A literature review of ERP system, challenges and opportunities of ERP implementation on organization

Nguyen Thuy Tien and Truong Thanh Tam
Hong Bang International University, Vietnam

ABSTRACT
A for-profit organization believes that ERP (enterprise resource planning) system effectiveness can be achieved through long-term rather than short-term processes. Moreover, some large corporations benefit more than others from the use of ERP software. As a result, the ERP system is now live. This study aims to demonstrate the numerous benefits of effective ERP system implementation from the organization's infancy to maturity. In addition, the researcher and analyst investigate the ERP system's application in numerous businesses by analyzing and reviewing previous academic journals and research. This research employs a semi-systematic literature review as its methodology. In this research paper, the fundamental concept of the ERP system and its organizational benefits are discussed. From a review of the relevant literature, this study discusses the aforementioned statement using case studies to demonstrate the ERP experiences of various companies. This research also reveals that implementing the ERP system is regarded as one of the most challenging projects that require collaboration between ERP project members. Theoretically, there is no end date for ERP implementation, particularly after the system has been established and implemented.

Keywords: ERP system, life cycle, stages, journey, system implementation, semi-systematic

1. INTRODUCTION
Globalization has created competition between domestic and foreign businesses. Globalization offers advantages, but it is difficult to anticipate, adapt, and act in accordance with shifting market requirements or malfeasance. To develop sustainably, organizations must improve resource management, storage, and control. Firms require sophisticated software to integrate and manage data from multiple departments, including accounting, sales, and vendor divisions, in order to maintain data consistency throughout all business processes. ERPs help companies achieve their objectives. In the 1970s and 1980s, MRP and MRP II were extensively used, according to Nazemi et al. (2012) [1]. MRP and MRP II relate process data in limited business contexts, such as manufacturing, in a logical manner. Individual systems are unable to aggregate the company's information flow, so MRP software cannot plan, monitor, or regulate. Manual transactions predominate.

ERP was implemented to resolve these problems. An ERP system is defined by Otieno [2] as "an integrated set of programs that support core organizational activities, such as supply, manufacturing, logistics, finance, sales, marketing, and human resources." Numerous ERP features make it a worldwide preference. In 2007, IDC reported that ERP licensing and maintenance accounted for $32.8 billion [3]. ERP, according to Umble et al., provides an integrated business perspective of all functional entities and a database process for each business transaction [4]. ERP can increase profits, reduce expenses, accelerate product development, and improve customer satisfaction [4]. Adoption of an ERP system is expensive and challenging [5]. ERP initiatives fail because company objectives and ERP capabilities are misaligned [5]. After decades of use and modification, ERP concerns remain ambiguous. ERP longevity has not received as much attention as deployment. This study investigates the problems and interactions of the organizational ERP life cycle. Multiple examples will illustrate the disparity between theoretical
analysis and practical perspective. To illustrate the ERP journey, the numerous advantages of the ERP system are first described. The five subparagraphs of the body paragraph are:

- The reason why an ERP voyage can be a never-ending story;
- The possible phases of an ERP system’s journey;
- The possible advantages of each stage;
- Discussion of the company's case study, which focuses on their various benefits and drawbacks toward ERP implementation.

2. LITERATURE REVIEW

This section discusses ERP literature review approaches. The investigation will be guided by this phase. Over the past decade, ERP systems have been intensively explored. This is shown by many ERP research review methodologies. Data collection and analysis are recommended. In 2007, Young B. Moon [6] evaluated peer-reviewed papers, identified the research era, utilized "ERP" as a keyword, and included surveyed journals. Between 2000 and May 31, 2006, he abstracted 79 documents. The results showed ERP research had improved, particularly in education. Over the course of a decade, Schlichter et al. [7] examined ERP knowledge growth. Their strategy entails searching certain journals rather than proceedings and books depending on duration and two keywords, "ERP" and "Enterprise Resources Planning," and then classifying ERP-related works. Thus, ERP implementation is the most fascinating issue, while academic understanding of ERP systems is mature. The assessment imagined ERP's anxieties as future interests (Figure 1).

Recent assessments have focused on application development and difficulties because implementation is popular. Shaul et al. examined ERP system implementation critical success factors (CSF) [8]. They use journals, proceedings, and scientific databases to create a bibliography from 1999 to early 2010. Published publications, defined cutoff date, and 52 searching examples from the matrix between first and second reasons drove their selection (Table 1).
Similarly, Tobie et al. [9] used Google Scholar and Microsoft Academic Research as their database search engines to find 36 journals containing the phrases "Enterprise Resource Planning and Implementation and African Countries” and "ERP Implementation and African Countries" before assigning those articles to the desired theme. As shown in Figure 2, the critical factors of success and failure in Africa received more consideration than the others.

Table 1. The search criteria and the database used in [8]

<p>| Search criteria-First Argument: Critical success factors, Factors, CSF, Issues, Barriers, Taxonomy, Success, Failure, Implementation, Utilization, Adoption, Deployment, Risks |
| Second Argument: ERP, Enterprise resource planning, Enterprise systems, Enterprise software |</p>
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<td>MIS Quarterly</td>
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Figure 2. Pie chart of published papers by issues in Africa [9]
Ranjan et al. [10] also address four ERP implementation challenges: technology selection, change management, knowledge management, and emerging technologies. The ERP life cycle evaluation so far has just covered implementation, which may be insufficient. Nazemi et al. [1] used the ERP lifecycle framework to survey the literature on that topic. The ERP lifecycle shows how a company will deploy a system from the beginning to best practices. The ERP lifecycle helped the researchers classify the papers into six primary topics (Fig. 3). The study shows that ERP research ignores other stages of its life. As Nazemi et al. found [1], that can create unanticipated ERP success challenges. The study may indicate ERP lifecycle issues, but their interrelationship has not yet been acknowledged.

![Figure 3. The publication's categories based on lifecycle [1]](image)

3. METHODOLOGY
Organizational ERP system adoption is examined in academic journals and research. The literature review was semi-systematic. Snyder [11] says the literature review can help academics incorporate empirical study findings. The field is investigated randomly and deliberately. Synthetic findings and sufficient evidence in diverse domains are used to build research conceptual frameworks. Systematic Literature Review (SLR) integrates research findings logically, coherently, and reproducibly[11]. It's the review’s best. Business research rarely uses this healthcare technique. Mantyla et al. [12] state that the SLR requires a dedicated database and several search-string documentaries to be researched exclusively. This study involves a narrative or semi-systematic literature review. Scholars in several fields use systematic reviews to define and study this technique. This technique helps business research by assessing complex topics and designing relevant studies. This is qualitative research. Narrative reviews help scholars plan research. Researchers understand earlier studies and tough situations. [13] This strategy can identify themes, theoretical frameworks, and common research or methodology concerns. This study's review will follow two steps: First, gather "ERP," or "Enterprise Resource Planning," journals. The second step is to analyze and interpret the findings for each title, such as why the ERP system life cycle is
"going alive," the likely stages in the ERP system journey, the possible benefits of three ERP implementation stages, and relevant factors and challenges for repositioning companies from one stage to another.

4. FINDINGS
4.1. The reason why the ERP system life cycle begins with "go live"
Nah et al. [14] state that operational ERP lifecycle implementation is infinite. Willis and Willis-Brown [14] agree with this theoretical notion that ERP deployment has no end date, especially when it is created and executed. Long ago, corporations considered enhancing data systems to help business processes [15]. ERP software almost replaces the existing corporate system to boost productivity and efficiency. ERP dominates other ICT markets, according to Sunner [15]. Avison and Fitzgerald [15] suggest that ERP system use could benefit both individuals and organizations. Information is crucial to organizational development, and the factors needed to obtain it have been rising [15]. Thus, information systems use ERP software to combine all important company data [15]. Zimmerman and Semdley [15] interview managers. After the interview, they learn that ERP's goal is to fix system issues and develop new systematic innovations. Baskerville and Myers [15] also argue that ERP systems aid daily corporate operations, correct faults, and increase technical expertise. ERP shapes and affects individuals in organizational management, according to Zimmerman and Semdley [15]. Zimmerman and Semdley [15] also discuss the importance of consultants in ERP deployment and use, organizational strategy, and operation.

4.2. The probable stages in ERP system journey
Nazime et al. [1] identified five ERP system maturity stages: adoption decision, acquisition, implementation, usage and maintenance, evolution, and retirement. Esteves and Bohorquez [14] describe the ERP implementation lifecycle as pre-implementation, implementation, and post-implementation. Adoption, decision, and acquisition are mentioned by Naizime et al.

Pre-implementation, which determines decisions and processes, will have an impact on implementation and post-implementation [14]. This early phase includes technology overview preparation, vendor task and internal resource decision-making, training programs, logistic strategy modification, pilot study position determination, simultaneous modification decisions, and progressive phase application [14]. Herold et al. [14] advise studying the nature and origin of attitudes that change initial behavior, such as fighting again, involvement, and critical response. Understanding the nature and origin of these attitudes [14] may help guide implementation-stage decisions.

In Implementation stage, Abidnour-helm et al. [14] say this phase's conclusion takes time. ERP deployment might take 12–30 months [14]. This phase is critical to implementation success since it involves several actions.

In final ERP, it evaluates the performance's efficacy, credibility, data quality, and applicability [14]. Caldwell [14] said the post-stage will assess implementation benefits after one to three years. Nah et al. [14] listed five post-implementation maintenance measures. Corrective, adaptive, prospective, preventive, user support, external parties Five distinct maintenance tasks Troubleshooting, data import, and seller information updates are corrective maintenance. Adaptive maintenance encompasses transmission, inspection, adaptation, and development, whereas preventative maintenance requires workflow control and administration. User support offers a help desk and consumer training. Finally, third parties handle vendor, consultant, and user contacts.

4.3. Possible advantages of three stages of ERP implementation
Ali and Miller's [14] research found that pre-implementation influences new hires' early views and ERP success. ERP deployment early on can uncover resistance, connection, and feedback for subsequent stages [14]. Hong and Kim [3] emphasize that the pre-ERP phase affects organizational attitudes regarding the system and installation quality. Early and post-construction failures can cost money, time, and safety [3]. ERP standardizes, innovates, and improves. ERP use could spread information [16]. Karimi et al. [16] claim ERP reduces system needs. ERP implementation reduces operational costs, predicts

4.4. The relevant factors and challenges for repositioning from one stage to another stage of companies.

Productivity, competitiveness, and product-related consumer satisfaction drive ERP implementation [17]. After implementation, companies confront many challenges. Some organizations' productivity plummets three to nine months after ERP "goes live" [14]. When implementing, maintaining, and improving ERP solutions, firms risk technical accidents, increased business requirements, poor user performance, and bad system design [14]. An organization faces many threats to its ERP life cycle. Palet et al. [14] listed the risks as losing professional IT consultants due to an inaccurate master production schedule, consumer opposition, a lack of ERP knowledge, a loss of vendor assistance, a lack of an appropriate material and resource strategy, and an inability to integrate ERP project components.

ERP software complexity, deployment difficulty, length, and expense restrict firms from progressing [17]. Berchet and Habchi (2005) also show several major threats to firms' growth. The first one is stabilizing, and primary users can't supply all users' needs. Due to a lack of knowledge or competence in using the latest ERP system, Berchet and Habichi [17] warn that deploying a new ERP system may fail to attract users. The information system only reports. Due to evolution risk, a new ERP system is integrated, making maintenance difficult and expensive. Other reasons to stop an organization from moving up In the beginning, they are lack of responsiveness, lack of reinforcement of certain task performance, trouble using the new system, lack of trustworthy and reliable data, cancellation of local performance, and system-wide issues. Lack of desire and the inability to define who will utilize and process the new approach and tool are development concerns. Lack of a vision, mission, and strategy for the information system; wrong decisions by firm executives and specialists; improper and impractical project goals and objectives; and huge and unstructured principles and methodologies are other potential issues [17].

4.5. The discussion of the case study of a company's advantages and disadvantages associated with ERP implementation.

Omantel is Oman’s monopoly Internet Service Provider and Public Switched Telephone Network [18]. The consultant's ERP program helped Omantel understand its stakeholders' needs. The corporation can also address stakeholder concerns, which increases cooperative testing [18]. The corporation also understands its suppliers, customers, subsidiaries, competitors, and authorities. Maguire et al. [18] explore ERP implementation issues. First, it influences the consumer-specific operational implementation duration. Another issue is consumer demand for detailed event freezing. If ERP systems fail or are damaged, Omantel may face regulatory issues and expensive costs [18].

The work streams within the ERP implementation project at Omantel encompassed various critical areas. The customer experience work stream focused on identifying and managing the impact of user acceptance testing on each line of business, incorporating activities such as devising a test strategy plan, developing test scenarios, and managing interactions with other affected lines of business. The technology workstream ensured the availability of necessary technology infrastructure for ERP implementation, encompassing tasks such as establishing user acceptance test environments, developing
design and test documents, and providing testing and technical support resources. Systems development involved conducting a comprehensive compatibility audit of existing customer interfacing systems prior to initiating development activities. The network and systems readiness work stream was responsible for migrating existing and legacy networks and systems as required, along with implementing new designs and changes essential for successful implementation, including solution design production, end-to-end testing, and network/systems change implementation. The customer migration and assurance efforts prioritized minimal customer impact during the platform transfer, employing robust advance notifications for service disruptions and data freezes. Additionally, the inclusion of a back-out plan ensured a clear process for migrating customers back to legacy systems, if necessary, while minimizing service disruptions [18].

Furthermore, Company X is a prominent enterprise focused on the construction of warehouses, industrial facilities, large-scale supermarkets, and shopping centers in Latvia [19]. The implementation of an ERP system in this company offers a range of benefits. Firstly, it enhances organizational operations by streamlining and managing processes across different functional divisions like purchasing and customer service. Secondly, it significantly reduces the time and financial resources required for business development. Additionally, it improves service management by leveraging resource management, leading to better control over personnel and expenses. Furthermore, it enhances the quality of the operating quality management system, reducing complexity and workload for employees. The system also enables simple and organized product planning, facilitates communication and transmission of critical data for wholesalers, and provides capabilities for efficient monitoring of sales and marketing activities [19].

Due to Company X’s unfamiliarity with this ERP system, there are challenges in addition to these benefits. Additionally, combining the ideas and opinions of personnel is problematic. Moreover, it is not simple to advance a top implementation project [19]. CDA [20] is the final business to consider that operates in Dubai’s social sector, promoting national identity and providing social protection. Customer contentment is achieved when implementing an ERP system [20]. Prior experience with ERP has yielded positive results for CDA, and a stand-alone system has been integrated into a single system. In the field of finance, ERP aids in reducing costs and enhancing accountants’ skills and efficiency, and it also provides a great deal of assistance in the field of information technology [20]. The CDA’s issues with the ERP system are the system’s complexity and the costly and difficult ERP implementation. Alsharari [20] indicates that CDA is also concerned with hazards associated with the process, alternative prevention, vendor quality, system selection, and the quality of the executor.

5. DISCUSSION

There is widespread agreement that implementing an ERP system is a journey with multiple stages. The stages are "pre-implementation, implementation, and post-implementation" [21]. There is a close relationship between these ERP stages, each of which fulfills a distinct, essential function. Specifically, pre-implementation has a substantial impact on the outcome of the subsequent stage, implementation. In other words, the process of preparing implementation can affect the timing of technology introduction, the determination of the role of vendors and internal resources, and the preparation of initial training. During the implementation phase, businesses will adapt and modify their ERP systems so that they can meet consumer demands. Post-implementation maintenance and enhancement of the ERP system are the responsibility of the concluding phase. This allows organizations to quickly identify and resolve issues. Despite the fact that each phase plays a crucial role in achieving a successful ERP system, implementing the system is viewed as the most essential. There are numerous justifications for this argument. First, if the entities successfully conclude the implementation phase, their production will be efficient, and data quality will be improved to some extent.

Moreover, this action can reduce not only training costs but also IT costs. However, the imple-
mentation of the ERP system is also regarded as one of the most difficult projects that companies must thoroughly evaluate before investing in. There are numerous issues that can arise during this process, such as the high cost of software, adjustments that meet customer requirements, and intricate integration. Another significant issue is the lack of support from upper management or specialists. Consequently, organizations must calculate their "consultant's capabilities" during the pre-implementation phase. When problems arise, professional technicians should be available to assist, and managers should monitor the process closely with the goal of transferring all necessary system knowledge to their employees. Lastly, in order to avoid failure, the collaboration between members of the ERP project, such as administrators, experts, staff, and users, should be maximized.

6. CONCLUSION AND RECOMMENDATIONS
This research provides a detailed explanation of the ERP maturity stages as well as the benefits and drawbacks of each stage and ERP application in various business sectors. This research paper's information and materials were found in eleven scholarly articles from the VU library and Google Scholar, allowing it to provide a comprehensive examination of ERP. This study defines and explains the meaning of the ERP implementation lifecycle in detail. ERP systems are the most effective instrument for increasing profit, enhancing organizational efficiency, and facilitating the straightforward achievement of business objectives. Although there are still some critical issues in ERP implementation, such as the high cost and complexity of the system, international and large or small businesses still need to implement ERP in order to achieve the best performance in the operation of every functional department. Since the implications of the study are global in scope, the Vietnamese corporation can use the study's findings as a guide for pursuing an ERP system in order to increase its business's competitiveness.

REFERENCES


Tổng quan về hệ thống ERP, thách thức và cơ hội trong việc triển khai hệ thống ERP trong các tổ chức

Nguyễn Thủy Tiên và Trương Thành Tâm

Tóm tắt
Các tổ chức lợi nhuận tin rằng hiệu quả của hệ thống Hoạch định tài nguyên doanh nghiệp (Enterprise resource planning) có thể đạt được thông qua quá trình triển khai lâu dài. Hơn nữa, một số tổ chức lớn đạt được nhiều lợi ích khi họ ứng dụng phần mềm ERP trong tổ chức. Do đó, ứng dụng hệ thống ERP sẽ không ngừng phát triển. Bằng cách tiến hành nghiên cứu tổng quan với phương thức bản her thông, nhà nghiên cứu và nhà phân tích đã chứng minh được nhiều lợi ích của việc triển khai thành công phần mềm ERP trong tổ chức quản lý doanh nghiệp từ giai đoạn đầu đến giai đoạn cuối của việc triển khai hệ thống này. Những kết quả nghiên cứu về hệ thống ERP và các loại ích của hệ thống ERP trong tổ chức được đề cập chi tiết trong bài nghiên cứu này. Từ thư thập các thông tin và tài liệu tham khảo, bài báo khoa học này đưa ra thảo luận và các nghiên cứu dẫn hình để chứng minh trải nghiệm thiết thực ERP của các tổ chức.
chức doanh nghiệp. Nghiên cứu cũng chỉ ra rằng việc triển khai hệ thống ERP cũng được coi là một trong những dự án khó khăn nhất mà cần có sự hợp tác giữa các thành viên của dự án ERP.

**Từ khóa**: Hệ thống ERP, Vòng đời, giai đoạn, hành trình, triển khai hệ thống, tổng quan hệ thống

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