

**OPPORTUNITIES, CHALLENGES AND COMPETENCIES OF ERP SYSTEM IMPLEMENTATION FOR KEY-USER SUCCESS IN BUSINESS ENVIRONMENT****Ragupathy Nagarajan<sup>1</sup> and Dr. Dolphy Abraham<sup>2</sup>**<sup>1</sup>PhD Student, Alliance University School of Business, Alliance University, Bengaluru, India<sup>2</sup>Independent Researcher, Bengaluru, India**ABSTRACT**

*The primary goal of this research is to review existing literature on the topic of key-user competences as they pertain to enterprise resource planning (ERP), specifically examining studies conducted during the ERP lifecycle's usage phase and their impact on ERP system success. An increased degree of learning and information sharing within the company is necessary due to the introduction of a new enterprise resource planning (ERP) system and the associated changes to business processes and transactions. The ERP implementation project's key-users, who are also business users, are pivotal to the transformation process because they assimilate both the internal knowledge of business processes and the external knowledge of ERP.*

**1. INTRODUCTION**

Every day, companies rely on enterprise resource planning (ERP) software to handle tasks like accounting, purchasing, project management, compliance, risk management, and supply chain operations. Included in a comprehensive ERP system is enterprise performance management software, which aids in financial outcome planning, budgeting, prediction, and reporting. ERP systems facilitate the exchange of data between various corporate activities by connecting them. Enterprise resource planning (ERP) systems provide data integrity by consolidating an organization's shared transactional data from several sources, hence eliminating data duplication. Enterprise resource planning (ERP) technologies are now indispensable for the management of thousands of companies across all sectors and sizes. For these businesses, enterprise resource planning (ERP) is as necessary as running water and electricity.

**1.1 ERP Features**

Many company processes can be better managed with the help of an ERP system integration. Because of the improved information flow, the processes are simplified. According to market trends, it often manages and defines a number of functions. The following processes might be simplified with the help of an ERP system for a manufacturing company:

1. Financial Management
2. Management of Human Resources
3. Management of Stock
4. Management of Quality
5. Purchase and Sales Administration

In contrast, the following may be part of an enterprise resource planning (ERP) software package for a retail company:

1. Financial Management
2. Personnel Administration
3. Distribution and Supply Chain Management
4. Retail Administration

Just a handful of an organization's functional areas could be automated with this technique. Nevertheless, the financial management system serves as an illustration of how each region has its own unique set of features. Included in this are the ledger, accounts receivable, and payable, among others. Therefore, ERP will facilitate the management of several departments via a unified platform. Concerning jobs and departments alone, there is no need to fret.



## ERP Features

### 1.2 The Phases in ERP Lifecycle

Understanding the basics of the phases of ERP lifecycle would benefit to understand the people side of the implementation. ERP products are available as a packaged solution that could be adapted according to the business needs of the implementing organisation (AboAbdo et al., 2019; Ifinedo, 2011b; Rutz et al., 2023). Hence, the IS life cycle is different for an ERP implementation project when compared to the traditional IS development projects. Being a pre-packaged solution, ERP is configured aka parametrised to meet the business needs of the organisation, which is significantly different from the conventional programming a software on a bespoke model (AboAbdo et al., 2019; Rutz et al., 2023). The ERP lifecycle has six distinct phases, and each phase contains very distinct activities. The life of an ERP crosses these six distinct phases gradually from its conception till its retirement from action (Esteves & Pastor, 1999). They are 1) adoption decision phase, where the organization identifies the growing business requirements, information requirements, systematic approach requirement, and drawbacks of their absences; thus, leading to the justification of ERP acquisition, 2) acquisition phase, where the purchase decision is made after through scrutiny, 3) implementation phase, covers the process of introducing the new ERP system for business transactions, 4) use & maintenance phase, that covers the usage of the ERP and start deriving the required benefits, 5) evolution phase, where activities are carried out to enhance the usage and derive maximum benefits for the ERP, and finally 6) retirement phase, that delays with the inadequacy of the ERP for the changing needs of business and technology and thereby ending with the process of replacement with a newer system.

### 1.3 The Teams in ERP Implementation

The ERP implementation team is a blend of internal and external members. Internal members include business users with required business process knowledge and usually represent a process or a specific function (department). Such members are called the key-users and by other names as super users or power users. External consultants with required industry knowledge and product knowledge form part of the external members in the implementation team (Wu & Wang, 2007). While external consultants configure the new ERP system in accordance with the business process / requirements, the key-users learn the knowledge of the system features and functionalities from the external consultants (Ha & Ahn, 2014; Maas et al., 2016). In the absence of the external consultants the key-user remain as the ERP knowledge base for the organization (Cronan & Douglas, 2013; Rutz et al., 2023; Sumner, 2018)

### **1.3 The benefits of ERP System**

Apart from business process focus, these ERPs provided the best of breed in-built features and functionalities bundled with industry best practices (Ifinedo, 2011a; Parr et al., 1999; Umble et al., 2003). Thus, companies fancied their chances to use such readymade packages which circumvented the development of such packages from in-house (Wang & Ramiller, 2009). Further impetus to adapt such enterprise applications came through the requirements of compliance and standards such as Sarbanes – Oxley Act (SOX), generally accepted accounting principles (GAAP), and International Financial Reporting Standards (IFRS) to implement the standard accounting practices (T. H. Davenport, 1998; Markus & Tanis, 2000). A standard ERP system from a renowned vendor is expected to meet these requirements. Though a plethora of advantages added merits to implement an ERP, the single major reason for companies to implement an ERP remained was the business control the management team can exercise through the visibility of enterprise information (Shaul & Tauber, 2012). ERP serves as boon to top management to view integrated data / information across the business instead of a single department, to control business as whole and more importantly allow them to set the corporate goals correctly (Kunduru, 2023). ERP serve as the core software package used by organizations to manage business transactions and information requirements across every functional area of business. Certainly, ERP can be termed as phenomenon in the IT industry due to the significance it developed over the years within companies that had implemented by providing the required integration of business processes, systems and information through rearchitecting the portfolio of transaction processing applications systems (Markus & Tanis, 2000; Monk & Wagner, 2012).

### **1.4 The ERP Implementation Challenges**

Though offering obvious benefits, implementing an ERP in an organization has been far from smooth. There are wide-spread failures of ERP, ranging from partial failure to complete failure. There are bitter cases where the failure in implementing an ERP led to the bankruptcy of the implementing company (Scott, 1999). One of the earlier studies showed that 90% ERP implementations end up late or over budget, more than 40% of large software projects fail and nearly 70% of enterprise application initiatives were considered as negative or unsuccessful (S.-I. Chang, 2004). According to the latest market report nearly 50% of the ERP implementations failed on the first attempt and most of the projects overshot the budgets by 3-4 times (J. Chang, 2023). Though, there are anecdotes of similar difficulties and failures observed with each wave of information technology starting from mainframe systems, ERPs posed a whole new dimension to the analysis as ERPs served as new breed of software application packages. Avon's failed order-management project (Henschen, 2013), Target's cross-border expansion mistake (Dolfing, 2019b), Lidl's €500 Million SAP Debacle (Dolfing, 2020) and Revlon's failed SAP implementation (Dolfing, 2019a) were the horror stories of failed implementations that continued to rock the ERP world. Critical people-related challenges such as employee's' resistance to change and lack of management support were found to be major causes of failures (J. Chang, 2023). Thus, the quest to explore the people-related factors has been a constant endeavour for both academicians and practitioners. competency and any existing relationship on the success of ERP.

## **2. KEY-USER ERP COMPETENCY**

A quick peep into the basic definition of the term competency would help us to understand the constructs of competency better. Competency is defined as the knowledge, skills, and ability to perform effectively in a given context. Also, it is the capacity to transfer knowledge and skills to new tasks and situations (Hunt & Wallace, 1997). Though the terms skills and competencies are used interchangeably, there are clear distinctions between them. While skills refer to ability to perform well in a given situation, competencies refer to abstractive nature where the ability can be extended to newer tasks situations. Skills, knowledge and ability are the sub-sets of competencies (Kanungo & Misra, 1992).

The success of Enterprise Resource Planning (ERP) implementation is heavily dependent on the knowledgeable and skilled users. Some of the common constructs used to conceptualise key-user competency are IT skills of business users (Ifinedo, 2011a), computer self-efficacy (Shao et al., 2015), human, technical & conceptual skills (Mahdavian, 2016) and key-user competence (Krell et al., 2016). While these construct focuses on either product

skill or individual personal traits, they fall short in a comprehensive definition of key user attributes. Another study points out that there are three key attributes of a key-user, namely business process knowledge, software application knowledge, and collaborative task knowledge, as crucial for a productive IT user in an ERP environment (Cronan & Douglas, 2013). Business process knowledge covers the general understanding about the business operation procedures, major activities and terminologies, and their inter-relatedness. It is the knowledge about the horizontal flow of activities and information cutting across the various functional areas of business. Software application knowledge, also termed as ERP transaction skill, is the ability of the individual to perform the required tasks in the ERP application to support the business operations. It covers the i) ability to navigate the system to locate the commands to perform specific tasks or to inquire for information, and ii) the ability to understand the setup of the system and the associated data structure. Collaborative task knowledge, termed as the enterprise system management knowledge, is the grasping about the significance and impact of ERP on organization such as organizational structures, responsibilities, decision making, and reporting (Cronan & Douglas, 2013; Sumner, 2018).

While looking at the literature for studies that used these attributes of the key-users and their relationship with the success of ERP, limited studies explored these attributes either in total or in parts and their effect on the success of the ERP system.

Business process knowledge is the very widely accepted and explored attribute of the key-user and assorted studies emphasised its importance at the implementation phase of the ERP lifecycle. Key-user's business process knowledge is considered as vital in an ERP implementation since it presents the organization context, organization's business processes, and the competitive situation of the organization (Wu & Wang, 2007; Xu & Ma, 2008). Key-users are considered as the knowledge bearers and a transmitter of business process knowledge to the external consultants during the implementation of the ERP (Wu & Wang, 2007). Key-users deploy various strategies to break the boundaries of knowledge such as i) structural boundaries that includes organization structure & rules, ii) social boundaries such as groups and sub-groups, and iii) cognitive boundaries such as differences in understanding, ideas, and beliefs and ensure the organization knowledge is acquired and transmitted to derive the ERP benefits (Maas et al., 2016). Business user's IT knowledge is found to have a positive impact on one of the success dimensions namely information quality (Ifinedo, 2011a). Another study states that key-users knowledge about the ERP system and their ERP transaction skills are high compared to the rest of the users in the organization since their knowledge acquisition is directly from the external expertise (Maas et al., 2016; Xu & Ma, 2008). Though studies theoretically mention these attributes of the key-user as crucial factors in ERP implementation projects, the literature fails to show the presence or absence of the effects of these attributes on the success of ERP during the usage phase. While the competency attributes of the external consultants found to be well documented in the body of knowledge with their relationship on knowledge transfer and ERP success, the competency of key-user remains an understudied area.

### **3. SUCCESS OF ERP**

While exploring the effect of key-user's competency on the success of the ERP systems, the definition of success of ERP systems is found to be a complex phenomenon. The presence of ambiguity is found with both in literature and in practice. Two major perspectives are found with respect to the measure of success of enterprise system implementations. The first, implementation success perspective, focuses on the efficient implementation of a new system within the defined constraints of time and cost, while the second, business result perspective, emphasizes achieving the intended business outcomes. The implementation success perspective evaluates the success of the project based on how well the project adhered to project metrics such as timelines, budget compliance, and resource utilization. The business results perspective assesses the success of the project based on the realisation of business goals and the overall impact on the organization such as ROI (return of investment) and user adoption & satisfaction (Markus & Tanis, 2000). The notion that success is multidimensional and relative is rooted in the complexity and dynamic nature of projects and organizations. Recognizing the multidimensional and relative nature of success emphasizes the need for a nuanced and context-specific approach to assessment. It also



highlights the importance of ongoing evaluation and adaptation, as success criteria may evolve throughout the project lifecycle and in response to external changes. Ultimately, a comprehensive understanding of success considers not only project management metrics but also broader organizational goals and stakeholder perspectives (Larsen & Myers, 1997). Measurement of success of an ERP system implementation is indeed a complex and nuanced task, precisely because perceptions of success can vary among different stakeholders within an organization due to stakeholder diversity, varied business objectives and use of different performance metrics (Ifinedo, 2007). While efficient implementation is crucial, the final goal is to deliver value to the organization by achieving the intended business outcomes. A balanced assessment that takes into account both perspectives provides a more holistic view of project success (Gable et al., 2008; Markus & Tanis, 2000). A clear definition of success and a comprehensive measurement model was elusive until a clear success definition model was developed termed as IS Success model (Gable et al., 2008). Indeed, the assessment of ERP success has evolved from relying on ineffective single measures to embracing multi-dimensional models. The DeLone and McLean Information Systems (IS) Success Model is one such influential framework that has been widely adopted in the field (DeLone & McLean, 1992). The refined version of the multi-dimensional and inter-related IS success model introduced in the early 2000s is widely appreciated by both practitioners and academicians (Gable et al., 2008; Ifinedo et al., 2010). This model recognizes the interrelated nature of the dimensions, emphasizing that success should not be evaluated based on a single criterion but rather by considering the holistic impact on users and the organization (DeLone & McLean, 2003). By adopting multi-dimensional models like the DeLone and McLean framework, researchers and practitioners can obtain a more nuanced understanding of ERP success, considering both subjective user perceptions and objective organizational performance metrics. This approach helps in capturing the complexity and varied aspects of success in ERP implementations.

Recognizing the unique complexity of ERP systems, Gable, G., Sedera, D. and Taizan, C. introduced a model popularly known as the 'Gable's model' (Gable et al., 2008). This model tailored the D&M framework to better suit the intricacies of multi-functional and integrated enterprise-wide solutions such as ERPs. This model acknowledges the dynamic nature of ERP success and the need to assess both the current impact and the potential for future benefits. It offers a more nuanced and targeted approach to evaluating ERP success during the post-implementation phase, considering the long-term objectives and outcomes of ERP systems in organizations.

The model proposed by Gable et al. (2008) represents a tailored adaptation of the DeLone and McLean (D&M) Information Systems Success Model, specifically designed to address the unique characteristics and challenges associated with ERP systems. Gable's model is specifically designed for assessing ERP success during the post-implementation stage. It acknowledges that the benefits derived from ERP systems may continue to evolve over time and seeks to measure the impact of the system up to the current date. The four dimensions of success proposed by this model are:

1. **System quality:** This dimension assesses the technical aspects of the ERP system, focusing on factors such as reliability, performance, and usability.
2. **Information Quality:** Evaluates the quality of information produced and managed by the ERP system, considering factors such as accuracy, relevance, and timeliness.
3. **Individual Impact:** Measures the impact of the ERP system on individual users, including improvements in their efficiency, effectiveness, and satisfaction.
4. **Organizational Impact:** Assesses the broader impact of the ERP system on the organization in total, considering factors such as improved business processes, strategic alignment, and overall performance.

The two impact constructs (Individual Impact and Organizational Impact) are intended to capture the benefits realized thus far, while the two quality constructs (System Quality and Information Quality) are geared towards assessing the potential for future benefits. The four constructs are considered mutually exclusive, meaning that each one measures a distinct dimension of success. This enables a more granular understanding of distinct aspects

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of ERP success. By evaluating each construct independently, organizations can identify specific areas of strength and areas that may require improvement. Gable's model suggests that the four constructs can be used in combination to provide a comprehensive measure of ERP success. By considering both the quality dimensions and the impact dimensions, a more holistic view of success can be obtained (Gable et al., 2008; Ifinedo et al., 2010).

#### 4. CONCLUSION

The absence of empirical studies on the function of key-users during the usage or post-implementation phase of ERP is highlighted by the discovered gap in the literature. According to the argument, there is a lack of research on the topic of ERP competency among important users, which is a prerequisite for ERP success during this crucial stage. Additionally, studies on key-users' ERP proficiency are lacking, which is an issue that needs to be explored more in relation to ERP success. To sum up, this research is expected to provide light on the connections between key-users' ERP competences and ERP success after implementation. Practical implications for firms looking to optimize their ERP systems by harnessing the expertise and participation of key-users can be found in this kind of study. On top of that, it helps close a knowledge gap in the literature and provides new information to researchers studying ERP rollouts and their aftermaths.

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