Implementation of ERP Systems in Organizational Settings: Enhancing Operational Efficiency and Productivity

Ferdouse Ara Tuli[1], Swathi Kaluvakuri[2*]

[1]Assistant Professor, Department of Business Administration, ASA University Bangladesh, Dhaka, **BANGLADESH**
[2]Department of Computer Science, Southern Illinois University, Carbondale, Illinois, **USA**

*E-mail for correspondence: swathi.kaluvakuri@siu.edu

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ABSTRACT

Implementing an Enterprise Resource Planning system (ERP) in organizations is a strategic move to enhance efficiency and productivity. This article explores the transformative impact of ERP deployment on businesses. It discusses how ERP systems streamline processes, centralize data, and facilitate informed decision-making. ERPs eliminate redundancy and improve communication by integrating various functions like finance, HR, and supply chain management. The resulting optimization of resource allocation and reduced manual effort leads to increased productivity. Furthermore, ERP systems enable real-time tracking of key performance indicators, fostering proactive responses to market changes. In summary, ERP deployment empowers organizations to achieve heightened operational efficiency and productivity.

Key words: ERP Systems, ERP Implementation, Organizational Settings, Productivity, Operational Efficiency

INTRODUCTION

Enterprise Resource Planning systems are comprehensive software designed to integrate and manage all organizational business functions. This set of software includes applications for human resources, financial and accounting, sales and distribution, project management, material management, supply chain management (SCM), and quality management. ERP systems are also integrated enterprise resource planning (ERP) systems. Similarly, the concentration of information inside the organization through a centralized database is the primary focus of ERP systems. Information flows between the modules of an ERP system, which are software components of an Information System (IS) that share a central database and contain functionalities for sales and marketing, development and product design, field service, production, inventory control, distribution, process design, management, and procurement industrial facilities management, quality, manufacturing, human resource, finance and accounting, and information services, among other areas of management (Ali & Miller, 2017).

ERP systems build productivity by strengthening an organization's capability while creating accurate and timely information across the firm and its supply chain. This can be accomplished by improving an organization's ability to generate this information. Successful adoption of ERP systems can result in lower inventory, a shorter cycle for product creation, improved customer service, increased efficiency (productivity), profitability, and effectiveness through improved customer service. Business organizations are investing in information systems to increase performance, and they are turning to ERP systems to deal with changing environments and overcome the limits of legacy systems. This is done with the benefits and functionalities of these systems in mind.

Performance improvements can be attributed to the deployment of the ERP system. These systems brought enormous benefits to organizations, such as increased productivity, improved access to accurate and timely information, enhanced workflow, reduced dependence on paper, knowledge sharing, tight control, and the ability to automate business processes by coordinating and integrating information across departments (Roy et al., 2019). Moreover, these benefits are clear evidence, so larger firms with extensive data are attracted to these solutions.

Organizations tend to steer clear of enterprise resource planning (ERP) systems despite the significant benefits associated with their use. This is owing to the complicated

deployment process and greater failure rate. The ERP project may fail in its entirety or part. Completing projects using information technology and information systems is a critical difficulty due to the uncertainties relative to the intricacies of technology. In contrast to the expansion of ERP systems, it is alleged that the implementation of these systems has failed at a greater rate, estimated to be between 60 and 90 percent and that there is an inability to appreciate the advantages that were promised while not reaching the high hopes and expectations that were associated with the deployment of ERP systems.

An unanswered debate of whether its acceptance or rejection is warranted persists despite the rapidly accelerating pace of technological advancement and the pervasiveness of technological innovations in people's lives, whether in their personal or professional spheres. In the past, millions of dollars have been invested in information technology (IT), such as enterprise resource planning (ERP) systems, to enhance employee performance or effectiveness, boost workplace productivity, or gain a competitive edge. Nevertheless, these advantages will only be realized if the workers in these organizations make effective and appropriate use of information technology (IT) to carry out their organizational responsibilities.

As a result, this research aims to review the relevant studies to shed light on the ERP systems literature about its impact on user performance. The study will enable the researcher to understand the current state of the art regarding the role of users in terms of performance. Understanding will be based on the premise that users are in a position to evaluate the benefits of these systems for organizations that have already implemented or are in the process of implementing ERP systems.

Enterprise Resource Planning Systems

ERP can deliver on its name. Ignore planning and resources as they are insignificant. Keep the enterprise in mind. This is ERP's goal. The goal is to centralize all company departments and functions into a single computer system to meet their unique needs.

Creating a software package that caters to the demands of finance, human resources, and warehousing personnel is challenging (Roy et al., 2020). Each department often has a computer system tailored to its specific work processes. ERP integrates all departments into a single software package using a single database, enabling easier information sharing and communication. Proper software installation can benefit firms using this integrated approach (Alhirz & Sajeev, 2015).

Example: a customer order. Customer orders typically undergo a paper-based journey through the organization, including keying and rekeying into various departments' computer systems. In-basket idling delays and missed orders while keying into several computer systems lead to errors (Maddali et al., 2021). The company needs more visibility into order status due to the inability of the finance department to access the warehouse's computer system to verify shipment.

ERP replaces separate computer systems in finance, HR, production, and warehouse with a unified software program with modules that closely resemble the prior systems. Finance, manufacturing, and warehouse software are now integrated, allowing finance to check warehouse software for order status. ERP software from most suppliers allows for module installation without purchasing the entire package. Many firms install ERP finance or HR modules and abandon the rest.

Improve Business Performance

The best chance enterprise resource planning (ERP) has of showing its worth is if it can serve as a battering ram to improve how our firm takes an order from a customer and converts it into an invoice and revenue. This process is more often known as the order fulfillment process. ERP is frequently called "back-office software" for this exact reason. It does not handle the up-front selling process (although most ERP companies have lately introduced CRM software to do this); instead, it takes a client order and gives a software road map for automating the various processes to complete it. This procedure is known as an enterprise resource planning system (ERP). When a customer service representative enters an order for a customer into an enterprise resource planning (ERP) system, the representative has access to all of the information necessary to fulfill the order (for example, the customer's credit rating and order history from the finance module, the company's inventory levels from the warehouse module, and the shipping dock's trucking schedule from the logistics module) (Chauhan & Singh, 2017).

People working in these various departments are all privy to the same information and can make changes to it. When one department is finished processing an order, it is automatically sent to the following department via the enterprise resource planning (ERP) system. We need to determine where the order is at any given time to log in to the ERP system to locate it. With any luck, the order process will proceed as follows: a bolt of lightning that travels through the corporation, causing customers' purchases to be fulfilled more quickly and with fewer errors than before (Maddali et al., 2020). ERP can do the same feats of magic on the other central business procedures, such as employee benefits and financial reporting. At the very least, that is the ideal goal of ERP. The reality is significantly more difficult. Let us return for a moment to the messages currently in those inboxes. It is the procedure could have been more effective. However, doing so was easy. The finance department performed its

job, the warehouse did its job, and it was not their fault if anything went wrong. If something goes wrong outside the department's walls, somebody else must fix it.

No longer, however. Since the implementation of ERP, customer service professionals are no longer merely typists who enter data. Putting a person's name into a computer and then pressing the return key. The ERP screen enables the persons in the business world. It varies depending on the credit rating of the customer obtained from the finance department and the product inventory levels originating from the warehouse. Will the client make a payment? to the minute? When it comes to shipping the order, can we meet the deadline? These are choices that the customer makes. These questions that customer service workers have never been required to address before, and the responses of customers in addition to every other division of the organization. However, the customer is one of many factors here. Service representatives who need to get up and start working. People currently working in the warehouse, mainly those keeping inventory in their brains or on scraps of paper, must put that information in a more organized way (Nwankpa et al., 2016).

On the web. If they do, customer service representatives will see low inventory levels displayed on their screens and inform the clients that the requested item is unavailable. Accountability and responsibility are both required. Moreover, communication has never been put to the test in a manner like this one. People have a natural aversion to change, yet ERP forces them to alter how they perform their tasks. That

is why it is so difficult to quantify the benefits of ERP. The hardware is significantly more crucial than the software. Alterations made to the standard operating procedures of businesses. If we employ ERP to enhance, we will benefit from the software in how our people take orders, create goods, ship them, and bill for them. Those are all things that our people do. If all we do is install the software without making any adjustments to ys that people carry out their responsibilities, we could not see any value in it at all; in fact, the brand-new software may make us move more slowly by merely installing fresh software in place of the outdated program that everyone already knew software that no one uses (Kaluvakuri & Lal, 2017).

CHARACTERISTICS OF ERP SOFTWARE

ERP software is a commercial product that may be purchased from various suppliers focusing on the software market's enterprise resource planning (ERP) sector. SAP, Baan, J.D. Edwards, Oracle, and PeopleSoft were the most prominent ERP suppliers when this article was written. This enterprise resource planning market is essential. According to projections made by Gartner Group (Gartner Group 1999), the market will expand to more than $20 billion by the year 2002, with around half of that amount coming from service income and the other half from license revenue (Shatat & Udin, 2012).

ERP software is highly adaptable, which enables it to cater to the varied requirements of users operating in virtually all spheres of the economy. As a result, enterprise resource planning software is currently available in three distinct flavors: generic, pre-configured, and installed.

- The software, in its most all-encompassing form, is generic, serves a variety of business sectors, and needs to be configured before it can be utilized;
- The complete software has been used to derive packaged, pre-configured templates. These templates are designed with particular business categories in mind, such as the automotive or retail industries and small and medium-sized enterprises (SMEs).
- ERP software shows itself to most users as the operational installation after the generic or pre-configured package has been individualized according to the specific company's requirements on-site.

By adding or removing complexity, any configuration creates individual instances of ERP software, making a generic description difficult. An investigation of generic ERP solutions yielded the software's classification criteria.

ERP is standard software. All standard packages targeting an anonymous market must be customized for each organization during system setup. Customizing software is termed customizatiProject management tools, step-by-step guides, additional implementation tools, remote checks, and other relevant materials like generic presentation files support ERP implementation files. ERP software stands out from other packages due to its excellent customization capabilities. Customization may be a drawback, yet it allows for unique ERP deployments and configurations. The volume and variety of pre-configured choices (e.g., chart of accounts), processes, and transactions give ERP software considerable configuration potential.

ERP software is application software. It differs from database management software, middleware, and operating systems. ERP application modules integrate functions and data. ERP software uses an integrated database to store master and transactional data consistently and redundantly. ERP software's business solutions enable fundamental company processes and administrative functionality. ERP stands out for its functionality. ERP supports all business processes, including procurement, material management, production, logistics, maintenance, sales, distribution, financial accounting, asset management, cash management, controlling, strategic planning, and quality management (Maddali et al., 2019). ERP also provides industry-specific operations, including hospital patient

management, university student administration, and retail high-volume warehousing.

The functionality of ERP software also sets it apart. Despite being organized in functional modules like financial accounting or sales, the primary ERP solutions all take a process-oriented perspective of organizations. Users generally do not need to realize which practical module they are in because typical business procedures are supported seamlessly across functions (Garg & Khurana, 2017). ERP's full capability requires documentation. Reference models show supporting processes, organizational structures, data, objects, and program documentation. These models give quick access to functionality and navigation between abstraction layers and views (Roy et al., 2021). Hotlinks to ERP documentation and screens are also present.

ERP addresses several sectors. Therefore, describing functions to describe ERP takes much work. Two ways ERP helps multiple industries. ERP can handle many industries (e.g., manufacturing and commerce) or offer pre-configured enterprise-specific solutions. PeopleSoft provides industry-specific solutions to communication, federal government, financial services, healthcare, higher education, manufacturing, public sector, retail, service industries, transportation, and utilities. ERP is for international procurement, production, sales, and administration. ERP must be able to meet regional needs. This includes country-specific chart-of-accounts, pre-formatted quotes, delivery notes, invoices, and HR procedures like payroll. All transactions must support numerous currencies.

Finally, its use of frequency and repetition may be differentiating. ERP facilitates routine business procedures like procurement, sales order processing, and payment processing, but not marketing, product creation, or project management. ERP software is technological, too. While technical features may not differentiate ERP from other applications, they can differentiate it from similar tools like integrated, centralized software with rigorous platform requirements. Additionally, technical features significantly impact the functionality and potential of this product.

Along with connected applications and data, ERP software has a consistent GUI across all application domains. Thus, regardless of the module, the ERP system appears to users as a single application. Current ERP solutions have a three-tier client-server architecture with conceptually isolated databases, applications, and presentations. ERP software must handle substantial transaction volumes for all types and sizes of enterprises and industries. This is a significant technical requirement because ERP efficiency is more complicated to assess than effectiveness (Does it support the essential functionality?). Current ERP is usually 'open' to software and hardware platforms. Most solutions run on Windows NT, UNIX, or Linux. Another notion is that ERP is defined by its functioning rather than its technical design or requirements. Finally, ERP's complexity requires proper management. ERP software offers user management, database configuration, system monitoring, and performance measurement. These solutions are software or add-ons.

REASONS FOR UNDERTAKE ERP

There are five primary motivations for businesses to implement ERP systems.

Integrate financial information: When the CEO investigates the company's state, he will encounter numerous conflicting accounts of the facts. The finance department maintains its own set of revenue data. In contrast, the sales department maintains a separate version, and the other business divisions may each support their version of how much they contributed to revenues. ERP helps businesses run more efficiently by producing a unified, authoritative truth that cannot be contested because all employees utilize the same software (Tai et al., 2016).

Integrate customer order information: Enterprise resource planning (ERP) systems have the potential to become the repository for a client order from the time a customer service representative accepts it until the loading dock ships the item and finance sends an invoice for it. Companies can more easily maintain track of orders and coordinate manufacturing, inventory, and shipping across many different sites all at the same time if the information necessary to do so is contained within a single software system rather than being dispersed across a large number of distinct software systems that are unable to communicate with one another (Kaluvakuri & Amin, 2018).

Standardize and speed up manufacturing processes: Manufacturing organizations, particularly those with an appetite for mergers and acquisitions, frequently discover that numerous business units across the company create the same widget using different processes and computer systems (Kaluvakuri, 2022). This is especially true in companies with an appetite for mergers and acquisitions. ERP software typically comes packaged with several pre-defined ways for automating various stages of the production process. Time may be saved, productivity can be increased, and the number of employees needed can be decreased if those procedures are standardized, and a single integrated computer system is used.

Reduce inventory: ERP makes the manufacturing process run more smoothly and improves the visibility of the order fulfillment process within the organization. ERP helps the manufacturing process flow more smoothly. This can result in decreased inventories of the materials needed to manufacture items (inventory of work in progress), and it can also help users better schedule deliveries to clients, resulting in decreased inventories of finished goods at warehouses and shipping docks. Both of these outcomes can be beneficial. We need ERP software in addition to supply chain software if we want to improve the flow of our supply chain significantly.

Standardize HR information: Human Resources might need a more streamlined, uniform mechanism for tracking employees' time and communicating with them about benefits and services, and this is especially true in firms with numerous business units. That can be fixed with ERP. In a rush to find solutions to these issues, businesses frequently lose sight of the fact that enterprise resource planning (ERP) software systems are nothing more than representations of the standard business practices employed by most organizations. While most packages contain everything imaginable, every sector has its peculiarities that set it apart. The vast majority of ERP systems were developed by discrete manufacturing companies (companies that make physical things that can be counted), which instantly left all process manufacturers (companies that measure their products by flow rather than individual units) in the lurch (Maddali et al., 2018). Each of these sectors has needed help working with the many ERP providers to adapt the fundamental ERP solutions to meet their specific requirements.

COSTS OF ERP

A study on the total cost of ownership (TCO) of ERP was recently conducted by Meta Group. This study examined hardware, software, professional services, and internal staff costs. The total cost of ownership numbers consider the cost of installing the software and the costs incurred in the next two years when the actual costs of maintaining, upgrading, and optimizing the system for our company become apparent. The total cost of ownership (TCO) was found to be $15 million on average among the 63 organizations that were examined, which included small, medium, and big companies operating in a variety of industries (the highest TCO was $300 million, and the lowest was $400,000). Meta came up with a statistic demonstrating that ERP is costly regardless of the business type. This is the case despite it being challenging to derive a reliable estimate from various businesses and ERP projects. The total cost of ownership (TCO) for a "heads-down" user during that period was an astounding $53,320.

Various firms may have multiple budgeting challenges, but ERP users agree that certain costs should be addressed. Based on business-wide insights, ERP professionals see the following areas as the most likely to cause budget overruns (Bhumgara & Sayyed, 2017).

- **Training:** For seasoned ERP implementers, training is the most commonly overlooked budget item. Training costs are expensive as workers must generally learn new processes, not just a new software interface. Unfortunately, other training companies may not be able to assist. They emphasize software usage rather than business education. Develop our curriculum to illustrate how the ERP system impacts various business activities. An innovative CIO enlisted local business school experts to create and instruct employees on ERP business training. With ERP, financial and warehousing personnel will share software and input information that impacts each other. Accurately executing this requires a better grasp of the firm's job processes than prior ERP. Training is ultimately the responsibility of our IT and business personnel. Consider doubling or tripling our ERP training spend upfront. Our ERP investment will be the best.
- **Integration and testing:** Integrating ERP packages with other company software requires case-by-case testing, which is typically underestimated. A manufacturing company may use add-on applications ranging from e-commerce and supply chain to sales tax computation and bar coding. All need ERP integration. We are better off with integrated ERP add-ons. Expect unpleasant results if we construct links manually. As with training, ERP integration testing must be process-oriented. Veterans advise against entering false data and transferring it between applications. Execute a purchase order through the system, from order entry to delivery and payment receipt. Preferred with employee participation who will eventually do those occupations (Mustafa & Abbas, 2017).
- **Customization:** Add-ons are just the start of ERP integration costs. Customizing the essential ERP software is costly and should be avoided if possible. When our ERP software cannot manage a business process, we may need to modify it to achieve our desired results. Playing with fire. Customizations impact all ERP modules due to their interconnectedness. ERP software upgrades are challenging because all customizations must be made again for the new version. It may or may not work. No matter what, the seller will not provide help. Additional workers must be hired for customization and retained for long-term maintenance.

- **Data conversion:** Moving customer and supplier records, product design data, and other company data from old to new ERP systems can be costly. CIOs need to acknowledge that most data in legacy systems could be more helpful. Companies may realize their data is filthy once they concede new client/server setups for popular ERP packages. Therefore, these companies may be estimated to pay more attention to moving. Clean data may need to be updated to align with ERP implementation-driven process changes.
- **Data analysis:** Data from the ERP system is often coupled with external data. Those with extensive analysis needs should budget for a data warehouse and anticipate significant effort to ensure seamless operation. Users need help with a dilemma: Updating ERP data daily in a large corporate data warehouse is challenging, and ERP systems need help identifying changes, making selected updates difficult. One pricey option is custom programming. Before approving the budget, the wise will meet all data analysis demands.
- **Consultants ad infinitum:** Consulting fees skyrocket when users fail to plan for disengagement. Organizations should set objectives for consulting partners to train internal workers to prevent this. Incorporate metrics into the consultants' contract, such as requiring a certain number of user business workers to pass a project-management leadership test, comparable to Big Five consultants' ERP engagement requirements.
- **Replacing our best and brightest:** It is often believed that ERP success relies on hiring top talent from both business and IT departments. Due to the program's complexity and significant business changes, the project must be trained by more than the body. Unfortunately, companies must be ready to replace numerous employees after the project ends. Although the ERP market is less competitive, consultancies and organizations seeking top talent may offer more salaries and bonuses than our company or HR regulations allow. Collaborate with HR to establish a retention bonus program and new wage levels for ERP veterans. If we fire them, we may end up hiring them or someone similar as a consultant for twice their salary.
- **Implementation teams can always continue.** Most firms plan to approach ERP implementation like any other IT project. Once the software is implemented, they expect the crew to disband and return to regular jobs. After ERP, we cannot return home. Implementers are too valuable. With extensive ERP experience, they possess superior knowledge of the sales and manufacturing processes compared to salespeople and manufacturing personnel. After installing ERP software, companies cannot afford to send project staff back into the business due to the heavy workload. Writing reports to extract data from the new ERP system will keep the project team busy for at least a year. Companies might expect to recoup their ERP investment through analysis and insight. Many IS departments need to pay more attention to the post-ERP installation activities and budget for them when starting ERP initiatives. Many require additional funding and workforce only after the go-live date before the ERP project has shown any benefits.
- **Waiting for ROI:** Traditional software project management often leads to the firm expecting immediate benefits while the team anticipates a break and a pat on the back. Neither ERP expectation applies. Companies often discover the usefulness of systems after some time, allowing them to focus on improving affected business processes. The project team will only be compensated for successful efforts (Saade & Nijher, 2016).
- **Post-ERP depression:** ERP systems often disrupt organizations that install them. One in four Fortune 500 companies surveyed by Deloitte Consulting reported a performance reduction after implementing their ERP system. Truthfully, the percentage is substantially more significant. Most performance issues stem from changes in appearance and functionality. Lack of familiarity with new methods might lead to panic and business disruptions.

CONCLUSION

Further, few researchers evaluate ERP system performance. Only a few articles explored ERP systems' effects on productivity and performance. Reviewing the literature on ERP implementation and performance shows that most studies measure the impact of ERP systems on organizational performance rather than individual performance, using outcome variables like product quality, benefits, financial performance, organizational service enhancement, market value, process efficiency, shareholder return, competitive advantage, and executive benefits. Over time, organizations have adopted new technologies faster, and many have invested heavily in ERP systems to integrate all business activities into a uniform system and improve efficiency. Thus, scholars and practitioners have debated ERP's impact on productivity and performance for two decades. Users must comprehend its fundamental principles to maximize ERP system efficiency and user effectiveness. In conclusion, user performance is crucial to assessing ERP system deployment. The implemented system's benefits depend on its system utilization. ERP systems in post-implementation and user performance studies should be

addressed as a necessity for empirical research. More research in different environments is needed to define the interaction between ERP systems and their users to help practitioners and researchers better understand this application. This section also illustrates the need for more user studies in this area. Thus suggesting future research into users' aspects related to ERP system adoption and use to determine how these systems affect efficiency, effectiveness, and creativity.

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