AN ANALYSIS OF ERP IMPLEMENTATION AND RECENT ERP DEVELOPMENTS

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Abstract

The ERP archive that was discovered a long time ago may have begun in 1970 with the purpose of merging business processes at the time. The phrase "enterprise resource planning" was coined by the Gartner Group, and the system was not implemented until 1990. Software businesses such as SAP were already aggressively adopting enterprise resource planning at the beginning of the 1990s (ERP). The R/3 version of SAP was finally released in 1992. Additional customer-server hardware construction was provided in order for the SAP R/3 system to run on several stages at the same time. By the year 2000, all of the major ERP software system providers had finally discovered a solution to the Y2K problem. The ERP software industry has expanded dramatically in the past 10 years, and many service providers now provide enterprise-wide systems that cover a broad range of business-related functions.

The goal of this essay was to look at the whole ERP system deployment process as well as current ERP software trends. Furthermore, we discovered a few problems or omissions in the ERP system application procedure and made an attempt to fix them by putting forward viable solutions.

We conclude that "an ERP system integrates all functions in an organisation such as finance, marketing, manufacturing, and human resource with advanced real-time data collection, processing, and communication at a very fast speed, allowing the organisation to make quick decisions on real-time issues and control the entire business process day today." This conclusion was reached as a consequence of the study that was carried out.

Keywords: *ERP Implementation, Data Cloud, 3D Printing, Digital Marketing, and Artificial Intelligence*

1. Introduction

The ERP archive that was discovered from a long time ago may have been created as early as 1970, and its primary objective was the integration of corporate activities (Sheilds and Mureell G., 2005). ERP was first adopted by the Gartner Group at the beginning of the

year 1990 (Chang, SI et al., 2000). The Gartner Group came up with the term "ERP" (InfoWorld and Heather Harreld, August 27, 2001). At the beginning of the 1990s, software companies such as SAP were already actively implementing ERP (Robert Jacobs, 2007). The R/3 version of SAP was eventually released the following year in 1992. The SAP R/3 system had been outfitted with the addition of customer-server hardware construction in order to facilitate simultaneous work on many stages. All of the main ERP software system suppliers had a remedy for the Y2K issue by the time the year 2000 rolled around. Over the course of the last ten years, the market for ERP software has seen enormous growth, and many service providers are now offering business-wide applications that cover a comprehensive spectrum of activities and applications.

Changes in the price structure of ERP software, revisions to application techniques, and shifts to vertical markets are going to bring about new business patterns during the next ten years. Numerous data are now being stored by cloud application models. For instance, software as a service (SaaS) is vying for the attention of businesses. The pricing model for enterprise resource planning systems that is based on use fees is widely used by companies who are attempting to replace enormous upfront costs with month-to-month subscriptions (Deskera, 2020).

Definition:

ERP: ERP stands for enterprise resource planning, which is also the full form of the acronym ERP. ERP combines the information obtained from a wide variety of other sources into a single database (Oracle, 2020). For instance, a company may have three primary data centers, which are referred to as human resources, finance, and manufacturing. ERP integrates these three sub-sources into a single system, which then shows data that includes all three sub-sources (Almajali and Dmaithan, 2016).

ERP Implementation: Checking the present pattern of business execution, establishing strategy and operating techniques, implementing and testing ERP software, managing data, overseeing change management, educating users, and providing post-maintenance support are all part of this process (Andrew, Ly. June 8, 2020).

2. Review of Literature

Methodical Approach to Implementation Researching business processes is the first of the ERP deployment's major seven phases, followed by data migration, software installation, software performance testing, user training, complete deployment, and after-implementation support. We made an effort to investigate these stages in more depth as shown below (Andrew, Ly, 2020),

1. Research on the Business Processes:

The first step in the process of implementing ERP involves defining the requirements, goals, and scope of ERP in relation to a specific business process (Turban et al., 2008). In addition to this, it necessitates the formation of a team that is capable of working on the ERP implementation project in its entirety. The following is the membership structure that the team must adhere to 9 Menon, Sreekumar, July 2019),

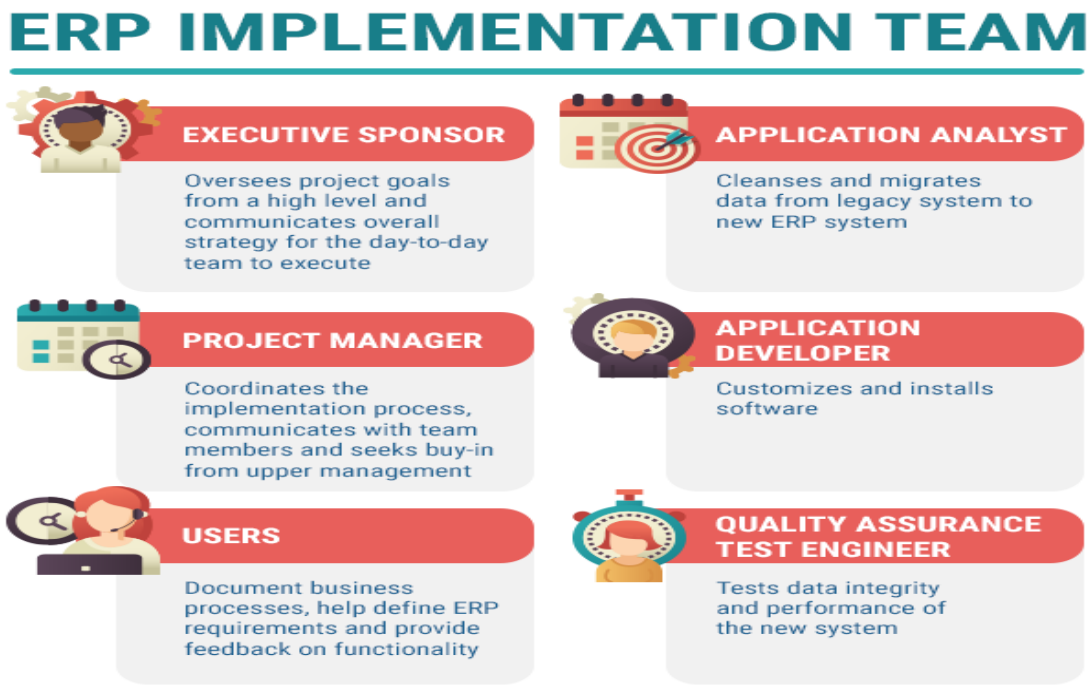

Figure 1: ERP Implementation Team (Andrew, Ly, 2020)

The Main Responsibilities of the Team are

- Mapping, documenting, and doing an analysis on the processes that are currently in place in a company are the primary responsibilities of the team (Yusuf, Y. et al., 2004).
- Make an effort to pinpoint main difficulties, wastage in the process, and concerns pertaining to the client.
- Establish concrete goals for an ERP rollout, complete with accurate quantification, and ensure they are related to the key performance areas.
- Create a workable timeline and a cost estimate for the project.

2. Software Installation:

After having designed the new flow of the process in the first stage, the team should have a strategy for the new business process. The software developer is responsible for the installation and construction of the program's infrastructure, which includes the data storage, the data presentation, and the availability of the internet.

3. Data Migration:

This stage involves moving all of the information that may be represented by data to a new computer program. Before actually moving the data to a new place, each and every piece of information should be analyzed and checked for accuracy using the same unit. This stage involves the establishment of a new place for the storage of data, as well as the mapping and transfer of data between the old and new store locations (Ramaswamy, V.K., September 27, 2007).

4. Testing:

A quality engineer will test all of the data interfaces, as well as their functionality and real-time data transactions. Users are required to verify that the correct flow of data is occurring between the various departments.

5. User Training:

The user training for ERP software is depending on how sophisticated the program is, and how staff react to change management. In the event of ERP deployment after it goes live, inadequate training might result in production stoppages of up to 56%.

6. Total Deployment:

An organization may choose any one of the following three deployment methods, based on the scale of the ERP software being used and the resources that are readily available:

- **Big-Bang Approach:** A seamless upgrade from the older program to the new one in only one day. This method is efficient and cost-effective, but even a little amount of deployment inefficiency might lead to a significant issue during operation.
- **Phased Approach:** An approach that involves transitioning gradually from one function or unit to another, taking more time overall.
- **The Parallel Operation**: Approach encourages users to utilize both old and new systems concurrently. This method has the lowest potential for danger. This strategy involves more time since it duplicates the work that has to be done, and the cost of running the two systems is also rather significant.

7. Assistance:

The assessment of the success of ERP projects over the whole of the project's life cycle is highly significant. For the purpose of conducting an assessment of the ERP project, the following key performance indicators may be taken into consideration:

- Comparison of the actual cost of execution to the budget that was projected
- ROI, which stands for return on investment
- Human error evaluations.
- Increased productivity or efficiencies in the supply chain.
- The satisfaction and loyalty of the customer.

Time Required for ERP Implementation:

The deployment of the ERP software might occur anywhere from three months to a couple of years after the project to install the ERP system has been completed (Sankar, C. and Rau, K.-H., 2006). The precise duration is contingent on factors such as the organization's size, the quantity of its data, the number of its users, and its resources (Pelphrey, M.W., 2015).

The Cost That Was Incurred for ERP Implementation:

The costs of implementing an ERP system include the system's continuing running expenditures, which include the following:

- The price of ERP software is determined by the license type, the frequency of license renewals, the data storage system, the number of users, and the amount of customisation.
- A team of experts and trainers specializing in the adoption of ERP software
- The installation of ERP software, subsequent maintenance, and periodic software updates.
- Data clouds.

- Staff dedicated to providing support in the areas of system maintenance, software updates on a regular basis, problem solving, and technical assistance.

In addition, in order to determine whether or not the implementation of ERP will result in a profit, we need to analyze the potential financial advantages of the deployment. The price of implementing ERP software may range anywhere from fifty lacs to five crores of rupees for smaller and medium-sized businesses, respectively.

Choosing the Appropriate Consultant for Your ERP System:

ERP system consultants need to have previous installation experience working inside our kind of business, with the goal of minimizing the potential for failure at each step. It's possible that consultants may attempt to sell unused software by demonstrating its full applicability. However, we can only implement those necessary technologies that would streamline the company's operations and provide a higher return on investment in a shorter amount of time. The following considerations are necessary for selecting the appropriate ERP system consultant: (Andrew, Ly. June 8, 2020),

- Previous experience working for an organization similar to ours.
- They are required to have an understanding of the procedure involved in setting up the organization's infrastructure.
- Deploy just the systems that are necessary.
- Find solutions to the problems associated with change management.
- It is necessary to do user training.

The Latest Trends in ERP Software and Their Predictions for the Future:

The enterprise resource planning system was first enhanced by adding the data cloud or data store management as the only new component. Additional digital revolution brought the ERP system certain current trends or characteristics that are unique to them, as will be discussed below (Finances online, 2020),

Data Cloud Acceleration: ERP systems that are run on the cloud are the next game-changing trend. The enterprise resource planning software is installed on the user's computer, which results in additional expenditures for hardware and initial setup. These prices might be prohibitive for smaller businesses. The development of cloud computing has been beneficial to consumers since it significantly reduces the costs associated with the maintenance and updating of software systems. The hybrid ERP solution is also becoming more popular among companies. The advantages of cloud-based and on-premises ERP are combined in a hybrid system, which also takes into account and compensates for their respective drawbacks. This tool is quite helpful for companies who provide digital services and business. Oracle ERP, NetSuite, Sage Intacct, Syspro, and Sage Business Cloud Enterprise Management are examples of some of the most effective enterprise resource planning (ERP) software on the market today (Deskera, 2020).

Artificial Intelligence: The combination of artificial intelligence with ERP is referred to as iERP in the field of artificial intelligence. It lets organizations quickly handle large amounts of complicated, unstructured data in novel ways and provides insights that may be put to use. iERP is streamlining processes, cutting down on errors, and shortening the amount of time needed to process data, among other benefits (Ruhi, Umar, 2016).

Mobile Application: In the past, a mobile was considered a "extra" item, but in today's society, it is considered a fixture. The modern ERP solution offers complete mobile assistance, enabling users to carry out company procedures at any time, from any location, and with excellent overall productivity. If an employee has access to all of the necessary data on their mobile device, for instance, they may conduct urgently needed work from home rather than spending lengthy hours in the office. The use of intelligent communication enables Mobile ERP to lessen the likelihood of production delays. Real-time decision-making, streamlined workflow, and improved efficiency are also made possible by mobile ERP systems (Linchpinseo, 2020).

Big Data Analytics: Enterprise resource planning software has earned a lot of praise for its ability to gather and organize data. Today's enterprise resource planning software includes additional functionalities like as data analytics, ad hoc reporting, and data presentation. It is used by the company for the purpose of making crucial judgments, such as those pertaining to finances or other features that aid decision making on a feature that ranges from the individual manufacturing units to the individual executives. The next generation of ERP systems will be able to evaluate data in both structured and unstructured formats. ERP software should be able to accurately forecast future trends by drawing on data that is readily available from all of the departments, since this contributes significantly to the predictive analysis.

Real-time data access: Real-time data access enables accurate operating insights, fast decision making, customer happiness, and a variety of other benefits. Three-dimensional printing and real-time data support are two examples. The ERP trend that is now popular in the manufacturing industry is 3D printing, which enables businesses to reduce costs and improve productivity. The integration of CRM and ERP software may provide information on the customer such as their purchasing histories, preferred products, and other needs, which can assist in more accurately judging the potential for sales, retaining existing customers, and building brand loyalty (Linchpinseo, 2020).

ERP with a Focus on Finance: A contemporary integrated ERP system for finance provides regular ledger administration, money and payroll management, control of assets, and more. The built-in functionality of current ERP software makes it easier to make decisions quickly and implement strategies. It enables the finance department to respond in real time to any issues that may occur and to adjust to any necessary modifications.

Digital Marketing Focuses: ERP real-time data is helpful in deciding the target audience for marketing campaign strategy, which is one of the focuses of digital marketing. Collecting data such as link sharing, post publishing, answer gathering on social media surveys, and more is one way that digital marketing integrated ERP uses social media bases for decision making.

Personalized ERP Solutions: The modular method was chosen for the deployment of the ERP system by the small firm. 2019 saw a shift from a modular strategy toward one that was more individualized and focused on vertical improvements at organizations. This was due to the fact that businesses would now be able to get an enhanced solution without having to rely on IT consultants or teams (Vilpola and Inka Heidi, 2008). This individualized enterprise resource planning system is designed to cater to the special requirements of a certain sector (Loh, Tee Chiat, and Lenny Koh Siau Ching, 2004).

Additive Manufacturing: Another one of the latest developments in ERP for the manufacturing industry is the proliferation of additive manufacturing. A unified platform is provided by ERP to the 3D printers so that they may access the digital data. The complete manufacturing material count is monitored by ERP software, which begins with raw materials and continues through in-process, finished, and shipped items. According to a research conducted by Sculpteo, the production process at 51% of enterprises now includes the use of 3D printers.

IoT: The Internet of Things, sometimes known as IoT, is a system that allows sensors to communicate with one another in a data network without the need for human intervention. IoT and ERP work together to gather, examine, and analyse large amounts of data obtained from network sensors; this helps to monitor the effectiveness of machines. The projection for the manufacturing industry's investment in Internet of Things platforms, services, and systems in 2020 is forty billion dollars (Finances online, 2020).

3. Objectives of the Study

- To investigate the process of ERP deployment.
- To investigate the most recent developments in ERP application.

4. Methodology of the study

The Most Important Flaws or Problems Observed in the Application of the ERP System

We discovered certain flaws in the course of implementing the ERP system, some of which are described below; these flaws may lead to the project's collapse.

1. Reverting to previously used procedures in the event of an ERP system application and standardization failure Reverting to previously used procedures in the event of an ERP system application and standardization failure is a lengthy process that requires continual adaptation (Menon, S.A. et al., 2019).
2. Strong support from senior leadership is essential The deployment of the ERP system involves a significant budget, extensive engagement over a prolonged period of time, and prompt decision making about resource allocation.
3. The Protection of Data (She, W. and Thuraisingham, B., 2007).
4. Exact business needs identification: ERP application consultants strive to provide full solutions where the company has to identify ERP requirements based on our aims. 4. Exact business needs identification: (Brown, C. and Vessey, I., 2003).
5. It's possible that long-term goals may be overlooked while ERP systems are being implemented to meet immediate needs (Bradford, M., 2015).
6. The implementation of ERP software at the site calls for a significant initial investment as well as extensive amounts of time (Fryling, Meg, 2010). (Gentry, Spencer Rogers, and Sammy, 2018).

Solutions that Have Been Proposed in Order to Fill ERP Implementation Gaps: An ERP software deployment has the potential to fail in the aforementioned ways, which is why we have offered certain activities for the success of the ERP system installation, which are outlined below.

1. A partner in the deployment of ERP software or a project manager is responsible for providing a very detailed definition of the project's scope based on the organization's team. In addition to this, they will determine the roles that each individual member of the team will play and will organize the necessary resources. Before beginning work on a project, the senior leadership of the organization must be presented with a list that includes both the project's scope and the resources that are needed in order to receive their approval of the projected budget and the amount of time that is available.
2. Users training and change adaptation management: All ERP software users need to undergo training on new systems and job responsibilities in order for them to be able to readily adjust to change throughout the course of the term.
3. The strategy for future growth and the extent of that plan: The future company expansion scope has to be described so that new changes do not delay meeting our requirements for a number of weeks, months, or years in the future.

5. Conclusion

ERP systems were first used on-premise by major manufacturing companies to handle the raw, in-process, and finished product material information transmission. In the beginning, the rate of acceptance of ERP systems was slow because the process of adopting ERP required a significant amount of time and a significant financial investment from any organization. However, in modern times, almost every business has adopted ERP, and it is changing the business legacy because of the exceptional benefits it provides. In the last decade, enterprise resource planning (ERP) systems have been updated with more recent technological trends in order to improve their operational efficacy; in addition, corporations have introduced many new ground-breaking innovations each year. A significant majority of cloud-based ERP solutions have had a high degree of adoption; However, there are concerns over the safety of users' data and the ongoing financial commitment required for subscriptions. In spite of this, it is a more cost-effective alternative to keeping equipment on-site, and it can be adapted to the specific requirements of a company, which is a great assistance to smaller companies. In conclusion, we found that "an ERP system integrates all the functions in an organization like finance, marketing, manufacturing, and human resource with an advanced real-time data collection, processing, and communication with very fast speed and allowing the organization for a quick decision on the real-time issues to control the complete business process day today." An ERP system integrates all of these functions because it uses advanced real-time data collection, processing, and communication with very fast speed.

References

[1] 10 New ERP Trends & Forecasts for 2020/2021 – A Look Into What's Next. Finances Online, 2020.

[2] Almajali, Dmaithan Abdelkarim, et al. "Antecedents of ERP Systems Implementation Success: A Study on Jordanian Healthcare Sector." Journal of Enterprise Information Management, vol. 29, 2016, pp. 549-565.

[3] Bradford, Marianne. Modern ERP: Select, Implement, & Use Today's Advanced Business Systems, Lulu, 2014.
[4] Brown, Carol V., and Iris Vessey. "Managing the Next Wave of Enterprise Systems: Leveraging Lessons from ERP." MIS Quarterly Executive, vol. 2, no. 1, 2003, pp. 65-77.
[5] Chang, She-I, et al. "A Delphi Examination of Public Sector ERP Implementation Issues." Proceedings of the Twenty First International Conference on Information Systems, 2000, pp. 494-500.
[6] Fryling, Meg. Total Cost of Ownership, System Acceptance and Perceived Success of Enterprise Resource Planning Software: Simulating a Dynamic Feedback Perspective of ERP in the Higher Education Environment, University at Albany, 2010.
[7] Harreld, Heather. "Extended ERP technology reborn in B2B." ComputerWorld, 2001.
[8] Jacobs, F. Robert, and F.C.'Ted' Weston. "Enterprise Resource Planning (ERP), - A Brief History." Journal of Operations Management, vol. 25, no. 2, 2007, pp. 357-363.
[9] Loh, T.C., and S.C.L. Koh. "Critical Elements for a Successful Enterprise Resource Planning Implementation in Small-and MediumSized Enterprises." International Journal of Production Research, vol. 42, no. 17, 2004, pp. 3433-3455.
[10] Ly, Andrew. "The Definitive Guide to ERP Implementation." BetterBuys, 2020, https://www.betterbuys.com/erp/erp-implementation
[11] Menon, Sreekumar. "Benefits and Process Improvements for ERP Implementation: Results from an Exploratory Case Study." International Business Research, vol. 12, no. 8, 2019, pp. 124-132.
[12] Menon, Sreekumar A., et al. "Critical Challenges in Enterprise Resource Planning (ERP) Implementation." International Journal of Business and Management, vol. 14, no. 7, 2019, pp. 54-69.
[13] Pelphrey, Michael W. Directing the ERP Implementation: A Best Practice Guide to Avoiding Program Failure Traps While Tuning System Performance, CRC Press, 2015.
[14] Rogers, Spencer, and Gentry, Sammy. Economic Development and Planning, Scientific e-Resources, 2018.
[15] Ruhi, Umar. "An Experiential Learning Pedagogical Framework for Enterprise Systems Education in Business Schools." The International Journal of Management Education, vol. 14, no. 2, 2016, pp. 198-211.
[16] Sankar, Chetan S., and Karl-heinz Rau. Implementation Strategies for SAP R/3 in a Multinational Organization: Lessons from a Real-World Case Study, Cybertech Publishing, 2006.
[17] She, Wei, and Bhavani Thuraisingham. "Security for Enterprise Resource Planning Systems." Information Systems Security, vol. 16, no. 3, 2007, pp. 152-163.
[18] Sheilds, Mureell G. E-Business and ERP: Rapid Implementation and Project Planning, John Wiley and Sons, 2001.
[19] "Trends Transforming Enterprise Resource Planning in 2020." Linchpin, 2020.
[20] Turban, Efraim, and Linda Volonino. Information Technology for Management: Transforming Organizations in the Digital Economy, John Wiley & Sons, 2010.
[21] Vilpola, Inka Heidi. "A Method for Improving ERP Implementation Success by the Principles and Process of User-Centred Design." Enterprise Information Systems, vol. 2, no. 1, 2008, pp. 47-76.

[22] “What is ERP?” Oracle, https://www.oracle.com/ applications/erp/what-is-erp.html.
[23] Yusuf, Yahaya, et al. “Enterprise Information Systems Project Implementation: A Case Study of ERP in Rolls-Royce.” International Journal of Production Economics, vol. 87, no. 3, 2004, pp. 251-266.