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A CASE STUDY ON IMPACT OF ERP IMPLEMENTATION ON SMB FIRM PERFORMANCE

Janipella Shanti*

Sunil Kumar**

Abstract :

The deployment of business automation and processes integration systems like enterprise resources planning (ERP) has brought in remarkable successes in helping companies to stream line their businesses. ERPs integrate material, monetary and information flows through a set of integrated application modules (Scapens and Jazayeri, 2003; Nicolaou, 2004a). They are implemented to help manage the organization in an integrated manner (Nicolaou, 2004a). Wagner, Scott and Galliers (2011) find that ERP adoption leads to improvements in transaction processing capabilities, in coordinating record keeping and reducing the cost of duplicating data.

Selecting the right ERP solution and technology platform are the key factors in ensuring the success of a business automation and integration system. However, the small and medium businesses (SMBs) are yet to unlock their potential and see successes in the same areas because of the lack of knowledge, process compatibility and easy to deploy integrated software systems.

The methodology adopted is 'Case Study' method. The paper examines the extent to which the implementation of ERP impacts both business strategy and organizational performance. It helps to understand how ERP can help various ways to streamline businesses, improve productivity and efficiencies of SMBs.

Keywords: *ERP Implementation, Organizational Performance, Performance Management, Management Strategy, Change Management, Business Processes Re-engineering, Business Automation.*

Introduction

The implementation of Enterprise Resource Planning (ERP) has brought in remarkable success in favour of companies to stream line business, reduction of costs, improvement in productivity, augmenting service quality, amplifying processes effectiveness and operations excellence. This progress has been seen in the same way by companies transversely in their business units, internal departments and across their divisions.

* **Janipella Shanti,** Assistant Professor, MBA Department, International Institute of Business Studies, Bangalore, Email Id: shantisunilbang@gmail.com

** **Sunil Kumar,** CEO, Greenestep Technologies, Bangalore, Email Id: sunil.kumar@greenestep.com

ERP is short for ***enterprise resource planning***. Enterprise resource planning (ERP) is a business process management software that allows an organization to use a system of integrated applications to manage the business and automate many of the back office functions that are related with different areas of technology, services and human resources. ERP software integrates all the facets of an operation, including product planning, development, manufacturing, sales and marketing. ERP software is considered an enterprise application as it is designed to be used by larger businesses and often requires dedicated teams to customize and analyze the data and to handle upgrades and deployment. In contrast, small business ERP applications are lightweight business management software solutions can be customized for the business industry.

Selecting the right ERP Solution and technology platform are the key factors in ensuring the success of a business automation and integration system. The research paper helps to understand how the 'OnCloud ERP' can help various ways to streamline businesses, improve productivity and value add to SMBs. The aim of this paper is to review the current research surrounding the benefits of implementing ERP systems and to explore this relationship using success and failure of implementation in SMB.

Research Objectives

1. To investigate the relationship between ERP adoption and business performance.
2. To determine the issues and challenges faced in ERP implementation

Methodology

The Research design is exploratory in nature and the methodology of Case Study is adopted. A total of ten companies have been chosen for analysis of which five Indian companies and five companies from USA were chosen as in (Table 4). The data collected is primary data about the companies from the vendor of ERP implementation. The software employees involved in implementation were surveyed in areas of pre and post implementation stages such as type of industry, functional and domain knowledge specific to the industry, number of user licences, implementation duration and implementation costs. The owner of the vendor company was interviewed to come up with the perception of issues and challenges faced in ERP implementation with specific reference to the SMB market and companies being researched. The type of data thus collected was qualitative data. This paper provides analysis of the ERP initiatives reported by select companies in their annual reports and company websites. The websites, post implementation inputs, feedback reports were premeditated to come up with similarities and differences regarding company performance.

Literature Review

MSME in India United Nations Industrial Development Organisation, UNIDO (2003) in the WSIS Report indicates that the only way to reduce poverty in a sustainable way is to promote economic growth, through wealth and employment creation. In developing countries, SMEs are the major source of income, a breeding ground for entrepreneurs and a provider of employment. They are a vehicle for mushrooming entrepreneurship in the Private sector. MSME contribute to the employment and GDP of India. (Table 3)

Micro, Small and Medium Enterprises

(MSMEs) play a significant role in the development of the industrial economy of the country. The sector contributes approximately eight percent to the national GDP and employs over eight crore people in nearly four crore enterprises. The sector accounts for 45 percent of manufactured output and 40 percent of exports from India. This MSME data is on the basis of results of Third and Fourth All India Census of Small Scale Industries/Micro, Small & Medium Enterprises.

According to the Ministry Of Micro, Small and Medium Enterprises, the number of MSME units in India has grown at a CAGR of 4.5 per cent during the financial years 2007 to 2011. MSMEs has shown constant growth rate of more than 10% every year till 2010-11 whereas in the year 2012-13 growth rate was 13.89%. The cumulative investments in the MSME units rose at a CAGR of 11.5 per cent during the same period and stood at 31.2 million at the end of financial year 2011. A complex and unfriendly business ecosystem pushes small entrepreneurs towards the informal and unregistered segment, which is growing faster than the Organised segment.

ICT and SMB ICT can enhance MSMEs in order to keep them competitive and sustainable. Ritchie and Brindley (2005) define Information and Communication Technology (ICT) as "the array of primarily digital technologies designed to collect, organise, store, process and communicate information within and external to an organisation and, in our case, SMEs". ICT covers technologies like the simple telephone, point-of-sale systems, stand-alone PCs, networked environments, Internet and credit card facilities. The SME can utilize the potential of ICT by aligning the unit operations with use of basic or complex ICT technologies.

A study carried out by FICCI indicates that that in the last 15 years, Internet has turned out to be one of the most promising tools which SMEs can leverage for their growth. Electronic Commerce is giving MSMEs access to markets producers could not reach or afford to reach hitherto. New generation IT models including Software as a Service (Saas) and Infrastructure as a Service (IaaS) are helping SMEs overcoming the technological divide.

ERP and SMB Performance Despite its size, the SMB segment is plagued with many problems like a highly unorganised and fragmented segment with problems of scalability and funding issues There are operational problems due to supply chain inefficiencies. Further SMBs have been facing stiff competition both in the domestic and global markets. This segment has therefore, a compelling need to streamline their operations, standardise the processes, and improve their productivity. These business needs are thus driving increased investments in IT solutions that can enable meet business objectives and improve the business performance. The gap in business improvements can be filled by adopting a company specific ERP solution. The challenges are providing opportunity to the Information and Communications technology (ICT) players to comprehensively evaluate and devise an SMB-specific growth strategy. The need of the hour is thus for cost-effective technological solutions backed by scalable business models that can easily help SMBs understand the impact of solutions on day to day business operations and can help SMBs to grow.

The eagerness for adopting ERP systems for SME include pressure from clients, gaps in efficiency and productivity, the need to gain

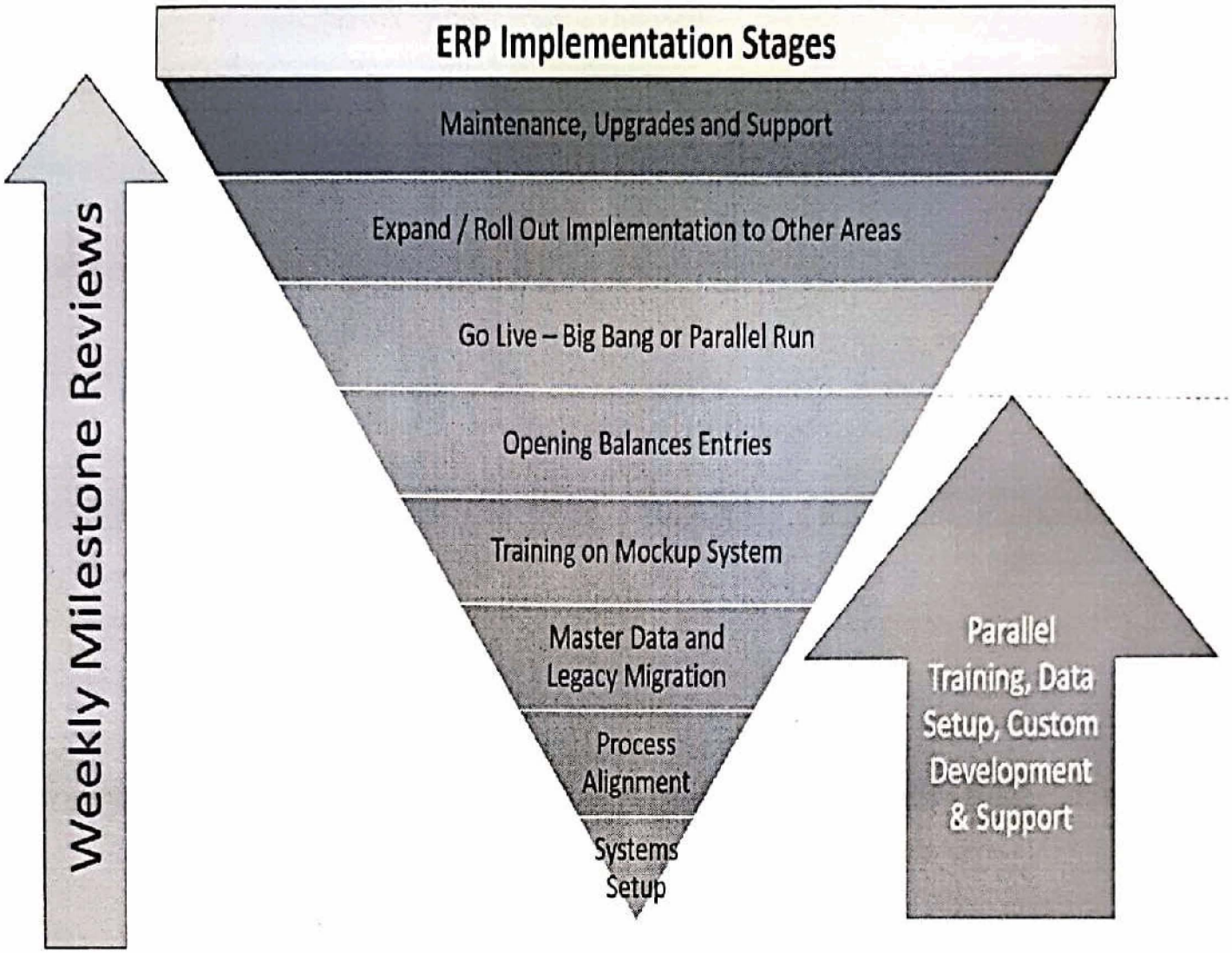
competitive advantage and respond quickly to the dynamic market scenario. Firms that have been successful in implementing and using ERP systems can get superior financial performance by raising revenues or decreasing costs (Nicolaou & Bajor, 2011). A noticeable reduction in raw materials and finished goods inventories should also be an expected outcome for most ERP adopting firms. The increased efficiency in business processes that results from internal integration, higher quality information, and external integration with trading partners, should produce savings in product cost as a proportion of sales.

Garg (2006) mentions the key benefits of ERP implementation being lower manufacturing cycle time, reduced inventory, systematic ordering, reduced manpower, rapid response to changing market situations. The benefits also translate into better utilization of resources, increased customer satisfaction and a global presence.

The reasons for implementing ERP are either for technical gains or for business reasons. In a long-term examination of differences between ERP adopters and non-adopters, Nicolaou (2004a) reported that a lag of at least 2 years was necessary before adopters would begin to demonstrate positive differential financial performance in comparison to their non-adopting peers. One of the technical reasons for adopting ERP is replacement of disparate systems into a single integrated system (Hitt et al., 2002). They also mention the business reasons being automation and reengineering of business processes for ERP implementation. In addition, benefits expected from implementation of ERP systems include tangible benefits like reducing costs, reducing operations time, and a lean organization, while intangible benefits like information integration, better information quality, and increase in customer satisfaction also exist (Loh et al., 2006; Nicolaou, 2004). Shang and Seddon (2000) created an ERP benefit list from a review of 233 ERP-vendor success stories published on the worldwide web to confirm the content of their analysis. The ERP benefits found were classified into five benefit categories namely operational, managerial, strategic, IT infrastructure and organisational.

Cloud adoption will continue to transform ecosystem Cloud model is one of the key requirements for SMB penetration. This technology platform is enabling SMBs to adopt business applications without large investments and attain technology benefits without being concerned about the management and technical expertise required. As a result, SaaS adoption by SMBs in India is growing at a CAGR of more than 25 per cent and is expected to reach 20 billion (~USD 370 million) by FY2018.

ERP Implementation ERP system implementation can follow two kind of approaches. One appraoch is the plain vanilla version of the ERP when the business process re-engineering is carried out to fit the standard ERP system functionality. The second approach is where the ERP system is customized to fit the business processes of the organization.



Typical ERP Selection and Roll Out Stages as per the ERP vendor

1. ERP vendor Shortlisting
2. BPR (Business process reengineering)
3. Master Data Import and Legacy Data Migration
4. Training on Mockup DataBase
5. External Reports Review and Customization/Thirdparty Integrations
6. Opening Balances and Opening Stock Entries
7. Go Live and Live Transaction Entry
8. Support Handover, Review Implemented System and Feedback

Company details This paper is about the ERP implementation vendor that has been involved with both US companies and Indian companies. The details of the Industry, Business impact and post implementation status for the companies under study are mentioned. Table 1and 2 are showing the number and types of business organizations in this case study.

Companies from US Region: Table 1

#	Company Reference	Industry and Business Type	Implementation Status	Business Impact
U1	**Gift Basket and Chocolate Supplier and Distributor**	B2B and B2C : Retail and WholeSale	Implemented 4 Years ago	Successful and Revenue Growth of 150%
U2	**Aviation Products DIstributor**	B2B : WholeSales Distribution	1 Year Ago	Streamlined Distribution Business
U3	**Home Furnishing Products**	B2C : Retailer	Live for last 2.5 Years	Process Streamlined, Ecommerce Sales Channel and 25% Increase in top line.
U4	**HVAC Equipment, Parts and Supplies**	B2B WholeSales and Distribution	Live for last 3 Years	End to end process improvement and costs reduced by 15%
U5	**Sporting Goods Supplier**	B2C Retailer	Live 2 years	Partially Successful. Still learning. Revenues went up by 20%

Companies from India Region: Table 2

#	Company Reference	Industry and Business Type	Implementation Status	Business Impact
I1	**HVAC Dealer and Servicing**	B2B, Services	1 Year, Implemented,dropped and reviving again	Inventory Parts Visibility, Streamlined Communication. Single DataStore
I2	**Display and Writing Boards Supplier**	B2B and B2C Manufacturer, Retailer and Distributor	1 Year : Failed	Implemented and dropped. User Resistance for IT and tech savvy is low
I3	**Electrical Fabricator and Part Supplier / Services**	**B2B :** Electrical Installation Supplier and Service Provider.	1 Year. Did not go live	2 Years tried various options to go live, but not successful. Owner is keen. Users Profile Mismatch.
I4	**Network Solution Provider**	B2B IT Network Supplies	Agreed to implement. Did not pickup. ERP Cost Decision impact.	Scope changed from Inventory Mgmt to Project Management.
I5	**Mobiles Retailer and Dealer**	B2C and B2B Retail and Wholesales	Implemented and Revisted after 2 years: Failed	Business gone bankrupt.

Implementation Issues and challenges

Several factors continue to challenge IT adoption among SMBs like high cost of ownership, poor governance, limited top management support, fear and lack of vendor support and adherence to Service level agreeements (SLAs), unorganised segments, non scalable sizes, limited technology skillsets adversely impact the usage of ERP during and post implementation of the ERP.

1. Mismatch of product and features expectations: Requirements are gathered, validated, and tested based upon a limited scope. There is a conflict of requirements and misaligned expectations between the ERP vendors and customers. This issue can be overcome if ERP vendors can evolve their ERP software to provide additional flexibility in configurations to allow variances based upon industry, line of business, country and even user preferences. Also the requirements data should be collected in a Logical progression and across all business stakeholders. In addressing the business need the vendor can go for Automation or create the Business processs to address the need.

2. Process re-engineering and change management: Business Process Reengineering (BPR) is the redesign of business processes and the systems, policies, and organizational structures that support them to optimize the work flows and productivity in an organization. Process Change Management and Adherance. Alignment of business processes to ERP software, rather than modifying the software, has proven to be a success factor for implementation. Customization is compounded by an unwillingness to change business processes.

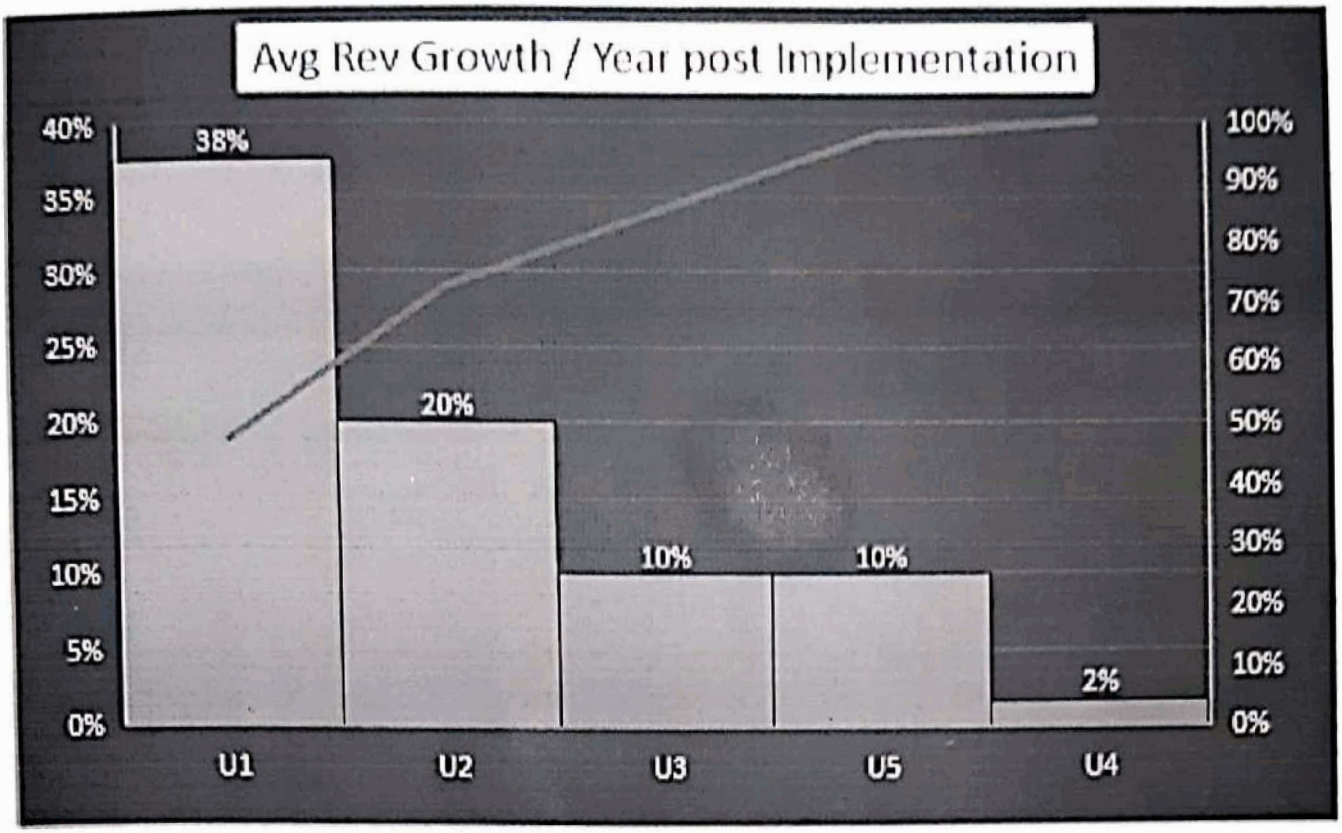
3. The amount and quality of Data availability is a challenge. Even when data is composed there is no standardization and Syncronization of various departmental data.

4. End Users Roles and Undestanding Levels This can be resolved by User Training for system acceptance and Usability. Domain and Functional Knowledge Transfers.

5. One major factor for failure is considering ERP implementation to be a mere automation project instead of a project involving change management. It is a business solution rather than an IT solution, as is perceived by most organizations. Yet another reason for failure is over customization of the ERP system. Therefore, organizations need to very carefully go about their ERP implementations, if they are to be successful.

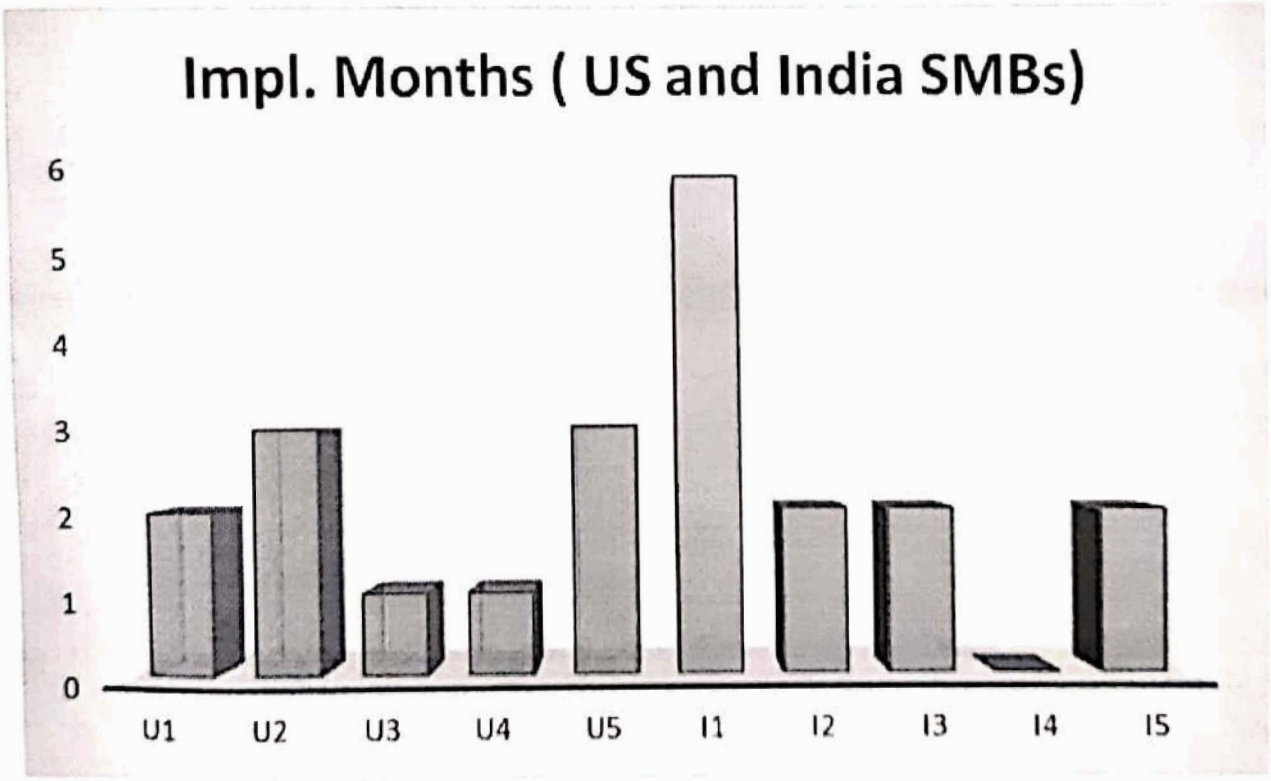
Results

1. The US company Gift Basket and Chocolate Supplier and Distributor from Table 1 has shown a Revenue Growth of 150%, Home Furnishing Products showed a 25% increase in top line. The HVAC Equipment, Parts and Supplies company experienced costs reduction by 15%. The chart indicates the average revenue growth which were averaged out for the number of the years post implementation.



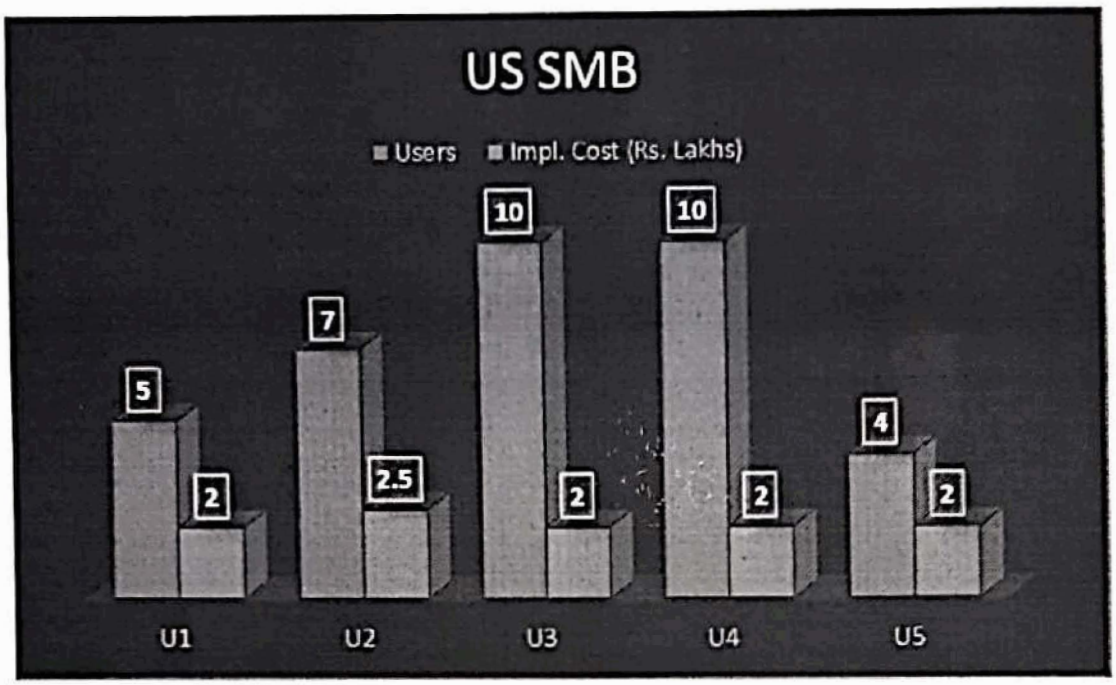
1. Chart indicating average revenue growth of US companies

2. Although the implementation duration as given in Table 4 is similar for US based companies and the Indian companies but the effective hours spent on implementation in US companies is lesser as compared to the Indian companies.

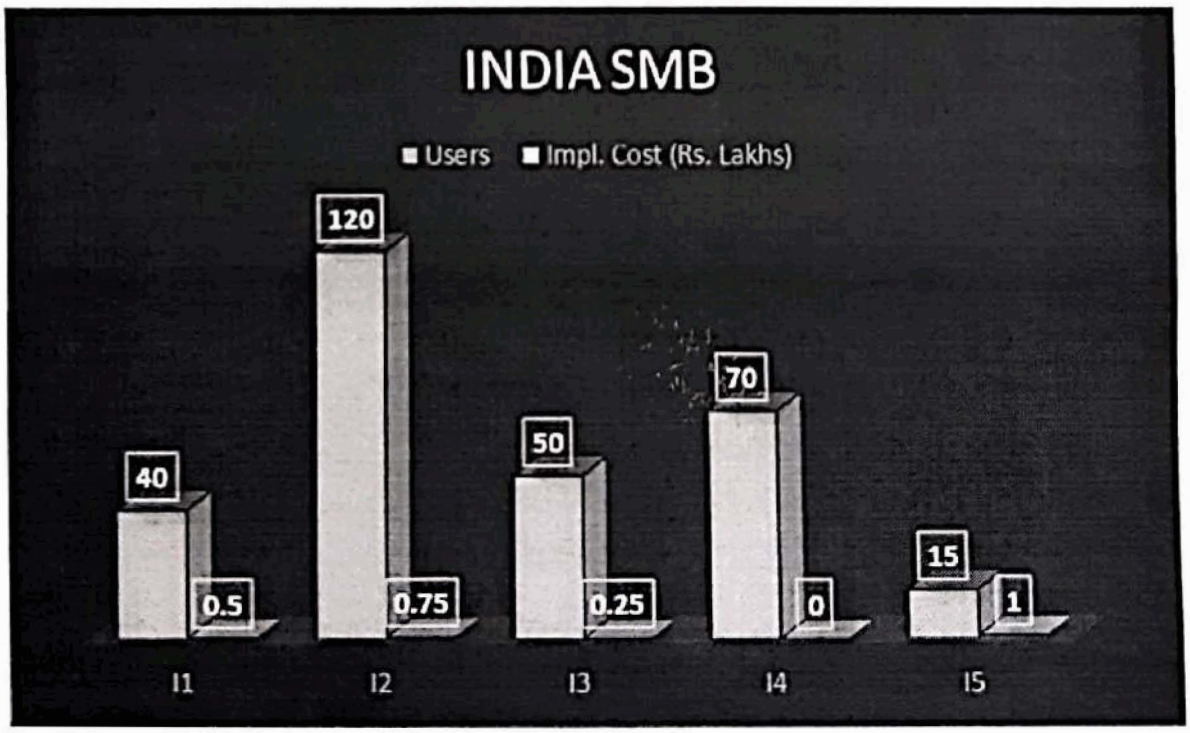


2.Chart indicating ERP implementation of US and Indian companies

3. The number of users in the US SMBs are less but the associated implementation costs are high, whereas number of users in the Indian SMBs are more and the associated implementation costs are low indicating that inclination of Indian spending on ERP products and services is low.



3.Chart indicating number of users and implementation cost of US companies



4. Chart indicating number of users and implementation cost of US companies

4. The issue of User Resistance and Technical Profile was found in Indian companies indicating that employees are good with functional knowledge but they have resistance while using the ERP product.

5. There was a change in Scope of project during implementation in the Indian companies.

Managerial Implications

The resource scarcity, the lack of strategic planning of information systems, the limited expertise in Information technology and the opportunity to adopt a process-oriented view of the business are among the factors that strongly influence, either positively or negatively, ERP adoption by SMBs(Levy et al.,2000).

There are certain measures that can help ERP adotption the first being **Developing a long term vision** and **Top management** involvement to enhance the SMB performance. The Strategy and the **value proposition** should be prepared to meet the market needs .Also the company needs to clearly **Define measurable business metrics** like Return on Investment and other financial and operational measures. There should be enough planning on the **Post-implementation stages** access and support.

Cloud model is one of the key requirements for SMB penetration. Cloud adoption will continue to transform ecosystem.This technology platform is enabling SMBs to adopt business applications without large investments and attain technology benefits without being concerned about the management and technical expertise required. As a result, SaaS adoption by SMBs in India is growing at a CAGR of more than 25 per cent and is expected to reach 20 billion ($USD 370 million) by FY2018. Corporate security concerns, initial infrastructure costs and recurring maintenance expenses are also leading to demand for Infrastructure-as-a-Service (IaaS) among SMBs, especially the managed infrastructure models.

Conclusion

With the advent of a challenging business environment, SMBs are now implementing ERP packages to enable the company to be more competitive, efficient and customer-friendly. However the SME market poses some unique problems to ERP vendors and implementers. Comapnies can see success in ERP implementation by alignment of business processes to ERP software rather than modifying the software. The findings of this paper hold significance for any organization in the small and medium scale sector which wishes to leverage the benefits of integration of business processes by implementing an ERP system in their organization.

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Annexures and Tables

Table 3: Definition and classification of MSME

For the Manufacturing Sector	
Enterprises	Investment in plant & machinery
Micro Enterprises	Does not exceed Rs. 25 lakh
Small Enterprises	More than Rs. 25 lakh but does not exceed Rs. 5 crore
Medium Enterprises	More than Rs. 5 crore but does not exceed Rs. 10 crore
For the Service Sector	
Enterprises	Investment in equipments
Micro Enterprises	Does not exceed Rs. 10 lakh
Small Enterprises	More than Rs. 10 lakh but does not exceed Rs. 2 crore
Medium Enterprises	More than Rs. 2 crore but does not exceed Rs. 5 crore

Source: Small & Medium Business Development Chamber of India, Aranca Research

Table 4 : Company Users and Implementation Duration

#	Company	Region	Number of Users	Impelmentation Duration (In Months)
1	**Gift Basket and Chocolate Supplier and Distributor**	USA	5	2
2	**Aviation Products Distributor**	USA	7	3
3	**Home Furnishing Products**	USA	10	1
4	**HVAC Equipment, Parts and Supplies**	USA	10	1
5	**Sporting Goods Supplier**	USA	4	3
6	**HVAC Dealer and Servicing**	India	40	6
7	**Display and Writing Boards Supplier**	India	120	2
8	**Electrical Fabricator and Part Supplier / Services**	India	50	2
9	**Network Solution Provider**	India	70	0
10	**Mobiles Retailer and Dealer**	India	15	2