

Implementation of IT/IS in Indian SMEs: Challenges and Opportunities

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ABSTRACT

Globalisation has forced SMEs to think beyond the traditional methodology, in the present scenario Indian SMEs are facing competition from within the country as well as from other developing countries. Small-and medium-sized enterprises (SMEs) have a crucial role to play because of their potential contributions to employment creation, improvement of income distribution, poverty reduction, growth of exports of manufactured products, and development of entrepreneurship, manufacturing industry, and rural economy. It is widely stated in the literature that SMEs in developing countries are important. IT/IS play decisive role in increasing the profitability of the organization. Competitiveness among the SMEs is makes them to think about the use of current available technology. Becoming an inherent part in large organisations, IT is a mechanism that enables SMEs to respond to customer requirements efficiently by enabling information to be transmitted. SMEs endeavour to manage the knowledge sharing process and inter-organizational knowledge. Enterprise Resource Planning (ERP) is best and effective available technology that can be adopted by Indian SMEs to survive the competition. This paper will focus on the available technologies that can be adopted by SMEs for maximizing benefits by taking quick and accurate decision such as ERP.

General Terms

Indian SMEs, Technology in SMEs

Keywords

Small and medium enterprises, Technology adoption, Enterprise Resource Planning, IT/IS, Evolution of technology.

1. INTRODUCTION

In present scenario it is very common thinking that Information Systems are useful for the organisations in gaining the competitive advantage over the others, it helps managers to take decisions according to the requirement of the situation and according to the available resources. Indian SMEs are considered as the backbone of economy contributing to 45% of the industrial output, 40% of India's exports, employing 60 million people, create 1.3 million jobs every year and produce more than 8000 quality products for the Indian and international markets. With approximately 30 million SMEs in India, 12 million people expected to join the workforce in next 3 years and the sector growing at a rate of 8% per year, the SMEs are deploying information technology to take the substantial advantage from it.

The SMEs in India facing various challenges such as the absence of adequate and timely institutional credit facilities, limited capital and knowledge, lack of access to technology and skilled manpower, competition from large enterprises and globalisation. These issues need to be addressed to tap the full potential of the sector, which brings about social and economic development of the country. SMEs are facing competition from multinational corporations in the domestic market [1]. Small & Medium Enterprises Development Act, 2006 the Small and Medium Enterprises (SME) are classified in two Classes respectively.

- (a) **Manufacturing Enterprises-** The enterprises engaged in the manufacture or production of goods pertaining to any industry specified in the first schedule to the industries (Development and regulation) Act, 1951). The Manufacturing Enterprise aredefined in terms of investment in Plant & Machinery.
- (a) **Service Enterprises:** The enterprises engaged in providing or rendering of services and are defined in terms of investment in equipment.

Table 1: Definition of SME as per SME Act, 2006

Manufacturing Sector	
Enterprises	Investment in plant and machinery
Small Enterprises	More than twenty five lakh rupees but does not exceed five crore rupees
Medium Enterprises	More than five crore rupees but does not exceed ten crore rupees
Service Sector	
Enterprises	Investment in equipment's
Small Enterprises	More than ten lakh rupees but does not exceed two crore rupees
Medium Enterprises	More than two crore rupees but does not exceed five core rupees

2. Literature Survey

The challenges faced by developing countries vary. On the organizational level, organizations working in developing countries find the ERP cost is a major barrier for implementing ERP systems especially for SMEs. Thus, most

of the implementation done in ERP is for large scale companies which can afford the costs. This includes multinational organizations [2]. Another barrier for ERP implementation is related to the IT maturity in both national and organizational levels. In developing countries, IT infrastructure has many weak issues related to the IT penetration such as internet and computer penetration in organizations and social levels. This is in addition to the lack of number of computer and internet users on both national and organizational levels. Other factors which lead to lack of implementation are related to cultural factors and lack of knowledge of ERP systems [2]. ERP systems are widely used to extract and process data from different functional areas across the enterprise [3]. ERP systems are therefore called 'Cross-Functional' systems as they integrate business processes across different functional areas of an organization. These systems are sought after to improve the visibility of information across the organization and to allow a better access to information in a borderless environment [4]. Hence, ERP systems are used by large scale companies as well as SMEs. The challenges accompanying the implementation of ERP systems are not limited to the size of the organization, but go further to where the organization is implementing its ERP systems. Developed countries are widely accepting and applying ERP systems in their organizations in comparison with developing countries. Statistics show that 88% of ERP market is in North American and European countries while the rest of the market is in the rest of the world. This gap in ERP implementation is directly related to the economic and technological status of each respective country. Developing countries are facing many challenges in applying information systems/information technology projects due to the poor and unstable economic status which is reflected in the delay of the ERP implementation [5]. The enhancement in the performance leads to the reduction in costs which eventually leads organizations to achieve competitive advantage. Even more, the organizations' vision recently is focusing on how to sustain competitiveness via implementing ERP systems [3]. These organizations find sustaining the competitive advantage over their competitors as a major motive for ERP implementation [6] [7]. Porter's Model for the five 'Competitive Forces' on any organization identifies technology as a driving factor for competency in enterprise organizations. Also, Porter's 'Competitive Advantage Theory' identifies four main determinants affecting a company's competitiveness in its business field. [7] Uses the Porter's 'Competitive Advantage Theory' as a tool to analyse the IT sector in developing countries and explains how ERP systems can gear up the competitive advantages for organizations functioning in such countries. As for an organization to obtain a sustained competitive advantage states that an ERP system implementation has to be of 'value creating strategy' where no other competitors are using as an advantage of their independent strategies. ERP implementation was not deployed by large scale companies alone, but also many SMEs have started the process of implementing ERP systems to have a competitive advantage in their respective market share. SMEs seek to reorganize and streamline their internal and external operations via implementing ERP systems. SMEs were, in many cases, enforced by large scale companies to implement ERP systems in order to be linked with external organizations and being able to continue working with them. This is done as part of the Supply Chain Management (SCM) systems or Customer Relationship Management (CRM) systems. Although the importance of applying ERP systems in both SMEs and large organizations are equal, SMEs normally face challenges in terms of limited resources and lack of

appropriate infrastructure [2]. The size of a business establishment depends on a variety of factors, of which two most important ones are market and technology [3]. As per the reports of 2010 on SMEs 40-70% of SMEs are not registered although they are playing tremendous role in employment generation and contributing in the economy of the country.

3. Technology and SMEs:

Since the beginning of 1991, globalization has made the organizations to think about the adoption of available technology so that they can face the challenges of the emerging market trends and the competition from the Asian and European SMEs. Globalization led to immense competition and companies, especially in the manufacturing sector, realized the need for more customer focus and shortened product life cycles. Corporations had to move towards agile manufacturing, continuous improvement of business processes and business process reengineering. This required an integration of manufacturing with other functional areas like accounting, marketing, HR, etc. Enterprise Resource Planning (ERP) system has emerged as a common and necessary platform among small and medium scale enterprises not only to remain competitive in the global business scenario but also to streamline their own internal processes to collaborate with their foreign partners in their supply chain. ERP is generally viewed as necessary infrastructure and is also a strategic weapon in automating business processes while providing visibility to those processes throughout the enterprise

ERP system consists a suite of software modules that lets an organization share common data and practices across the enterprise to access information in real-time environment [8]. ERP if implemented successfully can have a significant impact on organizational performance through automation and integrating the majority of business processes [9] on small, medium and large sized organizations. Small and medium sized enterprises (SMEs) have become a major contributor to the economies of the countries throughout the world [10]. Not only in developed countries but also in the developing countries like India, during the past 50 years, the small-scale sector has played a very important role in the socio-economic development of the country. It has significantly contributed to the overall growth in terms of the Gross Domestic Product (GDP), employment generation and exports.

3.1 ERP Overview

Enterprise Resource Planning (ERP) is business management software it integrates internal and external management information across entire organisation. It has been defined by various authors in various manners. Few of them quoted ERP as vendor software, integrated vendor software, enterprise wide-systems, enterprise systems, enterprise business-systems, and enterprise application systems, but however with no significantly different [11][12] defines ERP system as a "customizable, standard application software which includes integrated business solutions for the core processes (e.g. production planning and control, warehouse management) and the main administrative functions (e.g., accounting, human resource management) of an enterprise. Slight differently, [13] however, defines it as a comprehensive package software solutions seek to integrate the complete range of a business processes and functions in order to present a holistic view of the business from a single information and IT architecture" [11]. The purpose of ERP is to facilitate the flow of information between all business functions inside the

boundaries of the organization and manage the connections. ERP has its roots in manufacturing as the name is an

extension of Manufacturing Resource Planning (MRP II) [14]. ERP system is considered

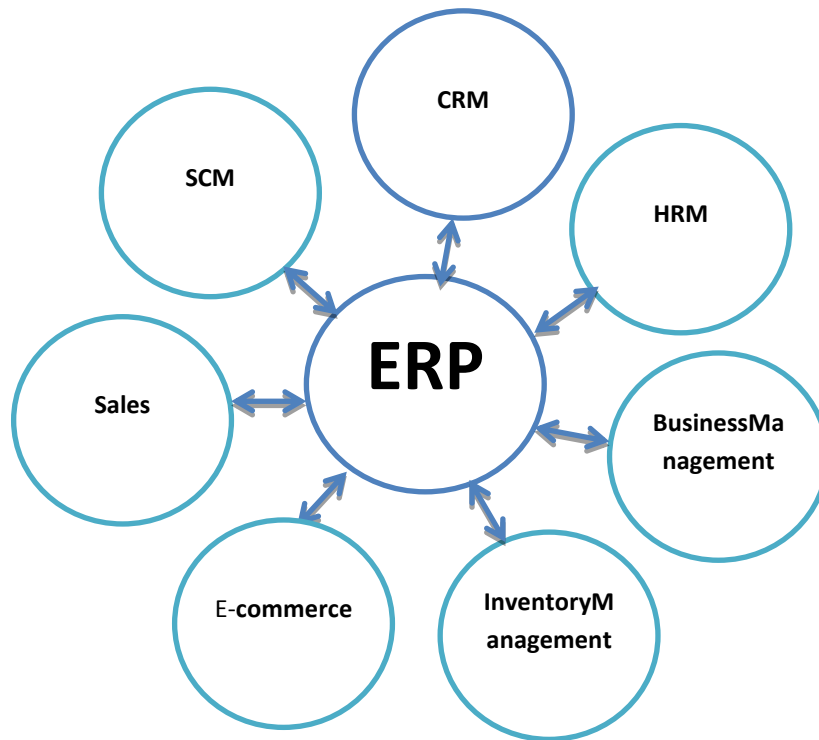


Fig. 1: ERP Business Functions

as the price of entry for running a business and for being connected to other businesses, which allows for business-to-business electronic commerce [15]. Many multinationals restrict their business to only those companies that use the same ERP as them [16]. Enterprise resource Planning (ERP) systems are sophisticated IT infrastructures [17]

Before the invention of ERP Systems every Organisation has different software in different departments as per their requirements ERP systems are software solutions integrating the various functional spheres in an organization and as a link through the entire supply chain, aimed at adapting best practices for providing the right product at the right place at least cost [18]. ERP means the techniques and concepts for integrated management of business as a whole for the effective use of resources to improve the efficiency and productivity of the enterprise [19]. Business functions or modules that are generally used in organizations are shown in figure-1. Modules may vary according to the requirement.

3.2 ERP Implementation

Implementation of ERP System is a complex exercise, involving many process alterations and several legacy issues. Organizations need an implementation strategy encompassing both pre implementation and implementation stages. The fallout of a poor strategy is unpreparedness of employees, implementation not in conformity with wider business strategy, poor business process redesign and time and cost overrun.

Information systems (IS) Implementation is quite difficult. It is therefore not surprising that implementations of ERP would be equally if not more difficult due to their size, scope and complexity. The benefits of ERP cannot be easily achieved and inconsistent outcome of the system have been reported [20] The very fact that about 60-70% of all ERP implementations in organizations end up with failure [21][22]..

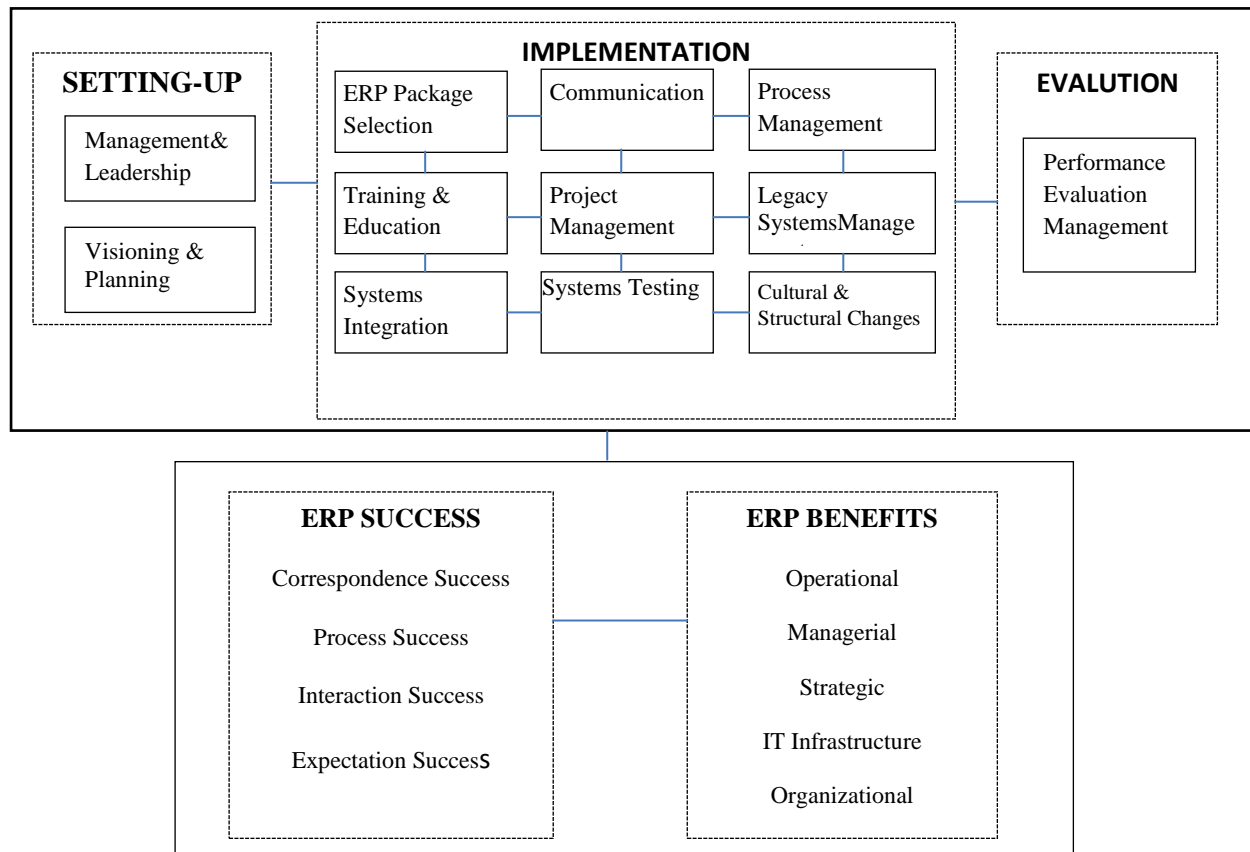


Fig. 2: Taxonomy for ERP critical factors, M, Al-Mashari et al. (2003)

3.3 Issues and challenges

Although the number of SMEs seems to be growing, there is still need to aware SMEs about the available technology that can be used for the business and for the proper utilisation, some of the challenges faced in the implementation of IT/IS are :

3.3.1 Lack of Awareness

Most of the SMEs are not aware of the available technologies that can be implemented for the better decision making, increasing productivity.

3.3.2 Lack of IT Support

IT personnel are in high demand and are often attracted to bigger companies and MNCs. It is very difficult for SMEs to attract good IT personnel. It is even more difficult to retain them. Moreover, good IT personnel are expensive and may not be affordable by most SMEs.

3.2.3 Lack of IT Literacy

Employees in SMEs started from the ground up after working with the company for many years. Some of them are often holding supervisory and managerial positions. These employees may not be IT literate and often have high resistance to the changes in the working process that they are comfortable with after many years.

3.2.4 Uneven IT Awareness and Management Skills

As a company grows, new managers are often introduced into the company. There will also be old managers who are promoted from the rank and file. Some of these managers may not been trained in the leadership and management skill. These uneven skill among the managers often caused conflicts during the implementation.

3.2.5 Lack of Experience in Using Consultants

A good consultant often saves time and effort, and help to prevent pitfalls during the IT projects. However, most SMEs are devoid of experience in working with consultants. The lack of knowledge in the field of IT makes it difficult for them to identify good consultant for the projects. They often feel that the consultant cost is too high and they can handle it with their own staff. If the company has no staffs that possess experience and knowledge in the IT project, avoiding external help often costs more to the company eventually.

4. Level of SMEs on the basis of IT/IS adoption:

Level 1: SMEs in the nascent stage of IT adoption having only the basic IT infrastructure in place, such as the basic level computerization, LAN, etc. can be categorized into this level of IT/IS adoption. These companies use IT only for basic communication and data processing.

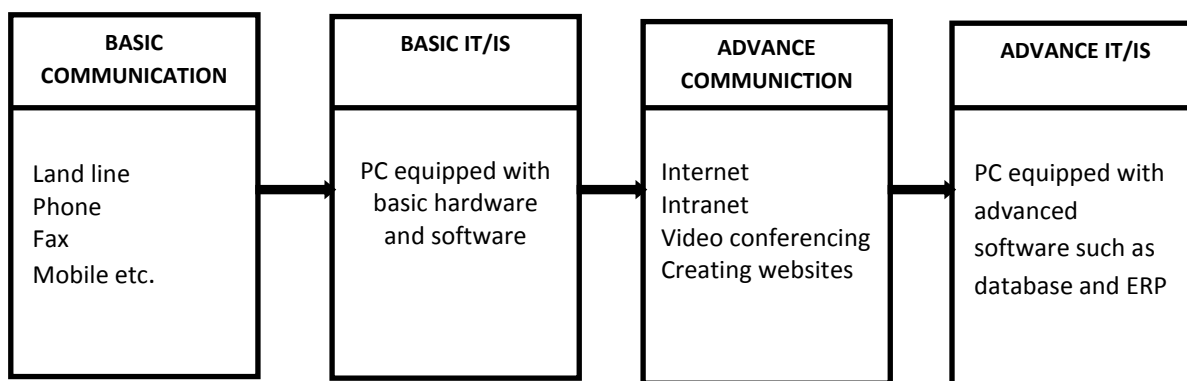


Fig 3: Evolution of IT/IS and its adoption as envisaged in SMEs

Level 2. SMEs that have computerized certain standalone functions without any cross functional linkages can be categorized in Level -2 of IT/IS adoption. Organisations at this level would be having several point applications aimed to automate selective functions. There will be islands of information with little or no integration between the applications.

Level 3. SMEs that have automated their core business functions, achieved complete process automation and integration are considered to be in level-3 of IT/IS adoption. This will include organisations which have integrated transaction processing environments with automation of core business processes and functions. The firms will be using an enterprise level resource planning application (ERP) which integrates various business processes across functional departments

5. Conclusion

Most of the Indian SMEs are either at level 1 or at level 2 in terms of technology adoption, the main reason behind this backwardness is lack of literacy and lack of information regarding the technology, SMEs need to be aware of appropriate technology and people need to be educated accordingly. In today's era of globalisation SMEs need to attain level 3 to compete. Enterprise Resource planning helps SMEs to enjoy unimaginable benefits. Nevertheless the problems of ERP in SMEs are also present. There are still ups and downs in it

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