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Adoption of ERPs in a Medium-sized Enterprise - A Case Study

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Abstract

Considering the problems and limitations of SMEs in the adoption of IT-enabled innovations in general and enterprise system software solutions in particular, this paper analyses the challenges and opportunities a medium-sized enterprise face in their decision to adopt Enterprise Resource Planning (ERP) systems, using a case study approach. While push by the technology/software vendors, influence of supply chain partners and competition are the key external factors influencing the adoption decision, the need for efficient management of information and processes, visibility and control are the key internal drivers, the study noted. Importantly, limited financial resources and challenges of evaluation and selection of the suitable software, though identified in the literature, did not seem to have any influence in their decision to adopt. Implementation of enterprise system in this case study facilitated enhanced visibility and control of information, improved quality of information for decision making and process performance. Successful adoption and implementation in a Medium-sized enterprise context is dependent upon factors such as complexity of business operations, a suitable fit between the software solution and the unique processes of the enterprise and the compelling need for standardised and integrated information and processes.

Keywords

Medium-sized enterprises, ERP systems, adoption

INTRODUCTION

Small and medium-sized enterprises (SMEs) make a significant contribution to the employment and GDP in every economy. With the internet and emerging information technologies and systems removing the barriers for global business for large, medium and small enterprises, involvement of SMEs within the information economy is considered vital for Australian economy (Martin & Matlay 2001). Though it is difficult to identify and measure their impact because of their transient nature (Simon 2001), small and medium-sized enterprises (SMEs) typically account for more than 95% of all the private sector entities and employ more than 70% of the workforce in Australia (Schaper 2007). According to the Australian Bureau of Statistics (ABS), 84% of companies are micro-small businesses employing up to four workers, 12% of the firms are small businesses employing from 5 to 19 employees and about 4% of the businesses are medium-sized entities employing 20 to 199 people, with the remaining large firms constituting only 0.3% of the sector (Schaper 2007). The definition of medium-sized enterprise is different in different world regions. For example, in Europe, a firm with 50 to 1000 employees is termed as a medium-sized enterprise (van Everdingen et al 2000) whereas in Australia it is 20 to 199 employees.

Considered as major drivers of innovation, small and medium sized enterprises (SMEs) play a key role in making an economy globally competitive. They are often regarded as being more innovative than larger firms because of their flexibility and willingness to try new approaches. While larger firms have an advantage in capital-intensive industries where substantial resources and converging technologies are present, SMEs appear to have advantage in emerging technologies that require high level of innovation. Considering the huge investments already made in information technologies and systems in the past two decades, organizations are still striving to derive value from those investments. This is particularly important in SMEs context where their capability to invest in new technologies and systems is considered traditionally low. While investment in information technologies/systems is important for both large and small enterprises, poor IT investment decisions can have a critical impact on the profitability and sustainability of the small and/or mediums-sized enterprises. The investment required to meet the costs of new information technologies, their implementation, training and reorganization as well as the risks associated with these projects, typically exceed the budget and the capabilities of an average SME (Pigni et al 2004).

Adopting ERP systems, typically viewed as risky and difficult even by large enterprises, may be challenging for medium-sized enterprises. Resource constraints, uncertainty of the environment, limitations on the infrastructure

and capability are some of the challenges SMEs generally face in adopting IT-enabled innovations. In order to make the SMEs more efficient and competitive in the marketplace and to help them move forward assimilating the emerging technology innovations, it is necessary to investigate the issues and challenges that influence their decision to adopt ERP systems and for successful management of implementation and post-implementation phases. Despite their strategic importance, research on the adoption and implementation of IT innovations in SMEs context is generally limited (Fink & Disterer 2006). This paper reports an ongoing research study investigating the implementation of enterprise system in medium-sized enterprises in Australia. It first presents a review of the literature and discusses the challenges and opportunities SMEs face in adopting enterprise resource planning systems. It will then explain the research methodology and discusses the findings and implications.

LITERATURE REVIEW

ERPs for SMEs

There are several factors that are influencing the ERPs market for SMEs. With most of the large organizations already adopting ERP systems world wide, SME's too are finding it a competitive necessity to follow the large enterprises. SMEs want to reap the same benefits that large enterprises have had through adopting ERP systems. These benefits include a gain in operational, analytical and strategic advantage in the market by achieving standardization and automation of information, processes and tasks (Markus & Tanis 2000). The advent of powerful, scalable and relatively inexpensive hardware, and increasing availability of the application hosting (remote hosting) of the software services have been motivating the SMEs to upgrade their systems and technologies (Wang et al 2006). Global competition for some of the high-tech niche market SMEs is forcing them to update their old legacy systems with a modern internet-enabled real-time enterprise-wide information system. Thus updating their information technologies and systems become a necessity for SMEs to survive in this global market place. As important stakeholders in the supply chain networks, SMEs are required to upgrade their systems and technologies and meet the information requirements of their larger partners.

On the market side, with a view to expand their market, large ERP software vendors such as SAP, Oracle and Microsoft have started focusing their attention to SMEs. With more than 70% of the Fortune 1000 companies having an enterprise system (Yen et al 2002), the ERP systems market for large enterprises has reached a saturated point. In order to meet the SMEs requirements, software vendors have modified their standard products and started offering pre-configured low cost solutions to SMEs (Wang et al 2006). ES software vendors such as SAP are now offering low cost preconfigured business process component based solutions with industry specific capabilities as extensions (Forrester research 2005, Wagner et al 2006, Beatty & Williams 2006). By allowing SMEs to choose particular component initially and then facilitating a gradual build-up of the system, they are able to offer SMEs a faster ramp-up, reduced implementation time and efforts and importantly lower initial and ongoing costs (SAP 2006, Forrester research 2005). SAP's All-in-One and Business One, Oracle's eBusiness Works, Data systems' Workflow ERP, Microsoft's Great Plains and Navision, and NetSuite are some of the products increasingly pushed into the SMEs market by the software vendors.

SAP by Design, a new product, offers SMEs a low cost application hosting facility (SAP 2008) and is touted as the next generation ES product for SMEs that incorporates analytics and other capabilities on-demand through Internet or as a SaaS (software as a Service). Without any investments in the hardware and software, this application hosting service is expected to revolutionize the software industry and truly bring into fruition the concept of on-demand software. Other vendor products such as NetSuite, Minicom are specialising in certain niche market SMEs in particular industry sector and trying to expand their market share. With very limited number of SMEs so far adopting these enterprise-wide systems in Australia, very little is known about the issues these companies faced in adopting and implementing these ERP systems and the benefits they have so far realised in their post-implementation phase.

Factors Influencing the Adoption:

There are several external as well as internal forces that are potentially influencing an SME's decision to adopt ERP systems. For example, major customers of an SME who are typically powerful in their supply chain contexts, and/or an SME within a large global conglomerate may force SMEs to upgrade their information management practices and adopt modern systems and technologies for doing business with them and/or part of their enterprise and supply chain integration strategies. Several e-Procurement initiatives of large enterprises forced the SMEs to enter the purchasing information directly into their customer's information system through Internet and facilitate transactional efficiencies for the large enterprises. Similarly on the sales side also, some large business enterprises have asked their smaller customers to place orders online and allowed traceability and visibility of their orders and demand information. Uncertainty about the environment, growth opportunities in the global marketplace and competition are other factors that influence SMEs decision to adopt or not to adopt

ERP systems. If an SME is operating in an uncertain and volatile environment where its business viability and continued sustenance is in doubt, it may not go in for any significant long term investments on information technologies. A summary of the factors influencing the adoption decision and relevant references are presented below.

Table 1. A Sample Table (Table Caption Style)

Factors	Factors influencing adoption decision	References
External	Uncertainty about environment	Raymond et al 2004 Koh & Sadd 2005
	Competition and opportunities for growth	Levy & Powell 2000
	External pressure (from bigger supply chain partners or headquarters)	Raymond et al 2007, Argyropoulou et al 2007; Lee & Myers 2004
	Changing requirements of external (markets, customers, suppliers and economy)	Branzei & Vertinsky 2006
	Information management practices and willingness to adopt modern systems & technologies	Koh & Sadd 2006
Internal	Resource constraints (costs and time); limited financial, technical and managerial capabilities	Bernroider & Koch (2001), Everdingen et al (2000), Buonanno et al (2005), Chong & Pervan (2007); Ballantine et al 1996, Love et al (2005), Mandal & Gunasekharan 2003, Tagliavini et al 2002
	Risks in the adoption of IT/IS – reorganization of processes and costs,	Pigni et al 2004, Raymond et al 2006;
	Recognised need to build operational capabilities and IT competence, for integration across the SME and beyond; for improving info visibility and decision making, reducing operational/transactional costs	Raymond & Uwizeyemungu (2007), Koh & Simpson 2005, Palaniswamy & Frank (2000); Laukkanen et al 2007
	Nature and complexity of internal processes, production systems, predisposition to process integration, process and software fit;	Everdingen et al 2000, Raymond et al 2006, Argyropoulou et al 2007, Olsen & Saetre 2007
	Organisational issues – change management, ability to manage the system (post-implementation)	Guido et al (2007), Argyropoulou et al 2007, Koh & Simpson 2007; Gable & Stewart 1999
	Challenges in evaluation and selection of software, implementation and post-implementation efforts	Blackwell et al (2006), Van Everdingen et al (2000), Motwani et al (2002).

Some of the internal factors that motivate the SMEs to adopt enterprise systems include typical problems of un-interfaced legacy information systems, redundancy in data capture, need for flexibility in their business processes, unsophisticated information systems/technologies management, lack of information visibility and the software-process fit, In addition to the costs of software and implementation services, organizations expend considerable resources for training and orchestrating changes in organisational structures and business processes.

Lack of technical and managerial capability to carry out evaluation of the risks and benefits of ERP systems, selection of the appropriate software solution and post-implementation maintenance, change management capability, nature and complexity of business processes, need for reducing the operational/transactional costs, improving the information visibility, need for integration within the enterprise and beyond, technical issues such as data migration, limited technical managerial and financial resources investment on software and implementation are other internal factors influencing the adoption decision. In addition, inadequate comprehension of change management challenges in ERP implementation context, challenges of legacy systems and their integration/migration and a conscious decision to limit automation in order to facilitate management flexibility, are, other factors influencing the ERP adoption decision in SMEs.

Yet ERP success is difficult to achieve and failures of ERP projects could lead to serious damage to a company's health. Though past research has identified the problems in implementation and its critical success factors in the context of large enterprises, the success of an ERP implementation is difficult to define. As

pointed out by Markus & Tanis (2000), an early success of completing the project on time and on budget, may later become a failure if the desired business benefits are not realised. Similarly, if the project is termed as failure initially because of the delays and cost and time overruns, and compromises in the software-process fit, it may be considered successful in the long run when the benefits of integration, standardization, best practices and process orientation have started to bear fruit in improved process performance. Organizations experienced problems at all phases of ERP systems life cycle (adoption, pre-implementation preparation, implementation, and post-implementation) with many problems occurring in early stages went unnoticed and/or uncorrected, and later on manifesting themselves in later phases (Markus & Tanis 2000). Assessing the benefits, costs and risks of IT investments and their implementations has always been a challenge to SMEs. While the costs tend to occur when the new software solutions are implemented, its benefits would start appear in future with all the associated risks.

Even though large ES software vendors such as SAP offer a very low price (for example \$5 per user per day for SAP All-in-One solutions) and its deployment in about 10 weeks (SAP 2006), initial investment and the ongoing costs of maintaining the system are still considered significant by the SMEs. Given their resource constraints, it is difficult for SMEs to commit investments on IT innovations without sufficient evidence of its potential benefits and proper assessment of its risks to the business operations.

RESEARCH FRAMEWORK & METHODOLOGY

The objective of this research study is to analyse the factors influencing the decision to adopt ERP systems by a small and medium-sized enterprise in Australian context and to explore the post-implementation challenges and benefits. Therefore the research questions are:

- What factors influence a medium-sized enterprise's decision to adopt an ERP system and how?
- What are the post-implementation challenges and opportunities for a medium-sized enterprise?

As the study is exploratory in nature, a case study methodology was adopted to capture its corresponding contextual richness and complexity (Yin 2003). Case study research offers deep insight into the impact of information systems on various organizational dimensions. Using semi-structured in-depth interviews of the key respondents that are actively involved in the adoption, implementation and post-implementation management of the company operations including the consulting partners/consultants, primary data is collected. Given the nature of questions, in-depth interviews based on the perceptions, views and experience of the key individuals in the organization were considered more insightful. Accordingly, the managing director/owner, general manager, IT manager and finance manager were interviewed in October 2007 to March 2008. In addition, one consultant who was actively involved in the implementation of the ERP system in this case study organization was also interviewed.

These respondents were selected as they were the key people looking after the main functions in this organization and were familiar with the pre-implementation and post-implementation issues. These interviews, each for about 60 to 90 minutes duration, were recorded with prior permission and transcribed for further analysis. The data thus collected was content analyzed with reference to the factors/framework discussed in the literature review section. It include the external and internal factors that influenced their decision to adopt enterprise systems, the benefits and risks they have realized after implementing the system, extent of the adaptation and process-software fit they have achieved in their organization, and the impact of the enterprise system's characteristics on process performance. Accordingly, three major issues are discussed in the context of this implementation - integration and standardization, information visibility and control, and flexibility and software-process fit. Based on the grouping and analysis of the perceptions of various respondents on these common themes, observations and findings are derived and presented in this paper.

Typical to case study research, this study had limitations including the lack of generalisability and subjective bias (Yin 2003). The extent of cooperation from different respondents in the organization though is uniform and positive, it is possible that some respondents may have either overrated or underrated the issues in the adoption, implementation and impact of ERPs. These limitations, however, were unlikely to have affected the validity and reliability of the outcomes significantly because the objective of the study was not to generalize, but to provide anecdotal evidence.

Background to the Case Study Organization

The case study organization is a manufacturing company that makes components for the automotive, aero-space and defence industries. It is a typical make-to-order medium-sized enterprise that is a supplier to major defence and automotive manufacturing companies. Started about a decade ago, it currently employs about 60 persons. Though there is no consistent definition of what constitutes an SME across the globe, this firm can be

considered a medium-sized firm by the number of employees (20 to 199 people) according to the classification by the Australian Bureau of Statistics (ABS). The annual turnover of this company is about \$10 million.

After evaluating several other software solutions such as Oracle, Minicom and Syspro the company had selected SAP All-in-one. It implemented SAP All-in-One software solutions, a pre-configured best practices ERP system made suitable to SMEs by SAP AG. Implementation was done with the help of an implementation partner. SAP had introduced this software solution to Australian market in the year 2003/2004 and this SME is one of the first few medium-sized enterprises in Australia that had adopted this system. When the study was conducted in 2007/2008, this company had the system in place for more than three years.

The company implemented sales and distribution, finance, assets, materials management and production modules. This organization was selected for this study because of the implementation of four important modules and because of its potential to offer a rich organizational context for the study. The benefits and risks of implementing enterprise systems cannot meaningfully be studied unless the basic characteristics of the enterprise systems – integration and standardization are adequately implemented in an organization. As this manufacturing organization implemented four important modules by replacing the existing processes and achieving a good fit between the software and business processes, this case study organization is considered appropriate for this study.

ANALYSIS AND FINDINGS

Adoption Factors

The decision to adopt an ERP system in this SME is influenced by both internal as well as external factors. For SMEs also, multitude of legacy systems (in proportion to their size) becomes a hurdle for their growth and competitiveness. This company has several such arrangements and in a growing environment, they have realised that it is not possible to continue to operate and that the company has ‘reached a critical point in its growth that they can no longer run their processes and information efficiently and effectively with excel spreadsheets and access databases’. Even though it is a small organization, lack of integration and visibility has apparently limited the organization’s potential to grow as well as affected significantly their operational effectiveness. For example, there were several instances in the past of missing inventories, repeat orders of expensive spare parts even while they are in stock, inconsistent pricing of the make-to-order products to same customers etc, which have resulted in loss of goodwill, profit and customer service. Therefore, in this SME also, the need for integration, increased visibility of information, need to replace the old legacy systems based on Excel and Access have all contributed to their decision to adopt ERP system. Though some large customers have asked the case study organization to prepare for Just-in-Time (JIT) environment through some digital platform and electronic communications, there is no explicit pressure to adopt ERP systems. As pointed out by both the consultant and the managers in the case study organization, in low margin industries such as automotive (in which this case study organization is operating), it has become imperative to be cost efficient and competitive. Adopting ERPs is considered as one of the key strategic tools by this organization to achieve cost efficiencies and thereby the competitiveness in the marketplace.

Integration of Processes and Information - An Important Benefit

Integration of processes and information is by far the most important benefit organizations are expected realise by implementing ERPs. Integration is viewed from two perspectives – horizontal and vertical. Tight coordination of various activities carried out by different individuals, work groups, teams, units, and departments in the organization across various functions and across different hierarchical levels is termed as organizational integration (Markus & Tanis 2000). Organizational integration can also be viewed from two perspectives – vertical integration and horizontal integration. If it is between different hierarchical levels, it is termed as vertical integration. Horizontal integration refers to interconnection between various departments or functions within an organization. This cross-functional integration represents the extent to which different functions and business processes are interconnected, standardized, and tightly coupled. While the horizontal integration is a critical determinant for facilitating cooperation across business functions, vertical integration is essential to facilitate enhanced visibility, accessibility and decision support capability. The benefits of such integration, however, depend on the scope and depth of integration achieved in a typical enterprise system implementation. Inadequate integration may actually limit a firm’s ability to make decisions even when the data is available somewhere in the system.

In this medium-sized enterprise (in general in most of these medium-sized enterprises) there is no vertical hierarchy and there are not many departments and functions unlike in a large enterprise. Improved quality of information in terms of its consistency, accuracy and currency in this organization has enhanced its ability to manage their information and processes better. Improvement in the “*process performance measured in terms of order cycle time, order-to-cash cycle time, inventory turnover, throughput time, scheduling errors and missing*

parts/components are clearly noticeable" (Respondent 01). In a small and medium sized enterprise, management in general is fairly centralized and the information management practices are also centralized even before implementing an enterprise system. So, implementing an enterprise system has actually enhanced the value of integration by tightly linking the processes along with the information. Importantly, it has facilitated the consequence of integration, i.e. improvement in the quality of information used for decision making. There is a clear discernable improvement in the decision making and process performance in this enterprise, unlike in large enterprises where enterprise systems (traditional models with no decision support module attached) are typically criticised for their inability to offer decision-support capability.

In this case study organization, five modules are implemented – production, materials management, fiancé, assets, sales and distribution. Centralization of controls typical in an enterprise system (ES) enabled work environment and the consequent requirements of new skills to manage the processes, have helped this organization to manage their information and processes with some discipline. As commented by one respondent *"it is just understanding of the whole company, how the whole system works; we made all the bosses (functional heads) to understand all the transactions that their employees did. I said, how can we monitor if we don't know what we are supposed to be doing?"* (Respondent 02). The effect of integration on finance/accounting side especially is observed to be significant. As mentioned by one respondent, *"the effect of integration from the finance side is huge, I really don't understand how we managed to operate before we had integrated financials. It is a huge leap forward to us"* (Respondent 04).

Information Visibility and Control – An Opportunity

In the context of an SME, the information is easily accessible to all the relevant managers and operating personnel. Visibility and control is not a problem generally in SMEs because of the centralised management control and limited number of systems. Therefore implementing an enterprise system may not offer any additional value in terms of increased visibility and enhanced control to SMEs. This, hypothesis, however was not supported by the evidence in this case study organisation.

Enhanced visibility of information is by far the most important benefit this organisation has noticed consequent to ES implementation. As mentioned by one respondent, *"the only visibility we had was the bank account at the end of the day... watching our daily reports tells us whether our MRP schedule health is worsening or getting better; gives us visibility to everyone see, previously it was sitting there but no one really saw it,"* (respondent 03). As noted by another respondent, *"we can watch our daily stats, whether our MRP scheduled health is getting worse or better, and the type of problems."* (Respondent 01). It gives visibility to everyone in the organization about the production process, status of production orders. Getting everything into one common user interface, enabled by the enterprise system, also has improved easy exchange and communication between different managers. In the past before the implementation of enterprise systems, managers were required to have expertise on different systems and/or dependent on the expert/specific manager on that particular system to explain the significance and furnish the information in required format. With a common interface, it is now easy for any manager to access the information (provided he/she has the appropriate authorisation).

In the past, control and visibility is a challenge in this case study organisation as it has to contend with different types of production systems (make-to-order and make-to-stock) and the complexity of the bill of materials (multi-levels). In a larger enterprise, financial controllers or senior management team is there to continuously monitor the performance of the firm. In an SME's context, however, absence of somebody (different from the owner-manager) at senior level to monitor the cost blow outs, variances, quality and performance on a continuous basis may be a problem. Many times in an integrated environment, no data entry errors are noticed by the managers. As pointed out by one respondent, *"in a way no-one notices bad posting or something like that, because no one is watching like a hawk, so being in one system can be negative sometimes"* (Respondent 02). Thus, while the integrated environment and improved visibility appear to be clear benefits, control challenges appear to be significant in this enterprise, probably because of the complexity of the production system. With growth predicted for this organisation, this may become a major issue unless some appropriate controls and data validity checks are introduced to ensure information and reporting integrity.

Flexibility, Change and Fit

Flexibility, a key feature of any information system, has a complementary as well as opposing relationship with integration. The more an organization is integrated adopting integrated technologies, the less flexible and more difficult to 'disconnect'. Given the size of investment, scope of coverage by the system and the commercial off-the shelf nature of the software, it is, however, necessary for an ERP to be adaptable to future needs and growth of this SME. To cater to the industry needs, and it being a generic system, ERP software vendors have offered industry solutions and pre-configured settings to accommodate these flexibility needs of the organization. Once the implementation is completed and the system goes live, ERPs are tightly linked with organizational structures and processes and changing them is considered difficult and uneconomical. In an SME's context flexibility of

processes, structures and business rules, however, is one of their key strengths, when compared with large enterprise. With less complex organizational structure and fewer elements to configure, mapping is relatively easy. Changes are also relatively easier than for a large enterprise. As explained by several respondents, *'implementation was fairly straightforward and took very little time for us as we have chosen the right solution (Respondent 01); implementation was the question of choosing right parameters and mapping with our simpler organizational structure and we did it pretty fast (Respondent 03); our old existing processes and procedures were confusing and varied from person to person and from time to time. So, we have simply discarded the way we did things and followed SAP procedures and processes. Now at least we know how our processes are executed and what information is to be keyed in and when'* (Respondent 02). As the nature and type of changes in process sequence, organizational elements, and procedures are also limited in scope in this organization, editing key configuration and relationships stored in tables and structures when necessary are relatively easy. Therefore, there is no evidence that the implementation of ERP has in any restricted the flexibility of this SME.

In a small and medium sized enterprise (SME) the issue of fit between the existing processes and the processes embedded in the software do not generally arise considering the cost implications of its alignment. In this organisation also similar situation prevailed. They have simply implemented the processes embedded in the pre-configured solution and simply discarded the existing processes. In cases, where the ERP system does not support an unique business process SME has which are not highly repetitive, this organisation has decided to carry them out manually outside the ERP environment. Even in repetitive processes, it is very easy to identify the variations, inconsistencies and exceptions in a SME's context unlike in a large enterprise. Therefore, the potential benefits of standardized processes and the challenges of dealing with inconsistencies and exceptions are relatively insignificant and least resource intensive in an SME environment. In a couple of specific instances where the process is offering a competitive advantage and in this case not part of the software solution (new product design and development process), this organisation has decided to carry out that process the way it is done in the past. They found it too expensive to build interfaces with the ERP and its usage is also infrequent. As mentioned by one respondent *"when there is a need for a change in the process, we will revisit the process and software fit, and weigh the pros and cons viz. business benefits vs. change management headaches. Of course, we are confident such occurrences will be rare."* (Respondent 01). While this may be difficult and expensive in a large enterprise, this is not a major problem in an SME context. As mentioned by another respondent, *"we will leave this change until next upgrade; there is no hurry."* (Respondent 01). It is thus easy for an SME to decide to leave this change until next upgrade while carrying out these variations in the process manually or outside the ERP system.

DISCUSSION

The decision to adopt IT innovations such as ERP systems by medium sized enterprises is typically influenced by both the external push factors as well internal pull factors. Even though the literature suggests the reasons to be predominantly external and refers to the pressures from large ERP software vendors, powerful supply chain partners, and global competition, this case study organization adopted an ERP system predominantly for internal reasons. The multitude of legacy systems the company has, recognition of the problems resulting from lack of integration and the potential for company's growth have all made this case study organization to go for a streamlined integrated systems. Even though the supply chain partners have asked the organization to prepare for a just-in-time environment through some digital platform, there is no discernable pressure from them to adopt ERP systems per se. The need to become cost efficient and competitive with streamlined and integrated operations and processes has become an imperative need for this case study organization considering its low-margin competitive environment. The cost effective pre-configured software solutions offered by the large ERP vendors that are expected to significantly reduce the cost of implementation have made the adoption decision an attractive one. In addition, the general reduction of the hardware and software prices have also contributed to the reduction in their investment pay back period.

Thus this study confirms the influence of environmental factors such as close logistical links with supply chain partners, price sensitive and high growth dynamic market and the technological factors such as obsolete legacy information systems as identified by Raymond et al (2007). According to past research, organizational factors such as limited availability of resources, centralised decision making, less formalized structures and processes - typical characteristics of small and medium sized enterprises are likely to place the enterprise less predisposed to the adoption of ERP system (Bernoider & Koch 2001, Olsen & Saetre 2007, Raymond et al 2007). The study, however, contradicts other studies (Bernoider & Koch 2001; Olsen & Saetre 2007), that the SMEs with more flexibility and more decentralised structure are more predisposed to the adoption of ERP system. Even though this case study organization is relatively small, has flexible systems and a fairly centralised structure and has least degree of formalization of structures and processes, a decision to adopt ERP system was taken primarily to achieve operational efficiencies and benefits of integration. Even though past studies have identified greater formalization of structures and processes as an important factor that will make an organization more predisposed to adopt an ERP system (Raymond et al 2007), they did not seem have any effect in this organization's adoption

decision. Even though some of the benefits of standardization and best practice processes are not fully realisable in medium-sized enterprises because of their size, the benefits of process and information integration, improved visibility and accessibility of information across the enterprise have greatly contributed to improvement in decision making.

This study points out the equal importance of information visibility and accessibility to all enterprises irrespective of their size. Hitherto, it is argued that small and medium sized enterprises, because of their size, are not complex and information is therefore easily accessible and visible to the few important managers in the organization. In this information-oriented environment, this is not entirely true. This study observed that information visibility and accessibility is a key benefit realised by ERP implementation. Unlike large enterprises, this medium sized enterprise even though has only a few managers, the complexity of its logistics processes and its unintegrated legacy systems have made it difficult to get an accurate and single 'truth' of information across the enterprise.

This study extends past research efforts on adoption of IT innovations to medium-sized enterprises in general and ERP systems in particular. The case study helps in understanding the ERP adoption drivers and influencing factors in Australian context. Considering the usefulness and inherent weaknesses of the innovation diffusion theory and resource-based perspectives in explaining the issues with regard to the implementation and post-implementation challenges of ERP systems in a medium-sized enterprise context, this study highlights the importance of organizational factors such as complexity of business processes and systems, problems of unintegrated systems and processes. Given the declining costs of the software and hardware, increasing complexity of business processes and the globalized competitive environment in which they operate, further research on the implementation, use and exploitation of the ERP systems and their advanced products is important for practitioner and policy makers.

Reliance on the perceptions of managers and the reliability of that information, and single case study are the major limitations of this study. Even though this study findings provide anecdotal evidence to the factors influencing the adoption decision and post-adoption management challenges and offer some rich insights into the phenomenon, its generalisability is limited. It is possible that respondents may have overrated their view. Interviewing multiple respondents and researcher's role as an outside observer may have helped in minimising this effect.

CONCLUSIONS

The ability of ERPs to integrate processes and information and to deliver automation and consistent execution of processes and information management discipline across the enterprise is important not only to larger corporations, but also for small and medium sized enterprises (SMEs). Carefully comparing the challenges and potential benefits, increasing availability of cost-effective ERP software solutions in the marketplace, pressure from the large software vendors, and the imperative business needs for integration and sophistication in information systems landscape, medium-sized enterprises are increasingly implementing pre-configured ERP solutions. Successful adoption, implementation and exploitation of enterprise systems in medium-sized enterprises context is dependent upon factors such as suitable fit between ES software solution and their processes, complexity of business operations, competitive and growing market, obsolete and unintegrated legacy systems in place, role of their major customers, need for building a digital platform, and the extent of standardization and integration of information and processes achieved after implementation. Two years after the implementation, this organization is able to realise significant business benefits and improved process performance. Adoption of emerging technologies such as SOA and web services in SMEs context, though are expected to offer immense benefits in terms of flexibility and adaptability, the potential for inexpensive and rapid reconfiguration of business processes that could be possible with the implementation of web services technology is still not proved and therefore is unknown at this stage. Implementation and exploitation of the ERP system now, with the costs significantly reduced, may offer an excellent opportunity for SMEs to streamline their processes and information management practices and truly take them into the next level where organization size may not be a limiting factor for them to be globally competitive.

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