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ERP Implementation: Issues & Challenges for Indian SMEs

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ABSTRACT: ERP (Enterprise Resource Planning) is a way to integrate the data and processes of an organization into one single system[2]. Its main goal is to integrate data and processes from all areas of the organization and unify it, to provide ease of access and an efficient work flow. ERP Systems usually accomplish this through one single database that employs multiple software modules. In India, SMEs (Small & Medium Enterprises) are the backbone of the economy and are today faced with global competition. Therefore, it becomes imperative to look for means of responding to the dynamic markets. ERP systems have become the most common IT strategy for most companies. ERP implementation at Indian SMEs put Indian SMEs on the competitive position.

KEYWORDS: Enterprise Resource Planning,Small & Medium Enterprises, Critical Success Factors,

I. INTRODUCTION

Organizations today are constantly in search for ways to achieve better business performance and sustain competitive advantages through effective deployment of resources and business processes. To improve business performance, organizations require an efficient planning and control system that synchronizes planning of all processes across the organization. The key to competitiveness lies in a solid information system (IS) infrastructure seamlessly aligned with core business processes developed for the delivery of high quality products and services to customers within the optimal time. These demands have prompted more firms to shift their IS strategies from developing in-house information systems to purchasing application software, such as ERP systems, to generate synergies and enhance operating efficiency

II. LITERATURE SURVEY

ERP use in HEIs integrates administrative functions that have been supported by separate legacy systems3 in the past (Zornada & Velkavrh, 2005). Separate legacy systems were “disparate” and have led to “duplicate resources and services” (Allen & Kern, 2001). ERP enables HEIs to consolidate disparate data and legacy systems and adopt best-of-breed processes and modern technology.

As different departments across an institution share an integrated database, end users can access data in real time. Best-of-breed information technology such as web technologies, mobile phones, and on-line services offer additional benefits not only to the administration within an institution, but also to people who constantly interact with the institution – faculty, students, and staff (Murphy, 2004; Zornada & Velkavrh, 2005).

According to King (2002), the main advantages of ERP in HEIs are (1) improved information access for planning and managing the institution, (2) improved services for the faculty, students and staff, (3) lower business risks, and (4) increased income and decreased expenses due to improved efficiency. Sabau, Munten, Bologa, Bologa and Surcel (2009) provide ERP benefits for universities in terms of business and technical point of views (see Figure 2-1 below).

Heiskanen, Newman and Similä, (2000) suggest that ERP software, which incorporates best practices from the corporate business industry, is not appropriate for universities, since universities have unique structures and decision-making processes.

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Organizational culture heavily affects ERP implementation. Tsichritzis (1999) indicates that today's universities have been forced to admit that "education is a business and students are the customers". ERP implementation encourages universities take a more business-like approach to education, resulting in cultural changes including "the use of managerial language and techniques" (Allen, Kern & Havenhand, 2002). There can be resistance to ERP implementation at universities because it involves not merely the adoption of a new information system, but a holistic change in organizational culture.

While there are diverse forms of management hierarchy from university to university, Birnbaum & Edelson (1989) describes that there exist two sources of authorities within a university: administrative authority and academic authority. ERP implementation is believed to reinforce administrative authority as a model of governance. For academics, this may lead to fear that use of a new system that results in increased transparency of their transactions would result in a loss of control. On the other hand, administrative staff may fear for their job security when redundant processes are eliminated work functions are automated across a university (Allen et al., 2002).

Moreover, Pollock and Cornford (2005) argue that ERP, as a "generic type of solution" from the corporate industry, could be a high-risk strategy for universities. Despite HEI's needs for unique business functions, ERP solutions limit their choices and encourage adopting a "generic solution". Since there have been few discussions and considerations regarding the challenges that universities might face from generic ERP system adoption, there is little assurance that the process will be successful.

Also, as ERP systems are "large integrated packaged solutions" with dynamic complexity, it may cause difficulties with implementation for management and IT staff in universities, even those who might have comprehensive understanding of their own organizations (Pollock & Cornford, 2005). This is because universities have expanded a range of systems many of which have sometimes competing functions whenever they had particular needs (Pollock & Cornford, 2005). In the worst case, universities do not always have management or IT staff who are well-versed in organizational functions.

Standardization and integration, both of which are key features of ERP systems, limit flexibility in university systems. This loss of flexibility may lead staff to create 'workarounds' in which workers attempt to carry on their previous processes. This response to new ERP systems may ultimately increase staff workloads and create a data gaps between the system and reality.

III.PROPOSED METHODOLOGY AND DISCUSSION

1.0 Requirement to study challenges

. It is important for companies to be aware of certain critical issues before implementing any ERP package. Careful consideration of these factors will ensure a smooth rollout and realization of full benefits of the ERP solution. An entire company under one application roof means everything from human resources; accounting, sales, manufacturing, distribution, and supply-chain management are tightly integrated[1]. This integration benefits companies in many ways: quick reaction to competitive pressures and market opportunities, more flexible product configurations, reduced inventory, and tightened supply chain links. The Earthgrains Co. implemented SAP R/3 and reports that its operating margins improved from 2.4 to 3.9 percent and pushed its on-time product delivery rate to 99 percent in 1997.(n13) The company also reports better managementinformation and happier customers. Similarly, at Par Industries in Moline, IL, an ERP system allowed management to base production on current customer orders rather than forecasts of future orders.

Successful implementation of ERP is intricatelytied to top management setting the strategicdirection of the implementation process. This factorcorrelates the highest with ERP implementationamong all the factors identified in the study. This isaccomplished by a continuous support and monitoringof the implementation process. A mere lipservice or lukewarm support from top managementis the ''kiss of death'' for any ERP implementation.

2.0 Major challenges to ERP implementation

2.1 Limitations of ERP technical capability

ERP maintenance is a critical IT service provided by IT organizations in the ERP post-implementation phase, including activities to support and extend existing ERP systems. This paper aims to reduce this gap, reviewing IT-related tasks, success and risk factors in the ERP post-implementation literature. Based on this review, eight IT capabilities on the

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functional level of ERP maintenance are proposed. Integrating these findings with previous IT capability research, the link between the identified ERP maintenance capabilities and firm-wide IT capabilities is examined

.2.1.1 Business Partnership

The previously proposed capabilities to integrate key users (P1) and to provide trainings (P2), can belinked to the business partnership capability category. The integration of key users into ERP supportstructures builds multi-disciplinary teams with business and technology expertise. These teams are onecapability identified by Bharadwaj et al. (1999) in the business partnership category. Appropriate ERPtraining increases users' self-confidence with the system and encourages them to experiment with theERP functionality. Experimentation with IT is another IT capability identified

2.1.2 External IT linkages

This capability category covers technology-based links among customers and suppliers, and IT-basedentrepreneurial collaborations with external partners. There is no direct link between the ERPmaintenance capabilities proposed in this study and capabilities listed in this category. This is becausethis category refers to capabilities on a technical level and not on a functional level. Nevertheless, it isexpected that ERP maintenance capabilities related to ERP changes and updates have effects on thedevelopment of these technical capabilities.

2.1.3 Business IT strategic thinking

The proposed capability to identify and evaluate relevant software updates (P7) requires visions and knowledge on how IT can contribute to business value. The clarity of vision on how IT can contribute to business value is one of four capabilities that are identified by Bharadwaj et al. (1999) in the IT strategic thinking capability category.

2.1.4 IT business process integration

The proposed capability to assess and select ERP change request (P3) supports the alignment of IT applications with new business requirements, that is in turn one of the capabilities proposed by Bharadwaj et al. (1999) in the IT business process integration capability category[1].

2.1.5 IT management

The proposed capabilities to make informed decisions about the implementation method for ERP changes (P4), to apply defined procedures for testing ERP changes (P5), and to manage an existing modification or extension to an ERP system across its life cycle (P6) represent capabilities related to ERP system development practices. System development practices in turn represent one capability identified by Bharadwaj et al. (1999) in the IT management capability category. Another IT management capability in this category is IT project management, which can be linked with the proposed capability to manage ERP upgrades with appropriate IT project management practices (P8).

2.1.6 IT infrastructure

IT infrastructure capabilities comprise the appropriateness of data architectures, network architectures and the adequacy of architectural flexibility (Bharadwaj et al., 1999). Data architecture and architectural flexibility of ERP systems are influenced by characteristics of the ERP software package and, specifically, how the software had been adapted during the ERP implementation. Nevertheless itis expected that in the ERP post-implementation phase, the architectural flexibility of an ERP system is affected by the method used to implement ERP changes (e.g. customization of modification).Therefore, it is expected that there is an indirect link between the proposed capability to make informed decisions about the implementation method for ERP changes (P4) and IT infrastructure capabilities in this category.

3.0 Implementation Costs

Understanding the factors that influence the cost of ERP will help give you a better idea of how much your business can expect to pay. Moreover, it gives you the knowledge to carefully evaluate estimates that fall significantly below or above industry standards.

3.1 Type of business and number of users –Most ERP systems are priced on a per user basis. Specifically, the number of users that will be using the system at the same time and the level of access they require. You can roughly expect to pay anywhere from $1,500 to $4,000 per concurrent user. The number of users and the functions that are included are factors that affect the price. For example a small-to-medium-size job shop may not require a Master

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Production Scheduling module or sophisticated warehouse management, and a large multi-national company would probably require more financial management applications than a make-to-stock manufacturer. Most robust ERP offerings have 30-45 applications and it is critical that you assess your requirements so that you do not purchase unneeded modules up front. An ERP supplier should be ready and willing to sell you what you need and when you need it. In addition, most ERP suppliers will take into account the number of users purchased and provide volume discounts as the number increases.

3.2 Third-party software add-ins–Many ERP vendors integrate software from other companies to boost functionality or add value to their ERP systems. For example, ERP vendors offer third-party software add-ins that allow users to create customized documentation and reports, generate barcode labels and perform custom data extractions. Because third-party products are usually designed by a specific vertical market, their functionality is often first-rate. You can expect third-party software licensing to be about 10-15% of the overall software cost.

3.3 Implementation costs– Implementation costs are a significant consideration because you as the buyer can dramatically influence this expense. First and foremost, carefully consider who will be supporting your implementation. Some ERP suppliers have their own implementation resources, others have 3rd party implementation consultants that they bring to you, and some just sell the software and leave you to find your own support. It is important that you speak with the person who you will be dealing with to ensure that he or she has knowledge of your business processes, knows the software application, and is a good match with your company culture. Implementation costs cover planning and organizing your project, training, prototyping functional areas of your business, installing the software, configuring the system, implementing process changes and completing conversions. Typically, an implementation to software cost ratio of .75:1 to 1:1 is considered a good planning goal but a ratio of 1.5:1 or 2:1 is not uncommon for more complex or customized ERP initiatives, especially if the implementation will cover multiple sites and/or companies.You can significantly reduce your out of pocket implementation costs by staffing and supporting the project with your own internal project manager and a core team of functional area representatives that work with the ERP consultants and assume some of the tasks such as business process development and training the end users.

3.4 The Bottom Line? Small-to-mid-sized businesses can expect the cost of software and services combined to range anywhere from $150,000 to $750,000. Certainly a significant investment, but a properly implemented ERP system will pay for itself quickly

IV.EXPERIMENTAL RESULTS WITH TABLES/ GRAPHS/ FIGURES

1.0 Flexibility of software system upgrades

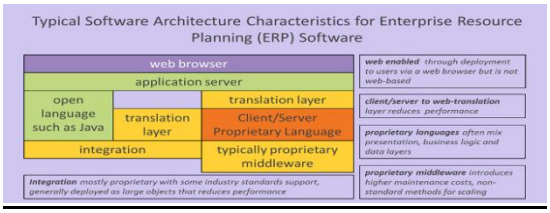

Fig. shows software architecture characteristics of ERP.

Need of Software flexibility is as follows

- Not flexible system forces adopter to change business process to fit ERP system model.
- Requires re-engineering & retaining of employee & business partner.
- Create resistance & delays for organization.

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2.0 Implementation Timeline

A typical ERP implementation timeline impacts every area of the manufacturing company, cutting across functional boundaries and departments as well as impacting the extended enterprise. A team with mid-market manufacturers, one of the main concerns is the exact timing of the implementation. Many times, the short answer is '"it depends."[4]

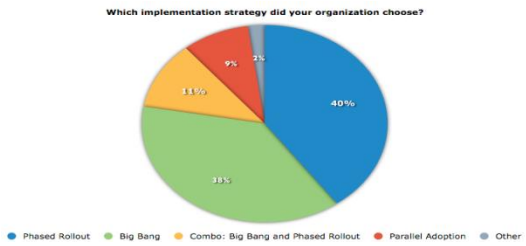
It experienced that ERP implementations go more smoothly when there is an emphasis on educating the team about the capabilities of the new ERP system features and functions. All parties must have a solid foundation of how the system works and what the new system will mean for their departments and the entire organization.
Practical, hands-on training must address the new capabilities, new processes and the expected value after implementation.

3.0Implementation strategy and execution
In choosing new enterprise resource planning systems, implementation is every bit as important as finding the right program. You should be thinking about it proactively when evaluating systems, you should raise the topic with prospective vendors and even ask for examples of their customers' strategies. There are hundreds of articles on "best practices" for implementing ERP software, but understanding each strategy and choosing the best option is difficult[5]. So, we set out to consolidate the information in a single guide. Our aim is to give you enough information – and the most important pieces – to choose the best implementation process for yourorganization. We'll cover the three most widely discussed ERP implementation strategies:

3.1Big bang - Implementation happens in a single instance. All users move to the new system on a given date.

3.2Phased rollout - Changeover occurs in phases over an extended period of time. Users move onto new system in a series of steps.

3.3Parallel adoption - Both the legacy and new ERP system run at the same time. Users learn the new system while working on the old. When it comes to ERP implementations, these questions skim the surface. We understand a myriad of questions and answers would be required to learn when it's appropriate to choose a certain strategy. Additionally, we realize reporting the "most successful strategy" would be erroneous. While one strategy may work for a majority of companies, it may not be the best strategy for your organization. As Jonathan Gross from Pemeco pointed out, "The circumstances dictate the appropriateness of the implementation strategy. In some cases, a phased deployment might be more appropriate than a parallel deployment. In other cases, it might be the opposite."



Nevertheless, our survey did uncover some interesting data. Here are the results:Eighty-nine percent of respondents followed "big bang," "phased rollout" or a combination of the two strategies.The number of phased rollout users compared to big bang was split nearly evenly; parallel adoption trailed far behind with only four users; "other" came in last. The "other" respondent left us the following explanation for his strategy:

"Component implementation; pilot projects; alpha testing; refinements and iteration before opening it to entire unit. If successful in a unit, expand it universally until all units have adopted."

4.0Resistance to change

Organizational cultural resistance is the major challenge of ERP implementation. It can often be difficult to convince business units of an organization to switch from already running business processes to new ERP system[6]. The two

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main threats are replacing known processes with an unknown and taking away decision making authority for the routine business activity.If the advantage of ERP system are not explain well the employee can even resist and slow the development and adoption process of ERP system.

5.0Education & Training

Training and updating employees on ERP is a major challenge. People are one of the hidden costs of ERP implementation. Without proper training, about 30 percent to 40 percent of front-line workers will not be able to handle the demands of the new system.[6] The people at the keyboard are now making important decisions about buying and selling -- important commitments of the company. They need to understand how their data affects the rest of company. Some of the decisions front-line people make with an ERP system were the responsibility of a manager earlier. It is important for managers to understand this change in their job and encourage the front-line people to be able to make those decisions themselves. Training employees on ERP is not as simple as Excel training in which you give them a few weeks of training, put them on the job, and theyblunder their way through. ERP systems are extremely complex and demand rigorous training. It is difficult for trainers or consultants to pass on the knowledge to the employees in a short period of time. This "knowledge transfer" gets hard if the employees lack computer literacy or have computer phobia[7]. In addition to being taught ERP technology, the employees now have to be taught their new responsibilities. With ERP **systems** you are continuously being trained. Companies should provide opportunities to enhance the skills of the employees by providing training opportunities on a continuous basis to meet the changing needs of the business and employees[8].

6.0some more challenges for ERP implementation

9.1 Inconsistency with existing business processes
9.2 Impact on organizational structure (front office vs. back office, product lines, etc.)
9.3 Changes in employee responsibilities
9.4 Availability of internal technical knowledge and resources

7.0challenges for indian smes

1. Inadequate infrastructure, finance
2. Absence of adequate knowledge, technology
3. Enhancing Access to Global Markets by greater policy coordination within the Indian Government
4. Promoting Small-Scale and Cottage Industries, and Regional Cluster Development by removing policy impediments
5. Enhanced competition

V. CONCLUSION

ERP represents an important technology investment option for operations managers.ERP implementations represent high-risk projects that need to be managed properly. As more and more organizations move from functional to process-based IT infrastructure, ERP systems are becom.ing one of today's most widespread IT solutions.ERP systems are enterprise-wide on-line interactive systems that support cross-functional processes using a common database.ERP implementation should not be viewed as just an IT solution but as a system that would transform the company into a more efficient and effective organization.

Study of ERP challenges plays important role for successful implementation.Challenges provide evaluation of new information function provided by ERP which acts as drivers.It increases SMEs' efficiency and productivity in the current global economy in terms of benefits.Study of challenges also improves productivity and overall business performance. The study provides a very useful reference for scholars and managers to identify the relevant issues of ERP projects failure in developing countries.

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