ford [2]. This was due in part to the natural historical evolution of local nationally based strategies and systems, and also because there was no obvious global solution. More recently the need for companies need to manage international operations has become the imperative and therefore, so too has the need for international systems and strategies [3]. Companies wishing to employ innovative supply chain based competitive strategies such as time based competition [4], the formation of new types of industrial structures [5][6][7] and mass customisation [8] have encountered problems. In general, existing systems were fragmented, difficult and costly to maintain and could not be aligned with global business strategies. To achieve the required level of co-ordination, it is necessary to have some form of common IT infrastructure and business processes in place - ERP systems fill the gap for many organisations. The reasons for the stampede toward ERP systems share commonalties with the systems they evolved from - manufacturing resource planning (MRP) systems. MRP systems were implemented to reduce inventories, lead times and costs, improve market responsiveness, improved control, and improve organisational communication [9]. Many of these reasons are highlighted in the current literature on ERP systems [10][11][12][13]. However, even in the light of these perceived benefits, the recent tidal wave of single vendor ERP system implementations have proved problematic for many and the ERP software has also been criticised. As a result, not all organisations have moved to the ERP model. A small, but increasing number, are adopting a strategy which aims to emulate the benefits of a single vendor solution, and surpass it in some areas. This strategy has become known as Best of Breed (BoB). The aim of this paper is to compare the approaches of ERP and BoB. The paper first identifies the problems associated with the ERP approach, it then defines the BoB approach and uses a case example of a global entertainment company to provide the backbone for the comparative analysis. Academic work on this subject is very limited and this paper aims to make a contribution to this theoretically and practically rich area.

THE PROBLEMS OF A SINGLE VENDOR ERP STRATEGY

Although many successful ERP implementations are publicised such as those at Pioneer New Media Technologies [14] and Monsanto [15], the problematic implementations have, as is generally the case in business, largely been buried. The major publicised failure is that of the implementation at FoxMeyer Drug which has led to bankruptcy proceedings and

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litigation against the principal IT supplier [16]. ERP implementation is complex due to the software's high levels of integration and the requirement for enterprise consensus in reengineering an organisation's core business processes in line with those implicit within the software [17][18]. Many managers throughout companies and industries argue that the software's business model is not representative of their own company's or industry's and that reengineering their business in line within this would present major difficulties. Financial Services and Retailing are key industries to note. It is also argued that software functionality is often lacking [19]. A manager of one of the organisations involved in our wider IT study said the ERP systems are sold as 'best of practice'. He felt it was more akin to 'best of a bad bunch'. IT and business managers also argue that ERP vendors tend only to have one 'best in class' application within their integrated suite of applications. Peoplesoft is linked with a good Human Resources module and Oracle with Financials for example. Furthermore, there is concern that a single ERP system will become a straight jacket. That is, rather than being able to implement new functionality in order to take advantage of business opportunities and remain competitive, some managers in our study are worried that they may be left waiting for the next upgrade from their ERP software vendor. A growing number of companies have therefore decided to develop their own customised suite of enterprise applications.

THE BEST OF BREED APPROACH

The BoB approach 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 using integration software [20]. 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 the BoB approach centre on the ability of organisations to benefit from the most appropriate, best in class software functions available [21]. The approach also provides an infrastructure that accommodates the implementation of new or improved applications thereby providing companies with a constant state of the art capability. This philosophy is also relevant to the integration of systems on an inter-organisational basis following merger/acquisition activity or e-commerce initiatives for example [22]. The key enabler of the move towards this approach relates to the middleware that integrates applications chosen to support the business processes. To integrate two applications at the data level, developers traditionally needed to write low-level applications program interfaces (API's) to read data from the first application. Further code then had to be written to transform the data to prepare it for transportation to the receiving application. Finally, more code had to be written to write the data out to a file in the second vendors format. A different API had to be written for each connection made between different vendor's applications. A BoB approach involving several vendor applications meant complex and costly interfaces that were difficult to maintain in the light of upgrades and further system development efforts such as new application introduction. New middleware has the ability to make these connections and perform the data transfer without the need for low-level API's. Some products are data oriented - that is, they support integration by sharing data sources, others bypass the need for an intermediary shared data source and use messaging to support direct data-sharing and a final group are based upon a central integration engine in a hub.

It is important to make the distinction between a BoB approach and the emergent strategy of different systems and platforms throughout an organisation. A BoB approach is a stated strategy. The aim is for enterprise integration whereas the emergent strategy of various systems and platforms is often technically and organisationally fragmented. In this mode, functional silos are reinforced in contrast to a BoB approach were a cross functional process orientation is usually the ultimate aim.

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. This strategy was employed as the area is contemporary and developing an understanding of it raises context, content and process questions that deal with operational links over time [23][24][25]. Interviews lasted between two and three hours and took place over a period of two years. The interview data were supplemented by documentary evidence including IT and business plans and annual accounts. The approach of collecting data from a variety of sources acted as a method of triangulation which strengthened the internal validity of the data [26][27]. However, the case is not presented as the results of a longitudinal study. Rather, selected case data is presented at a macro level with its function being to support the idea that an alternative to ERP systems exists and to allow comparisons between ERP systems and the BoB approach. A specification of a-priori constructs was also developed to structure enquiry [28]. This facilitated accurate and efficient data collection and is shown in Fig 1. The framework also provides a structure for analysing the data and understanding the inter-relationships between the constructs. A brief description of each of the constructs is now provided. The *business legacy* is an extension of the idea of a cultural web [29]. It is the characteristics of an organisation such as its structure, culture, business processes and strategy. The *IT legacy* is the existing IT infrastructure that may affect organisational operations and performance due to a combination of factors such as their value, age, size and complexity [30][31]. The *business pressures* can be viewed as the forces of globalisation, deregulation, information technology and competition [32]. The legacy systems and business pressures influence the implementation process which incorporates four constructs – IT Strategic Review, Project Management Strategy, BPR

Strategy and IT Strategy. The *IT strategic review* is based upon the notion of strategic choice and involves generating, evaluating and selecting strategic options [33][34]. The *project management strategy* details the philosophy for the project [35]. The *BPR strategy* outlines the nature of the business process change involved in the project [36][37][38]. The *IT strategy* is the IT chosen to be implemented [39]. Options include the adoption of standard packages, component based strategies such as BoB, ringfencing, business process strategies, bespoke development and the maintenance of existing systems. The framework shows that the outcomes of the implementation ultimately form the basis of an organisations future legacy systems.

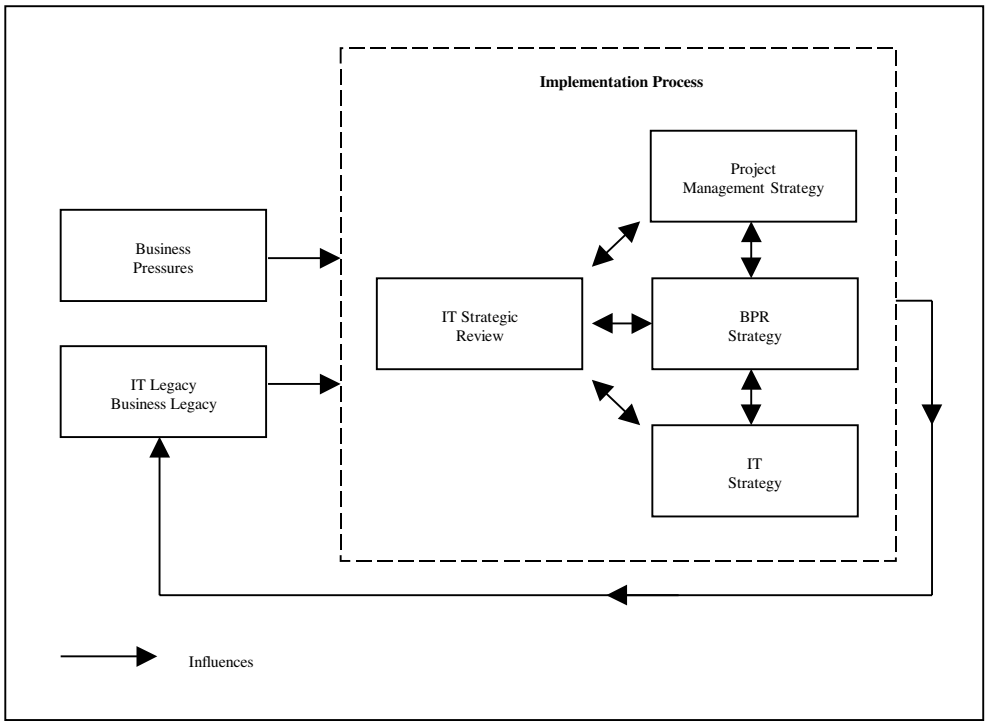

Fig 1. The Research Framework

A Case Study Of Global Entertainment

The case details the implementation of a BoB system in 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.

Business Pressures

Global Entertainment operates in a global market and competition largely revolves around the artists 'on its books'. There has been a dramatic shift in the dynamics of the business over the past decade. Retailers of Global Entertainment's products have increased the sophistication of inventory management. They want less stock, more often in contrast with the old model of bulk buying. The characteristics of the market have also changed. The lifecycle of products has reduced and a range of niche markets have emerged such as those for Jazz, Indie and Dance music. Global Entertainment found themselves in the position of having to manufacture to order rather than ship from stock. Whilst the operations of the business were, and still are not, seen as the core competence of the business, senior management recognised that the present infrastructure played an important role but it could not support a manufacture to order global strategy in its existing state.

Business And IT Legacy

Global Entertainment has a physical presence in around eighty countries and most of these sites incorporate a distribution centre. The organisation structure of Global Entertainment is split into two divisions - Record Marketing and Operations. The Record Marketing arm of the business is concerned with managing the product. That is the signing of artists and marketing the resulting 'hard' products such as compact disks. Functional areas include Artiste and Repertoire, Sales and Marketing, Order Processing and Secondary Distribution. The Operations division is concerned with getting these 'hard' products into the hands of the consumer. The operations division consists of core functional areas that follow the product flow: release planning, logistics and manufacturing. These are supported by the service

functions of Finance, Human Resource and Organisation and Information Technology. The supply chain impacts of each of the divisions is shown in Fig 2.

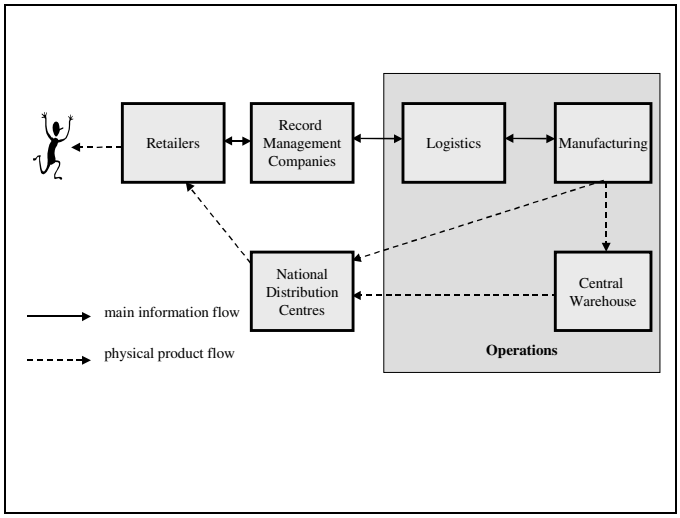

Fig 2. The Supply Chain Of Global Entertainment

The operations division was cost rather than service driven. Consequently, a 'stove pipe' environment had emerged whereby teams worked in functional silos. The general philosophy was that of 'as long as my function is operating efficiently, everything is okay'. A senior director commented that Global Entertainment was not managed in a top down manner and that there were powerful barons rather than a king. The individualistic approach throughout the organisation was acutely reflected in the IT infrastructure. Many different software applications and platforms were in existence - the characteristics of which were inextricably linked with the historical preferences and needs of the respective functions. Coupled with this, was a lack of project management and systems development standards throughout the IT function. The result was five disparate IT units and strategies. It was clear that a radical re-thinking of IT support for Global Entertainment was necessary.

The IT Strategic Review

The senior management of the company quickly realised that re-engineering the IT infrastructure of the operations division was only part of the work required to improve operations. Change would also have to take place within the business and alignment of both the business and IT strategies was critical. Management wanted to encourage a group focus within the business and overcome the historical tendency for individualism. The group focus was to be augmented by the development of a process view of the organisation. This would have the reciprocal effect of nurturing the group focus in addition to improving service levels and cost efficiency. Furthermore, senior management wanted to improve the business processes of the operations division. More specific business drivers for changes to the IT infrastructure are shown in Table 1.

Main Business Strategy Drivers
▪ Visibility and control over all steps of the supply chain managed by Operations
▪ One factory, multi-site. The same processes and system across the factories
▪ Central Inventory. Ship from stock in a box and unit quantities rather than make to order for specific product ranges
▪ Improve the forecasting of demand and separate predicable from non-predictable product behaviour
▪ Improve the efficiency and effectiveness of all areas of the organisation
▪ Implement the supply chain plan of volume, product and component planning to improve service consistency and reduce supply variability

TABLE 1. THE MAIN BUSINESS DRIVERS FOR CHANGING THE IT INFRASTRUCTURE

Global Entertainment decided they needed an integrated common system that would support a process oriented global operations strategy on an intra and inter organisational basis. The challenges were to reorganise the five IT departments into one and begin to standardise hardware, software and development methods. The intention was to reduce the large number of hardware platforms and software applications with two or three platforms and standardised software packages. This would form the common infrastructure for the organisational changes required The company implemented a BoB strategy because each business function had high demands in terms of functionality. Single vendor systems

were considered preferable, and evaluated, but they could not offer the required functionality. The ERP systems were perceived as being aimed at specific functions/processes which had been expanded to enterprise systems. Global Entertainment felt that they were weak in the 'expanded' areas. The IT Director stated that:

> "although ERP systems are good, you would have to build around them in order to provide the demanding functionality that our business would require".

He also felt it would be easier to generate consensus to migrate to a specific package if it was perceived as best fulfilling the requirements of the individual business area.

The Project Management Strategy

The Project Director recognised early in the review process that the approach to the management and implementation of the system and the associated organisational change would have to be carefully orchestrated given the legacy conditions. It was decided to carefully balance the use of external and internal expertise. To keep costs to a reasonable level and to ensure that a skills base for future project management and implementation could be developed in-house, the project director decided against using consultants from the big accountancy firms. The additional technical skill for implementing the various BoB components was sourced from the respective component vendors. This ensured familiarity with the software and alleviated some of the problems the Project Director had observed in single vendor ERP implementations where consultants often had little product experience. A small number of contract programmers were also used on the project. Organisational change was managed by internal personnel as they knew the business and its organisational culture. The project was sold to the various 'barons' on the basis that it would fulfil 80-90% of their requirements. Additional MIS developments would fulfil the remaining 10-20% of their requirements. The profile of the project was raised and promoted under the banner that the success of the system was essentially down to the managers and employees using the systems, that is, ensuring data quality and exploiting synergies for instance. This was tempered with assurances that the IT function would provide support. These actions aimed to create user buy-in and commitment to the project.

The Business Process Reengineering Strategy

Global Entertainment coined the phrase 'one factory, multi site'. The 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 wherever package software was implemented, the company would reengineer its processes in line with the software as required. As a result of the complexity of the BoB project and the associated organisational change, the company took the decision to change the organisation from within in an incremental way rather than attempt to transform the company overnight. Changes were made on a site by site basis rather than simultaneously across the whole organisation.

The IT Strategy

The Project 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, package software would be implemented at every possible opportunity and that when this was the case, at least 80% of desired functionality would be met by the software. The remaining 20% would be met by additional MIS developments outside of the package. The Project Director strongly believed that modifications to any package-based components must be kept to a minimum. The components that comprise the BoB system, (shown in Table 2), were integrated where necessary, based on the messaging model explained earlier, using IBM's MQ series.

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

TABLE 2. THE COMPONENTS OF THE BOB SYSTEM

The Implementation Process

The implementation process began in January 1995 with an organisational analysis exercise aimed at providing a business process map against which prospective component systems could be evaluated. This was to ensure that components were aligned with business needs given the 80/20 approach. Business processes were documented based upon the functional areas as listed in Table 2 and were then categorised as either business or system functions. The organisational analysis exercise identified unique and complex areas such as product data and release management, copyright and royalties

and the invoicing procedures. Packages were selected following detailed process analysis and documentation. Software suppliers were invited to tender and were asked to differentiate mandatory functionality. Reference site visits were then carried out at other sites where the software was installed and fully functional. Once the appropriate software had been selected, conference room pilots were set up to "test" the software against the business processes. Interfacing requirements were then identified. It became clear that some areas would have to be supported by custom components - namely the unique and complex areas as shown in Table 2. The application development and implementation began in 1996. Each functional area was treated as a single project and the implementation of applications were phased by site. Due to business constraints, the project could only run for eight months of every year. The project has actually taken around 36 months to date.

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 Project Director stated:

> "The business analysts are building up a wide understanding of how the whole business process cycle operates. This allows them to add considerable value in new projects and also allows them to challenge user requirements from a stronger, 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 with external contractors to be used as necessary. An 80% plus fit was achieved for each framework element and because several different components were used, the company is not dependent on one supplier. Global Entertainment also fast-tracked implementation. The senior 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 where 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.

Global Entertainment now have a common hardware and software application infrastructure, a high level of system integration and increased functionality. Furthermore, the project has facilitated the development of a more cohesive IS organisation - they now have common standards for project management and development exercises and a single IT division with a shared IT strategy.

Discussion and Conclusion

Single vendor ERP systems offer a simpler model of IT infrastructure and one that promises 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 internal IT function as both these areas are supported by themselves. However, as the ERP market has matured, problems with the implementation process and the functionality of the systems have arisen. ERP systems have generally cost more than originally predicted and the levels of organisational trauma have caused severe difficulties. A key contributor to this has been the need for organisations to perform drastic business process change, often in one step shift exercise. Organisations are beginning to question whether single vendor ERP systems still represent the 'best practices' in core functional areas and perhaps more importantly are beginning to realise that consequences of adopting a common systems strategy. It has become clear that organisations that have implemented single vendor systems have broadly similar business process and IT infrastructures. Some organisations are now implementing 'Beyond ERP' strategies such as customer relationship management and web enabled developments that aim to support innovation and facilitate differentiation [40][41].

Organisations have looked for alternative ways to obtained integrated enterprise-wide support and the BoB approach is one such solution. Advances in enterprise integration applications that reduce the complexity and cost of implementation and maintenance have clouded the allure of single vendor ERP systems. In fact single vendor ERP systems are currently in the process of being componentised to allow them to be more readily integrated into this form of strategy. BoB approaches offer distinct advantages over single vendor environments as they stand at present. Each component in a BoB approach can be implemented as a stand-alone application. The resultant 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 approaches also allow more flexibility in business process design. As demonstrated by Global Entertainment, companies have a wider range of applications to consider when looking

for a system which is closely aligned with their existing or improved business process map of the organisation. Again, as at Global Entertainment, this may impact upon the facilitation of the implementation process. The organisation may more readily buy into the implementation if the system meets their needs rather than the converse as is generally the case with the implementation of single vendor ERP systems. Moreover, the multi-vendor approach distributes 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. However, the organisation still has to make the decision as to whether it will continue to support the relevant application by outsourcing or through in-house means for example, or whether it will implement a new component from another vendor. The main difficulties associated with this approach are related 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 highlights the implementation difficulties in terms of the extensive training required and development of the necessary interfaces amongst the suite of applications. Global Entertainment have, however, seen the need for a highly managed approach to this form of IT strategy so that an easily maintainable infrastructure is created. They have endeavoured to maintain the integrity of the packages they have implemented by not modifying them and have developed global standards and documentation.

This paper has presented a comparative analysis of two of several IT strategies that companies are implementing to support the shift from a local to global business and IT strategy. It is not clear which strategy represents the best infrastructure for the 21st century, and it is probably fair to say that no one strategy is the 'best' for all contexts. However, it is clear that organisations adopting BoB and single vendor ERP approaches that have matured into the Beyond ERP arena, will have to carefully manage distributed information and infrastructures. If systems development, implementation and maintenance is not policed, organisations may be presented with a set of legacy problems more complex and threatening to the business than ever before.

REFERENCES

[1] Lee H.L. and Billington C. (1995) The Evolution of Supply-Chain Management Models and Practice at Hewlett-Packard, Interfaces, Vol. 25, No. 5, September-October, pp. 42-63.

[2] Treece J.B. Kerwin K. and Dawley H. (1995) Alex Trotman's Daring Global Strategy, Business Week, 3 April, pp. 36-44.

[3] Newing R. (1998) International Software: Big Questions on Globalisation, Financial Times, 18 March.

[4] Vesey J.T. (1991) The new competitors: they think in terms of 'speed-to-market', Academy of Management Executive, Vol. 5, No. 2, pp. 23-33.

[5] Konsynski B.R. and F.W. McFarlan (1990) Information Partnerships - Shared Data, Shared Scale, Harvard Business Review, Vol. 68, No. 5, pp. 114-120.

[6] Malone T.W., J. Yates and R.I. Benjamin (1987) Electronic Markets and Electronic Hierarchies, Communications of the ACM, Vol. 30, No. 6, pp. 484-497.

[7] Malone T.W., J. Yates and R.I. Benjamin (1989) The Logic of Electronic Markets, Harvard Business Review, Vol. 67, No. 3, pp. 166-172.

[8] Feitzinger E. and Lee H.L. (1997) Mass Customization At Hewlett-Packard: The Power Of Postponement, Harvard Business Review, January-February, pp. 116-121.

[9] Roberts H.J. and Barrar P.R.N. (1992) MRPII Implementation: Key Factors For Success, Computer Integrated Manufacturing Systems, Vol. 5, No. 1, February, pp. 31-38.

[10] Holland C. and Light B. (1999) Global Enterprise Resource Planning Implementation. Proceedings Of The 32nd Annual Hawaii International Conference On System Sciences. Hawaii, IEEE Computer Society Press. Los Alamitos, California.

[11] Kay E. (1998) Going Global With ERP, Datamation, July.

[12] Martin M.H. (1998) An ERP Strategy, Fortune, 2 February, pp. 95-97.

[13] Appleton E.L. (1997) How To Survive ERP, Datamation, March, pp. 50-53.

[14] Kay E. (1998) Going Global With ERP, Datamation, July.

[15] Edmondson G. Baker S. and Cortese A. (1997) Silicon Valley On The Rhine, Business Week, 3 November, pp. 40-47.

[16] Bicknell D. (1998) SAP to fight drug firm's $500M. suit over R/3 collapse, Computer Weekly, 3 September, p. 3.

[17] Holland C. and Light B. (1999) A Critical Success Factors Model For ERP Implementation, IEEE Software, Vol. 16, No. 3, May/June, pp. 30-36.

[18] Davenport T.H. (1998) Putting The Enterprise Into The Enterprise System, Harvard Business Review, July-August, pp. 121-131.

[19] Orenstein D. (1998) Retailers Seek More ERP Functionality, Computerworld, 11 February.

[20] Zygmont J. (1999) Mixmasters Find An Alternative To All-In-One ERP Software, Datamation, February.

[21] Kara D. (1999) ERP Integration, InformationWeek Online, 8 March. (informationweek.co.uk)

[22] Sweat J. (1999) The Integrated Enterprise, InformationWeek Online, April 26. (informationweek.com)

[23] Yin R.K. (1994) Case Study Research Design And Methods, 2nd. Edn. Sage, London.

[24] Pettigrew A.M. (1985) Contextualist Research: A Natural Way To Link Theory And Practice, pp. 222-274. In Lawler E.E. Mohrman A.M. Mohrman S.A. Ledford G.E. Cummings T.G. And Associates, Doing Research That Is Useful In Theory And Practice, San Fransisco, Jossely-Bass.

[25] Miles M.B. and Huberman A.M. (1994) Qualitative Data Analysis: An Expanded Sourcebook, 2nd Edn., Sage, London.

[26] Gill J. and Johnson P. (1991) Research Methods For Managers, Paul Chapman, London.

[27] Stake R.E. (1995) The Art Of Case Study Research, Sage, London.

[28] Eisenhardt K.M. (1989) Building Theories from Case Study Research, Academy of Management Review, Vol. 14, No. 4, pp. 532-550.

[29] Johnson G. (1992) Managing Strategic Change: Strategy Culture And Action, Long Range Planning, Vol. 25, No. 1, pp. 28-36.

[30] Bennett K. (1994) Legacy Systems: Coping With Success, IEEE Software, Vol. 12, No. 1, January, pp. 19-23.

[31] Kim Y.G. (1997) Improving Legacy Systems Maintainability Information Systems Management, Winter, pp. 7–11.

[32] Porter M. (1980) Competitive Strategy, Free Press, New York.

[33] Whittington R. (1993) What Is Strategy - And Does IT Matter? International Thomson Business Press, London.

[34] Johnson G. and Scholes K. (1999) Exploring Corporate Strategy, 6th Edn, Prentice Hall, London.

[35] Ward J. and Griffiths P. (1996) Strategic Planning For Information Systems, 2nd Edn., Wiley, Chichester.

[36] Hammer M. (1990) Reengineering Work: Don't Automate, Obliterate, Harvard Business Review, July-August, pp. 104-112.

[37] Hammer M. and Champy, J. (1994) Reengineering The Corporation, New York, Harper Business.

[38] Grover V. and Kettinger W.J. (1995) Business Process Change: Reengineering Concepts, Methods And Technologies, Idea Group, London.

[39] Earl M.J. (1989) Management Strategies For Information Technology, Prentice Hall, London.

[40] Holland C. Light B. and Kawalek P. (1999) Beyond Enterprise Resource Planning Projects: Innovative Strategies For Competitive Advantage. Proceedings Of The European Conference On Information Systems, 23-25 June, Copenhagen.

[41] Light B. (1999) Realizing The Potential Of ERP Systems. Electronic Markets, Vol.9, No. 4, pp. 238-241.