

IMPACT OF ERP SYSTEM OVER DIFFERENT SEGMENTS OF SMALL AND MEDIUM BUSINESSES

Sweta Bhadauria¹, HIRAK Dasgupta²

¹ MBA student at Symbiosis Institute of Management Studies, Pune
University- Symbiosis International (Deemed) University.

² Research Scholar, Department of Management,
Faculty at Symbiosis Institute of Management Studies, Pune
University- Symbiosis International (Deemed) University.

Abstract:

The ERP system is now an essential part of a business as it helps in timely regulating the requirements of business by centralizing all the information at one place. This paper studies the impact of ERP system over the business showing the importance of its implementation. The enhancement in relation to timely processing the needs of the business and the fulfillment of the communication gap within different departments of a business are also exhibited in this paper. A comparison is made between the traditional method and modern ERP system in order to present the benefits and drawbacks of the ERP system. Different parts of ERP system such as HRM, CRM, SCM, business intelligence, inventory system management as well as financial management are studied and presented to know its impact over the business. This paper also exhibits the progress in the ERP system by presenting the work of different researchers who gave their time and work through their researches since past few decades.

1. Introduction:

A large amount of investments has been made by many organizations since last two decades in the field of “Information and communication technologies” in order to develop many types of “information systems” for supporting various process and functions of the business. For the significant issue of understanding and accessing generated value in the business through the investment made in the field of “ICT” and also for finding suitable and efficient ways for this generation, the practitioners as well as the researchers are working hard on it. Because of these issues, this became an important topic for many researches. (Al-Jabri & Roztocki, 2015)

There are 4 periods under which the research of ICT business value can be divided. The period starting from the mid of 80s to the mid of 90s is considered as the 1st period which exhibits a little but positive link within the performance of the business and the investment made for it in ICT.

The second period starts from the mid of 90s and ends at the mid of 2000s and it exhibits mixed results. Some studies exhibited positive effect but there were few researches which contradicted with these results and exhibited mixed results and doubts over this investment.

Both third as well fourth periods are still present. The 3rd period started from year 2000 till today and in this period, the main focus of the researches is recognizing as well as understanding those factors are related to internal functions of the business. With these, the possibility of increasing the generated business values through ICT goes up like “soft ICT investment”, innovations, new human skills, redesigning of business process, etc.

The 4th period started from the year 2005 and is still an active period. This period deals with researches related to the factors of external effect which are subjected to company’s external environment like dynamism of industry, industry concentration, strategy, generalized competition, etc.(Fotini et al., 2008)

Recently, many researches were studied and observed over ERP system. This paper studies effects and impacts of ERP in details in relation to business. Different studies are revealed and observed in order to find out the benefits and drawback of ERP. But before moving to ERP, it is important to know the reason because of which the ERP is brought in application and for that it is essential to know the ways of traditional business.

2. Traditional business process:

A traditional business was a very lousy and slow process. The inter link between the organizations were not organized properly leaving various loop holes for work force to make errors both intentionally and unintentionally. The whole process was a complete mash up and it was not just a problem for the work force but also the customer use to face the problems regarding their time and money loss which many times make them move from one organization to another. Even business organizations were at loss because of improper communication within the departments. For example, if a customer wants to purchase a product then the customer will go to the sales department but if the product is unavailable, the sales department will contact the inventory. And if the inventory is out of stock then it will report to the production department which will go to the finance department upon unavailability of the product. The finance department will contact the supplier of the raw material and will send it to the production after purchasing. The production department will then manufacture the product and send it to the inventory which will supply it to the sales department from where the consumer can purchase it. The communication gap among the departments was so high that sometimes it would take days to process the information from one department to another.

Disadvantages of traditional methods:

- a. The traditional method was a very time consuming process.
- b. There was a lot of risk of duplication of data which a department can make to hide its mistakes. This at the end may suffer as an error in production or in loss of consumer’s trust.
- c. As this whole process is very time taking, therefore the consumer may move to another organization for business.
- d. It resulted in high inventory as well as material cost.

3. ERP system:

In a business, it is important to integrate all its processes which is done by the “Enterprise resource planning” (ERP) system. This is mediated by technology and software.

In general, ERP is termed as an element of software of business management. Through this, a business organization can store, collect, interpret as well as manage the data in accordance to the need of their activities.(Mabert et al., 2003)

A database management system operates the ERP system from where data can be continuously integrated and updated exhibiting the view of a core business process through a command data base. The business resources like production capacity, raw material cash and the status regarding the commitment made from the organizations like payroll, purchase and other orders can be easily tracked through ERP systems.

This application makes it easy to share data within the departments like sales, inventory, production, etc. which reduces the communication gap between them. This system maintains the flow of information within the departments of the business as well with outside stakeholders. (Nawaz & Channakeshavalu, 2020)(Karia & Soliman, 2017)

These frameworks, most importantly, give similarity and connection between data and information within an organization, then the information is analyzed and integrated to make a decision which helps in planning, executing and controlling of functions. This helps in increased efficiency of various functions of management.

ERP systems are the most preferable in decision-making process in management. This is because the ERP is responsible for forwarding information gathered to necessary management levels as soon as possible when encountered a situation or problem. Therefore, ERP, is now an important assistant position for managers.

ERP systems promise flawlessly integration of business processes throughout the organization. Yet the implementation of these systems is significantly challenging. Usually, organizations spend a huge amount of resources in terms of time, money, and energy on the implementation process with little to show for it. High failure rates in implementing ERP systems have been widely reported in the literature. Given this background, it is significantly important to define the critical success factors of ERP implementation. It is also necessary to quantify their influence on the implementation process. Good understanding of these factors contributes directly to choose the appropriate implementation strategies.

The systems of ERP consist of a time taking process and also are designed in a very complex way. Further, in comparison to the stand alone package, the system of ERP’s integrative nature often sums up with extra hurdles at the time of its implementation. Apart from its complex design, social as well as organizational factors are also basically the causes because of which it fails. The challenges in relation to the user are serious factors of risk within the projects of ERP which is often debated. (Al-Mashari, 2001)

At the time of implementation of the ERP system, if the employees does not participates then it will make the adoption of the ERP very difficult(Calisir et al., 2009). There is very less studies available over the employees’ contribution and participation in relation to the adoption and development of this system. (Mayeh et al., 2016)(Amoako-Gyampah, 2007)

The most important is to understand the impacts of ERP over different parts of the system. The changes and development which ERP brought in the organizations are remarkable as it saves time and increases the value of the business.

Parts of ERP system:

ERP systemsconstitutes of 6 essential parts. These parts are:

- a. Human resources
- b. Customer relationship management
- c. Business intelligent
- d. Supply chain management
- e. Inventory management system
- f. Financial management

4. Impact of ERP system over different parts of organization:

ERP Systems have high impact on the performance of various departments or segments of organization which are discussed in details below:

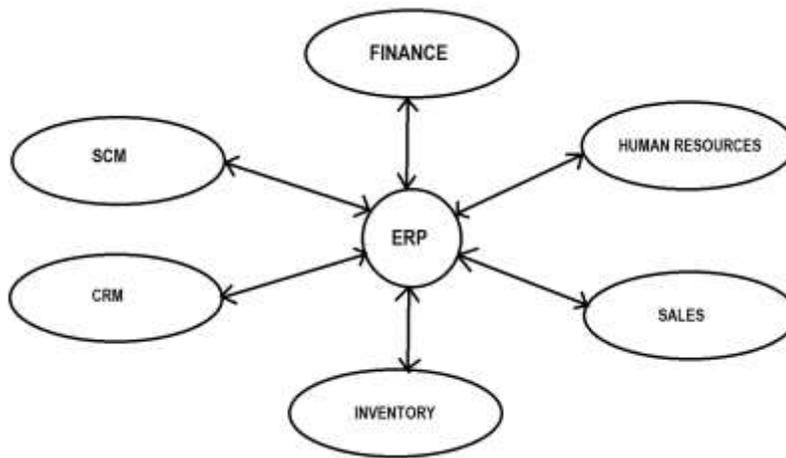


Figure 1: Exhibits the impact of ERP system over the business.

Human resources: It is the most important part of a business which manages from the recruitment to the salary and needs of the employees. A business cannot even stand to operate without this department. The HRM constitutes of 4 major sections which are recruiting, training, payroll and even attendance of the employees. Doing it in a traditional way was full of errors and even revising errors was time taking. ERP brought a revolution in the field and made everything a click away. ERP system exhibited a successful effect upon HR department. (Kulandai, 2019)

Customer relationship management: The work of this department is to connect the customer to the services of the company. Within the traditional business, CRM was known for its slow process and various complaints were kept pending for days or even months. This was ultimately deteriorating the relation between the customer and company. The use of ERP system enhances the process and segregated the data at one place and allowed both the representatives as well as

the customer to keep the track of their issues. This reduced the time of work and nearly removed the possibility of intentional or unintentional error.(Ruivo et al., 2014)

Business Intelligence: This is newly added as an integrated part of ERP system. Nowadays, many businesses are following the strategy to create a data driven decision making process. For those businesses, ERP system is very effective as good reporting feature plays a vital role in this field. (Trad & Kalpić, 2014)

Supply chain management: To develop an efficient supply chain management is a very hard job. The network of supply chain comprises of retailers, distributors, supplier and manufacturer. Three types of flows are supported by this network at the level of operation which are:

- **Material flows:**

The flow of physical products to the customers from the suppliers is exhibited under the material flow. It also shows the reverse flow such as return of the products, recycling and servicing;

- **Information flows:**

The tracking and transmission of the order is shown under information flows and it also coordinates with the physical flow; and

- **Financial flows:**

The scheduled payments, consignments, credit terms and title ownership arrangement are exhibited under the financial flows.

During the period of traditional business, it was hard to operate all these things in proper combinations. With evolution of ERP system, the errors reduced and time efficiency increased which further raised the profit.(Akkermans et al., 2002)(Seyed Ali Nemati, 2013).

Inventory management system:

This management system is considered as one of the most cooperative part of ERP. This system basically works in a combination with the SCM but also combines a little with the warehousing and sales processes. The work of this system is to fulfill the orders and also to stock the warehouse.

The management system of inventory is one of the most significant parts of the ERP. It basically operates in the collaboration of the supply chain management system. However, it get along in the operations with ware housing and sales departments also. The basic work of this system is to fulfill the sales requirement as well to stock the warehouse. In the traditional method, it was very difficult to keep the track of the sales requirement which further leads to the issue in stocking the warehouse as there was a communication gap and the department of inventory was not timely informed about the requirements.

The best part of this system comes along with the tracking features but it also removes the manually controlled elements. These features include multi-level serial number tracking, revision level tracking and multiple units of measure per product ID or SKU. With the implementation of ERP system within the business, the tracking of the product requirement became easy which

further helped in stocking the ware house in time as there was complete knowledge about everything at one place and this knowledge was accessible to every department.

Financial management:

It is the basic need of an organization to manage the finance. The track of the money invested and money earned is very important. The ERP system helps in storing and analyzing all the related data inclusive of the accounts payable, accounts receivable, costs, budgets and forecasts. It helps reveal insights of the spending, so that profit trends and times of unusually high spending can be discovered which will help in putting that data to good use by changing whatever processes are causing lower profits or high spend, which will help in maximizing the company's profits while reducing costs.(Sangster, 2009)

5. Impact of ERP over small enterprises:

Recently, many vendors in the field of software have moved to SMEs for offering them an extensive range of systems for CRM which were previously implemented only by the large-scale companies. These small-scale businesses are the potential source for the economic growth of not only India but for entire world. These SMEs are limited with their funds and they do not take CRM system as an essential part to integrate within their system. But since the strength of small enterprises especially in India is very large, therefore implementation of the CRM system cannot be considered as a small version in comparison the large-scale businesses. The small enterprises are highly exploited as CRM system provides many opportunities for them but due to lack of resources and knowledge, these small enterprises hesitate to implement it within their businesses (Amoako-Gyampah & Salam, 2004). Just to stand in the market many small-scale businesses have stepped forward in the adoption of CRM and ERP systems. This is done by them so they can compete in the market with the large-scale businesses. But the most significant challenge was in relation to manage the CRM system. As a matter of fact, various projects of CRM failed because of the complexity of the system. (Alshawi et al., 2011)

When talking of ERP system implementation within SMEs, the burden of time and price is hard for them and out of budget for most of them. The time needed for ERP system installation is a lot which might throw these small business persons completely out of business. Even when the small enterprises are potential source of economic growth, their exploitation which started by the CRM vendors is still pursued with ERP systems. The complexity which the ERP systems bring with it along with its cost is a big burden over these small-scale enterprises.

6. Previous work over ERP systems:

Many researched have been studied since the beginning of the implementation of the ERP system. Few of the important works are presented below:

Year	Researcher's name	Work

2019	Shadi AboAbdoa, Abdulaziz Aldhoienab, Hashbol Al-Amribb	The team did statistical analysis and showed that top management involvement and awareness, training and support for users, and implementation team composition are the most significant factors of ERP implantation success.
2018	Saraswati Jituria , Brian Flecka , Rafiq Ahmad	The article gives the overall idea about the business objectives/KPIs, which can be improved using the ERP and Lean manufacturing practices. Using this information, enterprises can strategically distribute their resources on ERP and lean system
2014	Huseyin Selcuk Kilic, Selim Zaim, Dursun Delen	Exhibited that enterprise resource planning systems are making the enterprises more efficient by integrating their cross-functional business processes over a common information system infrastructure. Also developed a hybrid methodology for ERP implementation. (Kilic et al., 2014)
2012	Seyda Findik, Ali Osman Kusakci, Fehim Findik, Sumeyye Kusakci	The team selected and implemented different systems of ERP depending upon the different solutions required by the companies. (Findik et al., 2012)
2012	Fadi Taher Qutaishat et. Al.	Identified the effect of ERP over the employees' productive, innovation and service quality. (Qutaishat et al., 2012)
2009	Shahin Dezdar and Ainin Sulaiman	Investigated the CSFs of ERP implementation. (Dezdar & Sulaiman, 2009)
2009	Claude Doom, Koen Milis, Stephan Poelmans and Eric Bloemen	Investigated the CSF of ERP implementation in Belgium SMEs. (Doom et al., 2010)
2006	Hooshang M. Beheshti	Studied the impact of enterprise resource planning (ERP) on organizations and discusses critical issues that should be considered by

		managers and decision makers who are considering implementing an ERP/ERP II system. (Beheshti, 2006)
2005	Vale´rie Botta-Genoulaz and Pierre-Alain Millet	Investigated the services approach in respect to the implementation of ERP. (Botta-Genoulaz & Millet, 2006)

7. Advantages and disadvantages of ERP system:

Internal advantages of ERP system(Chang et al., 2008):

- a. All the data are integrated as a single source.
- b. It enables to control various processes of a business.
- c. It increases the productivity, improves the quality of work and product and organizes the inventory management.
- d. It eliminates te possibility of duplication of data.
- e. Reduces the cost of operation
- f. Improves internal communication
- g. Reduces the cost by properly managing the inventory planning

External advantages of ERP system

- a. Enhances the customer service and the related order fulfillment
- b. Enhances the communication with customers as well as suppliers.
- c. Enhances the competitive position and raises the sales and profit
- d. Creates an effective HR management.

Disadvantages of ERP system

Following are the disadvantages of ERP (Al-Fawaz et al., 2008):

- a. It is very complicated, large and very costly.
- b. Implementation of ERP system requires enormous commitment of time from the company
- c. Also, implementation of ERP will require trained employees to work with. It means that the company will need to train their employees for ERP system.
- d. A lot change is required for its implementation.

8. Conclusion and Future Research:

From the study over the effect of ERP system over business, it is observed and can be clearly stated that ERP is undoubtedly beneficial for a business and has a wide range of advantages over a business. It centralizes the data and inter link all the departments of a company together which reduces the communication gap, enhances the productivity and most importantly it saves enormous amount of time. The most important part of a business is the satisfaction of customer which leads to more profit. Both of these are attained because of the implementation of ERP

system. The problem is regarding the money and time which makes the implementation of ERP difficult for small enterprises. More work is needed to be done to make ERP system available for such businesses.

Managers should take into consideration that their employees are needed to be satisfied with using the ERP system, to improve their performance which will motivate them to take decisions.

For Future Research the study can be expanded to different industries and different internal departments of organizations. The study should focus on building an infrastructure for SMEs to implement ERP systems.

Acknowledgment:

The authors wish to acknowledge Symbiosis Institute of Management Studies for providing all the facilities.

Conflict of Interest: There is no conflict of interest among the authors

Ethical approval: Not applicable

REFERENCES:

- Akkermans, H. A., Bogerd, P., & Wassenhove, L. N. Van. (2002). The impact of ERP on supply chain management: Exploratory findings from a European Delphi study. *SpringerReference*, 146, 284–301. https://doi.org/10.1007/springerreference_25823
- Al-Fawaz, K., Al-Salti, Z., & Eldabi, T. (2008). Critical success factors in ERP implementation: A review. *Proceedings of the European and Mediterranean Conference on Information Systems, EMCIS 2008, January*. <https://doi.org/10.22214/ijraset.2018.5279>
- Al-Jabri, I. M., & Roztock, N. (2015). Adoption of ERP systems: Does information transparency matter? *Telematics and Informatics*, 32(2), 300–310. <https://doi.org/10.1016/j.tele.2014.09.005>
- Al-Mashari, M. (2001). Process orientation through enterprise resource planning (ERP): A review of critical issues. *Knowledge and Process Management*, 8(3), 175–185. <https://doi.org/10.1002/kpm.114>
- Alshawi, S., Missi, F., & Irani, Z. (2011). Organisational, technical and data quality factors in CRM adoption - SMEs perspective. *Industrial Marketing Management*, 40(3), 376–383. <https://doi.org/10.1016/j.indmarman.2010.08.006>
- Amoako-Gyampah, K. (2007). Perceived usefulness, user involvement and behavioral intention: an empirical study of ERP implementation. *Computers in Human Behavior*, 23(3), 1232–1248. <https://doi.org/10.1016/j.chb.2004.12.002>
- Amoako-Gyampah, K., & Salam, A. F. (2004). An extension of the technology acceptance model in an ERP implementation environment. *Information and Management*, 41(6), 731–745. <https://doi.org/10.1016/j.im.2003.08.010>
- Beheshti, H. M. (2006). What managers should know about ERP/ERP II. *Management Research*

- News, 29(4), 184–193. <https://doi.org/10.1108/01409170610665040>
- Botta-Genoulaz, V., & Millet, P. A. (2006). An investigation into the use of ERP systems in the service sector. *International Journal of Production Economics*, 99(1–2), 202–221. <https://doi.org/10.1016/j.ijpe.2004.12.015>
- Calisir, F., Altin Gumussoy, C., & Bayram, A. (2009). Predicting the behavioral intention to use enterprise resource planning systems: An exploratory extension of the technology acceptance model. *Management Research News*, 32(7), 597–613. <https://doi.org/10.1108/01409170910965215>
- Chang, M. K., Cheung, W., Cheng, C. H., & Yeung, J. H. Y. (2008). Understanding ERP system adoption from the user's perspective. *International Journal of Production Economics*, 113(2), 928–942. <https://doi.org/10.1016/j.ijpe.2007.08.011>
- Dezdar, S., & Sulaiman, A. (2009). Successful enterprise resource planning implementation: Taxonomy of critical factors. *Industrial Management and Data Systems*, 109(8), 1037–1052. <https://doi.org/10.1108/02635570910991283>
- Doom, C., Milis, K., Poelmans, S., & Bloemen, E. (2010). Critical success factors for ERP implementations in Belgian SMEs. *Journal of Enterprise Information Management*, 23(3), 378–406. <https://doi.org/10.1108/17410391011036120>
- Findik, S., Kusakci, A., Findik, F., & Kusakci, S. (2012). Selection and implementation of ERP systems: A comparison of SAP implementation between BIH and Turkey. *South East European Journal of Economics and Business*, 7(1), 19–28. <https://doi.org/10.2478/v10033-012-0002-x>
- Fotini, M., Anthi-Maria, S., & Euripidis, L. (2008). ERP systems business value: A critical review of empirical literature. *Proceedings - 12th Pan-Hellenic Conference on Informatics, PCI 2008*, 186–190. <https://doi.org/10.1109/PCI.2008.38>
- Karia, N., & Soliman, M. (2017). *International Journal of Advanced and Applied Sciences* Factors affecting enterprise resource planning (ERP) systems adoption among higher education institutions in Egypt. 4(5), 144–151.
- Kilic, H. S., Zaim, S., & Delen, D. (2014). Development of a hybrid methodology for ERP system selection: The case of Turkish Airlines. *Decision Support Systems*, 66, 82–92. <https://doi.org/10.1016/j.dss.2014.06.011>
- Kulandai, A. (2019). Impacts of ERP in HRM. October. <https://doi.org/10.1729/Journal.21755>
- Mabert, V. A., Soni, A., & Venkataramanan, M. A. (2003). The impact of organization size on enterprise resource planning (ERP) implementations in the US manufacturing sector. *Omega*, 31(3), 235–246. [https://doi.org/10.1016/S0305-0483\(03\)00022-7](https://doi.org/10.1016/S0305-0483(03)00022-7)
- Mayeh, M., Ramayah, T., & Mishra, A. (2016). The role of absorptive capacity, communication and trust in ERP adoption. *Journal of Systems and Software*, 119, 58–69. <https://doi.org/10.1016/j.jss.2016.05.025>

- Nawaz, N., & Channakeshavalu, K. (2020). The Impact of Enterprise Resource Planning (ERP) Systems Implementation on Business Performance. SSRN Electronic Journal, July 2013. <https://doi.org/10.2139/ssrn.3525298>
- Qutaishat, F. T., Khattab, S. A., Abu Zaid, M. K. S., & Al-Manasra, E. A. (2012). The Effect of ERP Successful Implementation on Employees' Productivity, Service Quality and Innovation: An Empirical Study in Telecommunication Sector in Jordan. *International Journal of Business and Management*, 7(19), 45–54. <https://doi.org/10.5539/ijbm.v7n19p45>
- Ruivo, P., Mestre, A., Johansson, B., & Oliveira, T. (2014). Defining the ERP and CRM Integrative Value. *Procedia Technology*, 16, 704–709. <https://doi.org/10.1016/j.protcy.2014.10.019>
- Sangster, A. (2009). ERP implementations and their impact upon management accountants. *JISTEM Journal of Information Systems and Technology Management*, 6(2), 125–142. <https://doi.org/10.4301/s1807-17752009000200001>
- Seyed Ali Nemati, D. M. D. (2013). Impact of Enterprise Resource Planning in Supply Chain Management. *International Journal of Economic Research*, 14(20), 477–482.
- Trad, A., & Kalpić, D. (2014). The Selection and Training Framework (STF) for Managers in Business Innovation Transformation Projects - Business Enterprise Architecture Integration. *Procedia Technology*, 16, 755–767. <https://doi.org/10.1016/j.protcy.2014.10.025>