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Implementation and Updation of ERP Systems In India: A Survey

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Abstract - In recent years there has been an increase in using Enterprise Resource Planning (ERP) systems in large companies and government corporations mainly in developed countries. While there is wide adoption of ERP systems in Western economies, developing countries lag far behind. However, due to recent economic growth, developing countries such as India are increasingly becoming major targets of ERP vendors. There is an urgent need for understanding ERP implementation issues in developing countries, as ERP systems are still in their early stages in these countries. They face additional challenges related to economic, cultural and basic infrastructure issues. This research investigates the organisational and national context within which ERP is adopted and used in India, and how the context and ERP influence each other. In general, this research is based on the need to study organisations in their societal contexts and information systems in their organisational settings. This research focuses on the controversial debate on the conflict between standardization imposed by ERP systems and localisation of business practices. This study also provides some key insights into the implementation and use of ERP systems in the public and the private sectors in India. Case study findings suggest that the company sector plays an important role in ERP implementations in several key dimensions. ERP systems with in-built business practices express the tendency toward standardisation. In addition, the study investigates the challenges faced by organisations implementing ERP systems in India and factors influencing ERP upgrade decisions. Findings of this research suggest that ERP implementation and upgrade is influenced by, but not necessarily bound by, existing contextual factors -- national and organisational.

Keywords: ERP Systems, Implementation, Updation, Drivers, India.

1. INTRODUCTION

WHAT IS ERP?

An ERP system is a packaged business software system that allows a company to [3]:

- automate and integrate the majority of its business processes,
- share common data and practices across the entire enterprise, and
- produce and access information in a real-time environment

An ERP system as “a packaged software product that can be bought ‘off-the-shelf’ by an organisation in order to integrate and share its information and related business processes within and across functional areas”[1][2]. This definition emphasizes the integration, laid by ERP, between various organisational networks, in particular functional divisions within organisations like finance, marketing, procurement, inventory, sales and distribution, human resources planning and payroll while downplaying the implicit side of the ERP systems, for example business processes embedded in the ERP.

2. RESEARCH BACKGROUND AND PROBLEM

Due to improved business productivity, streamlined business operations, and increased cost savings [4], organisations worldwide have launched initiatives to integrate ERP systems into their existing business environments. There has

been a growing increase in using Enterprise Resource Planning (ERP) systems developed by, for example, SAP, Oracle, BaaN, PeopleSoft and JD Edwards as a business information system platform for large organisations and government corporations in developed countries such as USA, UK, Canada, and Australia [2].

“ERP systems have now been adopted by the majority of the Fortune top 500 firms, and as the high end of the market becomes saturated, ERP systems are filtering down to medium-sized organizations, and to regions beyond those initially penetrated in Europe and North America”[5].

While there is wide adoption of ERP systems in Europe and North America, developing countries lag far behind [6][9]. However, due to economic growth, developing countries such as India are becoming major targets for ERP vendors [7][8][9]. In some developing countries, for example India, a number of large and mid-sized organisations have implemented ERP solutions and more are expected to follow suit. The majority of adopting organisations that joined the ‘ERP bandwagon’ [11] presumed that with relative ease they can benefit from the alleged ‘best business practices’ that are merged within ERP systems.

However, the transfer of information systems like ERP - typically developed in developed countries - to developing countries is often marred by problems of mismatch with local, cultural, economic and regulatory requirements. For instance, Huang & Palvia state that: “Meanwhile, ERP is beginning to appear in many organisations of developing countries. Little research has

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been conducted to compare the implementation practices of ERP in developed vs developing countries. ERP technology faces additional challenges in developing countries related to economic, cultural, and basic infrastructure issues"[10].

Popular press and trade journals have documented both successes[12], and failures [13][14][15][16] but with very little explanation on the underlying causes. Failure rate of ERP implementations in developed countries to be between 66% and 70%[18]. Since the trade press is now replete with articles on ERP failures in Europe and North America where most of these systems originate from, we agree with the Huang & Palvia[10] argument that ERP implementation is likely to be more problematic in less developed countries like India, given that "ERP technology faces additional challenges in developing countries related to economic, cultural, and basic infrastructure issues".

The difficulty in ERP implementation in developed countries may be exacerbated by the claim that ERP embodies established ways of doing business thereby requiring organizations adopting ERP systems to change their business processes to conform to business practices inbuilt in ERP packages. Vendors argue that the adoption of these best practices makes the configuring of the software less costly and brings about improvement in the organisation's processes. Consequently, organisations and their members often experience pressure to adopt these practices[19].

ERP systems are developed by vendors who draw on their existing sources of knowledge, resources and norms. These would include the developer organisation's own business strategy and establishing norms about what constitutes best practice. In general, the 'spirit' of ERP packages rejects beliefs about the value of having a single enterprise-wide system, and hence tend to have features that are aligned with cross-functional process integration and enterprise-wide data sharing [20].

Developers, while modeling likely organisational requirements in order to design the system, usually draw on the network of organisations to which they have access. These 'referent' organisations are usually those from their home market and other markets in which they have a major presence. Such markets are likely to be defined by national and industry boundaries. The structures embedded in the resultant package will therefore reject the context of the group of companies that the developers interacted with most closely during the design and development of the software. As a result, organisations adopting ERP systems may find the assumptions embodied by these systems about the nature of organisations and the ways in which they operate run counter to their own existing structures and work practices. Soh *et al.* (2000), for instance, observed misalignments between ERP packages and organisational structures expressed in formal rules, procedures, and cultural norms in their study which was conducted in Singapore. They stated that:

"Our findings suggest the misfit issue (gaps between the functionality offered by the package and that required by the adopting organisation) may be worse in Asia because the business models underlying most ERP packages reject European or U.S. industry practices. Procedures in Asian

organisations are likely to be different having evolved in a different cultural, economic and regulatory context"[16][17]. Furthermore, ERP being capital intensive, is likely to be faced with constrained IT budgets [21] due to poor economic performance in this region. Cultural conflicts escalate implementation cost, and can lead to long implementation period as organisations spend more time and resources in resolving cultural conflicts. This becomes a twofold problem: companies lack the financial resources to gain access to tailored world-class ERP systems; and ERP companies are not prepared to deal effectively with the customisation processes that these markets require. In many cases, the basic infrastructure for supporting ERP may be lacking or insufficient to enable organisations to reap optimum benefits from ERP investments. ERP implementation and usage also require specialised skills which may not be sufficiently available in developing countries.

The arguments above suggest that there is often a gap between the system and specific contexts, practices and requirements of particular user organisations. We can conclude that the underlying business models in-built in ERP have implicit contextual biases such as country (for example, European or American practices), sector (for example, private sector), industry (for example, manufacturing), and even biases in organisational practices (for example, process-oriented workflow). On this note, we argue that where contextual difference between the ERP package vendor and the adopting organisation exist, it is important to explicitly consider the difference and how it may influence the adoption and subsequently the use of the ERP package. Therefore, this research will seek evidence on how the organisational context influences ERP systems implementation and upgrade and how the organisational context is affected by the implementation and use of ERP system using India as a case study.

In spite of all the benefits, implementing ERP can be a risky undertaking [18]. Due to the behavioural and management related challenges in the implementation process many ERP projects have been terminated[22]. It is imperative for organisations to be aware of the challenges and the experiences of others, and to learn from their challenges and practices, because of the complex and integrated nature of ERP, and the large investment involved[23][24]. Identifying challenges relevant to local companies is one way to increase the chances of a successful local ERP implementation. Therefore, this research will aim to identify challenges faced by Indian organisations during ERP systems implementation. As software vendors enhance their products to respond to anticipated business needs, they release upgrades with more features and better performance. Although performance improvements are not necessarily anticipated in an upgrade, it is reasonable to expect organisations to upgrade ERP systems for the purpose of achieving benefits such as greater efficiency and improved functionality that the current ERP system may be lacking [25][26][27]. To the user of ERP systems, deciding whether and when to upgrade from the current version requires an ongoing process of evaluation.

One of the most neglected issues related to ERP systems is the decision to upgrade from one version to another.

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Although practical guidance to upgrade decisions have begun to appear in the literature[26], most studies of ERP have focused on initial adoption, and empirical research on ERP upgrade practices and decisions has been limited both in developed and developing countries. One of the researchers [28] found that maintenance and upgrades were adopted to realise increased business benefits and that cost was a major concern in those decisions. Although valuable, Ng's study combined maintenance and upgrade decisions together making it difficult to understand the upgrade decision process independently. Therefore, this research will investigate ERP upgrade practices and decision-making process among Indian organisations.

Based on the suggestions of Friedland & Alford [29] this research adheres to the need to study organisation as located in their societal contexts and information systems in their organisational setting. Therefore, in general this research investigates the organisational and national context within which ERP is adopted and used in India, and how the context and ERP influence each other. ERP systems with in-built business practices express the tendency toward standardisation. This research seek to contribute to the controversial issue on the conflict between standardization and localisation of business practices.

3. DRIVERS FOR ERP

As Walsham[30] states, the 1990s was a decade where companies were turning away from decentralised computing systems in favour of enterprise-wide initiatives for organizational transformation. He argues that company managers began situating their organisations within a global context and in turn they developed a sense of worldwide business solutions. This awareness was supported by international management consultancies whose revenues increase as approaches become more widespread and standardised. These consultancies were the "driving force" behind both ERP adoption and its precursor, Business Process Re-engineering (BPR) which forms an integral part of most ERP implementations[30][31].

In the mid-and-late 1990s, Y2K compliance was a major concern for many companies as well as the wish to replace existing and poor quality systems. Management consultants were touting the global ERP software solutions available from the several vendors as a panacea to the Y2K potential nightmare. Business executives seeking expert advice about operating in the new millennium were encouraged by management consultants and ERP vendors to replace outdated, home-grown systems with a single integrated solution.

Other major reasons reported in the literature as drivers for ERP adoption relate to: improving firms' performance and decision making, reducing labour costs, bureaucracy and errors. Other reasons are: pressure from the side of the competitors, business partner requirements for faster service, integration between functional units, organisational standardization across different locations and globalisation of businesses. Acquisitions and mergers between the units are forcing companies to change and function as a single system. However, for each company the drivers for implementing ERP are different as well as their priority order depends is

likely to be influenced by the organisation's context both internal and external.

ERP drivers can be grouped into four categories: technology, business practices, strategy, and competitiveness[32]. Holland [33] recognised three main dimensions: technical, operational and strategic. Some studies narrow down the reasons even to broader groups: technological and business performance[34]. Based on the literature review, the foremost reasons that have caused fast growth in the use of ERP systems are summarised in the following table :

Table : Drivers for Adopting ERP systems

Technical	Operational	Strategic
Need for a common platform	Process improvement	Y2K compliance
Replacement of legacy systems	Data visibility	Globalisation of business
Systems incompatibility	Operating cost reduction	<ul style="list-style-type: none"> ▪ Growth of an enterprise ▪ Standardisation of business processes ▪ Improve customer responsiveness ▪ Integration between the units and processes ▪ Enhance firm's performance and decision making

Olson[35] summarises two studies, which have examined the motivations for ERP adoption. One study was carried out on U.S. manufacturing organisations and the other on Swedish firms. Organisations studied in both countries ranked the replacement of legacy systems, and the simplification and standardisation of their systems as their primary reasons. Other reasons that received high ranking were the improvement of interactions with suppliers and customers, the gaining of strategic advantage, and the creation of supply-chain in order to link to global activities. Pressure to keep up with competitors, ease of upgrading systems and restructuring organisation received low ranking from both of these studies. Given that there is increased ERP systems implementation in India among large companies and some mid-sized companies are expected to follow suit. Hence, it is imperative to investigate the motivation towards the increased implementation trend.

4. CONCLUSION AND FUTURE WORK

The study deduced that while all the case study organisations have been actively using their systems for five years or more, they are learning that there is really no "hardstop" implementation end point: ERP systems continually evolve to meet demands for additional functionality, capability, and expanded deployments throughout the organisation. Furthermore business requirements are in a state of continuous change to respond to the ever dynamic environment.

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Given that there is no "hard-stop" implementation end-point, Indian organisations are beginning to realise that learning from past implementation experiences - from both internal and external sources - is key to the success of adding ERP capability or functionality.

The findings of this research show that any typical ERP implementation will involve redesigning of existing business processes and customisation of the software. However, it is suggested that customisation, while only a small percentage of the entire system, can be quite significant in creating differences between otherwise similar systems. Organisations should only use small-scale customisation to fine tune their ERP systems to match their own specific strategic and decision-making needs which can be difficult to imitate.

While this study covered all aspects of an ERP implementation, it was not designed to study such issues as the rationale for doing things in certain ways or to determine exact outcome relationships. For example, one key question that our study could not answer is the cost and benefit relationship.

There are a number of questions still to be addressed. Future studies could look at differences by industry type, by size of firms, by number of locations, by number of customers etc.

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