



JOURNAL OF ACCOUNTING AND BUSINESS EDUCATION

P-ISSN 2528-7281 E-ISSN 2528-729X

E-mail: jabe.journal@um.ac.id

<http://journal2.um.ac.id/index.php/jabe/>

Understanding the Implementation of Enterprise Resource Planning System: A Phenomenological Study

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DOI: <http://dx.doi.org/10.17977/jabe.v9i1.53449>

Abstract: This phenomenological study examines the implementation of an Enterprise Resource Planning (ERP) system at PT. X, a construction and engineering company in Indonesia. The research aims to understand the experiences and perceptions of employees regarding the ERP system's integration and its impact on organizational processes. Through qualitative interviews and thematic analysis, key themes emerged such as mindset change, top management commitment, change management strategies, and functional improvements in project control, transaction speed, and human resource management. The findings reveal the transformative effects of the ERP system on operational efficiency, decision-making, and strategic alignment within PT. X. This study contributes to the theoretical understanding of ERP implementation and offers practical insights for companies considering or currently undergoing similar transitions.

Article History

Received:
5 July 2024

Revised:
18 July 2024

Accepted:
23 July 2024

Keywords

Phenomenology, ERP,
SAP, System, Integration,
AIS

Citation: Medyastanti, M, Suharsono, E.G, Baridwan, Z. (2024). Understanding the Implementation of Enterprise Resource Planning System: A Phenomenological Study. *Journal of Accounting and Business Education*, 9(1),17-38.

INTRODUCTION

Companies today must utilize information technology to support their business performance amid a competitive and rapidly changing global economy. Industrial Revolution 4.0, as described by Sukoharsono (2020), marks an era where digital technology revolutionizes various fields, including artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, 3D printing, and autonomous vehicles.

The advancement of technology and the onset of Industrial Revolution 4.0 require companies to maintain their competitive edge and success by developing and implementing internal business process-aligned information systems. This often results in many standalone systems which, despite being efficient for individual departments, lack the integration needed for strategic decision-making at the company level. Effective IT management requires a strategic vision integrating information technology with business processes. A good information system enhances performance and benefits its users (Hartono & Abdillah,

2011). Achieving information system success involves integrating various systems in alignment with the company's business processes.

One technology strategy that involves specific investments in integrating various forms and types of systems is ERP (Enterprise Resource Planning). Enterprise Resource Planning (ERP) is a management information system that optimizes a company's resource distribution and helps businesses integrate all their resources more quickly and effectively to improve operational performance and competitiveness (Hsiao et al., 2007). ERP systems consist of interconnected applications that offer comprehensive solutions to an organization's information system requirements, covering a wide range of business functions such as finance, accounting, human resources, supply chain, and customer information (Shehab et al., 2004). ERP integrates all information systems from functional areas or departments into a single integrated system that accesses a database to facilitate information processes, thereby enhancing communication within the company.

Today, enterprise systems are essential for all types of companies, especially those with many projects or branches spread across different, distant locations, making it impractical to manage all operational activities manually. Companies need an information system that helps achieve their goals, solves various problems, and effectively and efficiently manages their operational activities. It can be said that ERP serves as a software application encompassing enterprise management systems, covering activities from planning and monitoring to reporting.

PT. X, a part of BUMN Karya in the building planning and construction sector, is required to enhance its competitiveness and promote professional, efficient, and effective management. To improve organizational effectiveness and integrate all business processes, PT. X implemented an ERP system. The ERP implementation at PT. X began in November 2016 and initially applied to the EPC Division. Subsequently, in February 2017, it was expanded to the entire Operations Division of PT. X.

Implementing an ERP system requires substantial costs. Apart from the expenses related to the installation of the ERP system itself, companies also need to allocate funds for hardware provisioning, databases, data communication networks, and consultancy fees with ERP installation vendors. Recent research cited from erpfocus.com indicates alarming statistics: 60% of ERP projects fail, 80% of customers are dissatisfied with ERP implementations, 90% fail to achieve measurable ROI (Return on Investment), 95% of companies allocate less than 10% of their total budget to education/training/management changes, 57% of ERP systems take longer than expected to implement, 54% exceed projected budget targets, 32% of ERP executives are dissatisfied, and 39% of ERP workers are dissatisfied (Carlton, 2019).

The high percentage of failures in ERP implementation in companies indicates that it is a challenging process influenced by numerous factors. DeLone and McLean's research in 1992 developed a model for assessing the success of information systems, which includes system quality, information quality, output, user satisfaction, individual impact, and organizational impact. According to Choe (1996), achieving success in implementing an accounting information system in a company is not easy and often encounters challenges influenced by factors such as user involvement, top management support, user training, and education, group dynamics within the organization, and other organizational factors. These elements collectively contribute to the success or failure of ERP implementations, highlighting the complexity involved in integrating such systems effectively within organizational settings. The research by Sánchez and Bernal (2007), based on factors identified from nine studies, identifies 14 critical success factors in ERP implementation. If these factors are categorized into larger groups based on their characteristics, three factors emerge human factors, technological factors, and organizational factors.

From the results of the research discussed earlier, it can be concluded that the qualitative characteristics of information systems play a significant role in the success of implementation. Particularly crucial are the roles of human factors and organizational factors, implying a substantial contribution from HR management—specifically, the readiness and competence of system users—and the organization itself. Achieving successful ERP implementation requires organizational support to optimize company performance. This organizational support is closely tied to top management backing, as ERP implementation involves transformative changes within the organization.

Research evaluating and reviewing the implementation of ERP in companies has been extensively conducted. However, most studies use quantitative approaches focusing on financial aspects and accounting figures. Zhang and Zheng (2019) conducted research aimed at analyzing the impact of ERP implementation on operational efficiency and company performance. Insana and Mayndarto (2019) aimed to determine the effect of ERP system implementation on the financial performance of companies by comparing the first, second, and third quartile values before and after ERP implementation in 33 consumer goods companies listed on the Indonesia Stock Exchange. In 2021, Ramadhanti and Saad also conducted research to analyze the differences in financial performance between companies using ERP systems, focusing on Return On Assets (ROA), Current Ratio (CR), and Debt to Equity Ratio (DER). Similar studies were carried out by Putra et al. in 2021, examining the impact of ERP system implementation on company performance measured by Return On Assets (ROA), Return On Equity (ROE), Net Profit Margin (NPM), and organizational capabilities assessed through Operating Profit Margin and Cash Debt Coverage, using 117 samples of manufacturing companies listed on the Indonesia Stock Exchange. In 2022, Fitriyanti et al. conducted research on the impact of ERP system implementation on financial performance using ratios such as Net Profit Margin (NPM), Current Ratio (CR), and Debt To Asset Ratio (DAR).

The various explanations provided can serve as a basis for researchers to delve deeper into the success of ERP implementation from the perspectives of users, decision-makers, and top management, focusing on PT. X pioneered implementing ERP in state-owned enterprises (BUMN Karya). PT. X, as one of Indonesia's state-owned enterprises, implemented an ERP system in its business processes in late 2016, yet no evaluation has been conducted post-implementation. Moreover, previous studies on ERP implementation success predominantly emphasize quantifiable factors such as financial and accounting aspects. However, financial and accounting aspects are not solely influenced by the success of ERP system implementation but can also be affected by the company's economic conditions, particularly amidst the last two years of the COVID-19 pandemic impacting Indonesia and the global economy. Researchers have also not found studies focusing on an in-depth qualitative study concerning personnel and organizations implementing ERP systems. This aligns with the findings of Sánchez and Bernal (2007), indicating that human factors and organizational factors significantly influence ERP implementation success.

This research can provide both theoretical and practical contributions for researchers and other parties related to the research topic. It contributes to the development of theory in understanding the application of ERP systems in companies, influencing the success of these systems. Additionally, it serves as a consideration for management in selecting and implementing ERP systems, ensuring that their application has a significant positive impact on users and the company. Practically, this research benefits accounting practitioners, particularly those in the field of accounting information systems, in applying ERP systems. It also aids in policy-making, especially policies formulated by company management regarding the application and implementation of ERP systems across all company divisions, not just the parent company. This is crucial as ERP implementation can provide positive benefits to the company. Furthermore, it contributes to the Kementrian BUMN in formulating policies for BUMN companies concerning ERP system implementation. It is hoped that the Ministry will not only issue recommendations but also establish policies mandating the application and implementation of ERP systems in all BUMN companies in Indonesia. Lastly, this research contributes to the system development of companies, enabling management to focus more on developing ERP systems that meet needs and support the company's growth in today's digital era.

LITERATURE REVIEW

According to Wibisono (2005), ERP is an integrated computer-based system designed to process company transactions and facilitate integrated, real-time planning, production, and customer response. (Hall, 2011) describes ERP as an information system model that allows an organization to automate and integrate its main business processes. Galy and Saucedo (2014) state that ERP is widely implemented globally because it provides accurate and real-time information to companies. ERP software integrates all departments and functions of a company, including procurement, sales, marketing, production, accounting,

finance, and human resources. Successful ERP implementation requires proper computer applications and infrastructure, both hardware and software. The most critical aspect of an ERP system is integration, combining various needs into one software with a single logical database, making it easier for departments to share information and communicate, resulting in accurate and real-time data access.

ERP systems originated from the MRP II (Material Requirement Planning II) concept, which itself evolved from the first-generation MRP. Although the concept of ERP was believed to have been formulated in the 1960s, it was not referred to as ERP at that time. The need for companies to enhance their competitiveness and optimize resources led to the widespread adoption of this technology by large companies. The term ERP was introduced in 1990 by Gartner Group (Martina, 2020). By then, ERP systems included functions like inventory management, operations, finance, marketing, human resources, and project management, complemented by a network system that kept units interconnected.

ERP functions consist of two general applications: core applications and business analysis applications. Core applications are those that operationally support the daily activities of the business. If these applications fail, the business also fails. Core applications of an ERP system include sales and distribution, business planning, production planning, control, and logistics but are not limited to these areas and should be tailored to the company's needs. These applications are also called online transaction processing (OLTP) applications (Hall, 2011).

The success of business analysis applications centers on their function as data warehouses. A data warehouse is a database created for precise retrieval, specific queries, and ease of use (Hall, 2011). The definition of a data warehouse itself is a database designed to serve quick searches, retrievals, specific requests, and ease of use. Data is usually extracted periodically from operational databases or public information services. An ERP system can exist without a data warehouse, and organizations that do not implement ERP might still use data warehouses. However, organizations serious about competitive advantage will use both.

According to Shehab et al. (2004), several of the most popular functions in each ERP module are shown in Figure 1. However, the names and number of modules in an ERP system provided by various software vendors may differ. Generally, ERP is a "do it all" system that can perform all company functions, from sales order entry to customer service. ERP integrates suppliers and customers with a company's manufacturing environment (Shehab et al., 2004). For example, a purchase entered in the order module is then forwarded to the manufacturing application, which subsequently sends a material request to the supply chain module. This module obtains the required parts from suppliers and uses the logistics module to deliver them to the factory. Simultaneously, the purchase transaction is displayed in the ledger module as revenue.

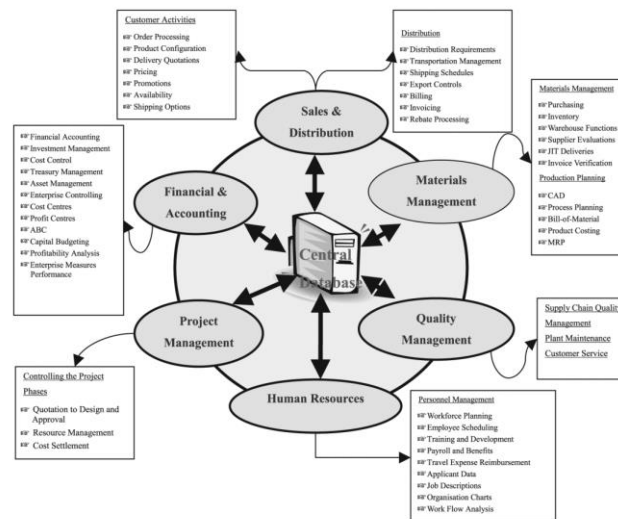


Figure 1. ERP System Module

ERP plays many crucial roles within a company. This is because each department in the company is integrated into the ERP system. The ERP system encompasses the integration of all parts of the company, both structurally and functionally. Structurally, company resources are grouped according to a certain hierarchy, such as divisions, departments, sections, and work units. Functionally, company resources are grouped based on their roles within the company, such as procurement, purchasing, accounting, marketing, and others.

The objective of ERP in an organization is to coordinate the organization's business as a whole. ERP functions to (1) automate and integrate many business processes, (2) share a common database and business practices across the enterprise, (3) produce real-time information, (4) improve data management, (5) facilitate communication both internally within the company and with external parties, and (6) enable the integration of transaction processes and planning activities (Ray, 2011).

The investment required for ERP is very high, and a poor choice of ERP can become a nightmare for the company (Khaitan, 2003). In addition to reaping the benefits of a successful ERP system implementation, it is crucial to be aware of several factors that can lead to ERP failure, such as (1) lack of commitment from top management; (2) inadequate definition of company needs (business strategy analysis); (3) flawed software selection process; (4) lack of resources, including human resources, infrastructure, and capital; (5) miscalculation of implementation time; (6) misalignment between software and business processes; (7) insufficient training and learning; (8) flawed project design and management; (9) poor communication; and (10) misleading cost-saving suggestions.

The ERP implementation process involves several stages, as described by (Cornelius III, 2006). First is the strategic plan, the most crucial stage, involving research on how significantly ERP will impact the company's overall business processes. During this stage, Business Process Reengineering (BPR) is conducted to ensure integration between the software modules and the company's business processes. Next is assessing company readiness, where the company initiates ERP policy implementation across all lines to encompass all divisions and levels of the organization. Vendor selection preparation follows, based on the company's business characteristics and the initial ERP study conducted within the company. Vendors are chosen by evaluating their track record and professionalism, with reputable vendors typically having certification from software publishers. The implementation planning stage involves thorough scheduling and human resources planning, usually taking one to two years, depending on the company's readiness and the complexity of the ERP to be implemented. ERP software implementation is then carried out by the installer in coordination with the company's internal IT division and management, which play central roles during this stage. Mistakes often occur when the implementation is fully handed over to the vendor. Finally, the post-implementation assessment stage involves a support period by the vendor to maximize the ERP implementation.

METHODS

This research employs an interpretive paradigm with a phenomenological approach to understand phenomena in their pure form, as initiated by Edmund Husserl. Phenomenological studies, as described by Creswell (2013), aim to describe the common meaning of individuals' life experiences regarding a concept or phenomenon, focusing on shared experiences. The main goal, according to Manen (1990) in Creswell (2013), is to distill individual experiences to their universal essence, describing what and how participants experience the phenomena (Moustakas (1994) in Creswell (2013)). This study uses Husserl's transcendental phenomenology, emphasizing objective science and consciousness analysis (Husserl & Carr, 1970). It aims to uncover not just observable phenomena but also the awareness and interpretation of ERP implementation by individuals at different management levels.

The research seeks to analyze the meanings and roles of individuals in ERP implementation, exploring their conscious experiences before and after ERP system implementation. The focus is on understanding actions, interactions, and interpretations rather than evaluating the correctness of the implementation process. The study aims to provide insights into how individuals at various management levels perceive and contribute to ERP system implementation, based on their subjective experiences.

The research object of this study is PT. X, a state-owned enterprise (BUMN) engaged in construction, EPC (Engineering, Procurement, and Construction), and investment, with its main business being general contracting. PT. X was established in 1953. The headquarters of PT. X is located in Jakarta, and currently, it has four operational divisions: Infrastructure Division 1, Infrastructure Division 2, Building Division, and EPC Division. Based on preliminary research, PT. X's business became increasingly complex, prompting a restructuring at the beginning of 2017 to evaluate performance and implement improvements for growth, competitiveness, and increased company value. The restructuring activities included organizational structure changes, financial policy changes, change management, and transitioning the company's systems. Initially, PT. X used PCCS (Project Cost Control System) for control and ACCPAC for accounting, both of which were standalone systems requiring manual integration for data consolidation. The transition to an ERP system began in late 2016, starting with the EPC Division and fully implementing it across all operational divisions in 2017.

In the data collection phase, the research employs several techniques. Preliminary research aims to analyze the underlying main issues and was conducted in August 2023 through semi-structured interviews with selected informants to understand the current conditions and general overview of the research subject. The observation method chosen is participant observation, where the researcher observed events, processes, and occurrences related to the implementation of ERP at PT. X over approximately three months, from April to June 2024. During this period, the researcher directly observed how the ERP system aligns with PT. X's business processes, from input stages to report generation and management decision-making. This involved closely observing the OC-SCM Division and ERP Department within PT. X, including one of its projects. Additionally, data collection involved multiple in-depth interviews using both structured and semi-structured interview techniques. This approach aimed to understand how participants perceive and contribute to ERP implementation at PT. X. Semi-structured interviews provided flexibility while adhering to interview guidelines, focusing on understanding how different management levels perceive the benefits and utility of ERP in decision-making. Documentary research supplemented the observation and interviews, utilizing written materials such as interview transcripts, recordings, and photos depicting the subject, as well as screen captures of ERP system inputs and outputs. Additionally, internal and external reports related to ERP implementation at PT. X, including technical data, blueprints, and flowcharts provided by PT. Telkom Indonesia was used for data triangulation and verification.

This methodology aimed to provide a comprehensive understanding of ERP implementation at PT. X through a qualitative lens, capturing diverse perspectives and ensuring data validity through multiple sources.

In this research, informants are key individuals who possess expertise on the researched issues (key informants). Subjects are chosen based on their representation of information or data. The study avoids generalization, ensuring each subject represents themselves. Subjects include representatives from PT. X, specifically ERP system users, decision-makers (middle management), and top managers responsible for policy-making. The criteria for informants to be interviewed are:

1. Personnel from PT. X's IT (Information Technology) unit, is involved in supporting ERP system implementation and development.
2. Representatives of ERP system users who are directly involved and knowledgeable in operating the ERP system.
3. Middle management representatives are closely involved with using ERP system outputs or reports for management decision-making.
4. Top management representatives involved in policy-making regarding ERP system usage at PT. X.
5. External representatives or ERP system implementers at PT. X, such as PT. Telkom Indonesia.

This study employs the transcendental phenomenological approach, analyzing data by reducing information into meaningful statements and combining these statements into themes (Creswell, 2013). The researcher analyzes data by setting aside their own experiences to discover first-person perspectives of the observed phenomena. Transcendental phenomenology, or Moustakas' psychological phenomenology (Creswell, 2013), focuses less on the researcher's interpretation and more on describing participants'

experiences. Moustakas emphasizes Husserl's concept of "epoche" (or bracketing), where researchers set aside their experiences as much as possible to gain a fresh perspective on the phenomenon under investigation. Thus, 'transcendental' means perceiving everything anew, as if for the first time (Moustakas, (1994) in Creswell (2013)).

The data analysis procedure, as illustrated by Moustakas (1994) in Creswell (2013), consists of the following steps:

1. Identifying the Phenomenon to be Studied: At this stage, the researcher comprehensively describes the phenomenon experienced by the informants. All recordings of in-depth interviews with informants are transcribed into written text for easier analysis. The spoken language from the interviews is fully transcribed into a text.
2. Bracketing or Epoché: The researcher begins by performing bracketing or epoché, which involves setting aside personal experiences and suspending judgment or conclusions. The goal is to focus more on the research subjects and avoid mixing important points with subjectivity.
3. Collecting Data from Several People Who Have Experienced the Phenomenon: Additionally, the researcher inventories important statements relevant to the phenomenon of implementing the new system, namely the ERP system, at PT. X.
4. Analyzing Data by Reducing Information into Significant Statements or Quotes and Combining Statements into Themes.
5. Developing Textural and Structural Descriptions: The researcher creates textural descriptions, which describe "what" the informants experienced regarding the phenomenon. Structural descriptions, or imaginative variations, describe "how" the phenomenon was experienced by the informants (Creswell, 2013). The combination of textural and structural descriptions conveys the overall essence of the experience.

After completing data analysis, the final stage involves reporting research findings. The research report is presented in narrative form and tables that complement each other. This aims to provide readers with a better understanding of how informants experience the phenomenon of implementing a new system, specifically ERP at PT. X. The research report also demonstrates a singular unity of meaning from the phenomenon, indicating its significant "structure."

After analyzing the obtained data, the next step is to ensure validity, which cannot be achieved through statistical tests in qualitative research. One approach is triangulation, aimed at gaining a deeper understanding of the studied phenomenon. Triangulation is not a tool for proof but an alternative to it. The truthfulness of data is not verified based on the instrument's accuracy but on intersubjective truth. Triangulation is a validity-checking technique in which interview results are compared with the research object using different methods—interviews, observations, and documents (Moleong, 2021). In this study, the researcher employs triangulation specifically through the methodological examination of collected sources. After gathering interview and observation notes, cross-verification is conducted to ensure consistency between interview and observational data. Any discrepancies are investigated for their origins and details and confirmed again with informants and other sources. This process continues throughout data collection and analysis until all discrepancies are resolved, and no further information requires confirmation from informants.

RESULTS AND DISCUSSION

THE INITIATION OF ERP SYSTEM IMPLEMENTATION AT PT. X

The phase of the fourth industrial revolution demands companies to swiftly adapt to significant changes in technology and digital fields. This also impacts PT. X, a state-owned enterprise engaged in construction and investment with over 70 years of experience in building infrastructure, properties, and EPC projects. The complexity of PT. X's transactions, involving dozens or even hundreds of projects both domestically and internationally, necessitate a system capable of integrating various functions and

generating real-time reports accessible to management for decision-making guidance. One way to achieve this success is through more efficient business process management, enabling services that save time, reduce costs, and meet vendor and customer expectations in terms of quality. Therefore, PT. X has chosen an Enterprise Resource Planning (ERP) technology system, designed to integrate marketing, production, logistics, human resources, finance and accounting functions, and other operations into a centralized data repository accessible in real-time. This ERP system is used to help PT. X integrates information from various business functions and centralizes resource management, thereby simplifying data presentation for the management's needs.

ERP system implementation journey at PT. X, initiated in 2011. NW, who was the former Operations Analyst Manager at that time, proposed the use of an ERP system to the company's board of directors in 2011. Subsequently, NW along with DVRT (now the Stratech Division) studied various ERP systems. They began with presentations by ERP implementers, including Oracle. After several studies with DVRT, it was decided to develop a "tailor-made" ERP system, designed and developed by a programmer to integrate existing systems across PT. X's units. Unfortunately, this ERP project designed with DVRT failed and did not reach completion. The programmer from Singapore faced difficulties due to the variety of platforms across PT. X's operational units. Since the failure of the ERP project in 2011, PT. X has continued to expand, marked by the addition of divisions and subsidiaries, necessitating a system that can handle the company's transactional complexity and needs. NW also highlighted these developments:

"PT. X continues to grow, with the addition of divisions and subsidiaries, and has been continuously expanding since 2011, which makes us in the data department constantly emphasize the importance of creating an ERP with a platform that can become the company's 'brain system'."

Year after year passed until 2015, during the first quarter Management Review (MR) forum at PT. X, NW mentioned another opportunity arose for ERP implementation at PT. X. During that MR session, a guest speaker from PT Indika presented on Supply Chain Management (SCM). The Board of Directors became interested in establishing an SCM Division at PT. X, accompanied by the implementation of an ERP system because according to NW, SCM cannot be effectively run without using ERP or a unified platform across all units. Quoting NW:

"It was the beginning of the ERP discourse resurfacing at X after being forgotten for several years. Coincidentally, starting in 2016, there was a strong push from Kementrian BUMN to implement ERP across all BUMN Karya. That's what I mean by 'the right timing.'"

In September 2015, the ERP implementation project began, with the Board forming a special team to study SCM concepts. Subsequently, this team also handled negotiations with various ERP implementor vendors. The SCM Division was officially established at the end of March 2016, marking the continuation of the ERP implementation with the kickoff on April 14, 2016. The rapid development across PT. X's business pillars demanded management reports that were not only quickly accessible but also precise and accurate. This ensured that the Board of Directors at PT. X faced no difficulties in interpreting the report data, which ultimately aided decision-making across all operational points within the company. According to NW, PT. X is now on the right track and schedule, although the journey towards fully implementing ERP remains lengthy.

SAP ERP AS THE RIGHT SOLUTION

The implementation of the ERP system at PT. X is expected to bring significant benefits, such as improving productivity, achieving operational effectiveness, and enhancing company operational efficiency. DA, currently serving as Senior Manager at the Head of the Information System Department, mentioned that the ERP implementation has brought many significant benefits perceived by PT. X both organizationally and individually within the team as a whole. DA also stated that with ERP, data from each business unit at PT. X can be integrated, enabling better and more accurate decision-making by the Board of Directors.

"Because the ERP history data is well-maintained. If it's done manually, there's a tendency for projects to incur losses due to maintenance. And there's a significant risk of forgetting things."

DA also explained the advantages of ERP, which can be used to maintain data in a unified history. Therefore, automatically in future decision-making, PT. X can learn by reviewing previous historical data. In addition, DA also mentioned that ERP, in terms of speed, historical data, data integration, and efficiency, can enhance human resource efficiency. This is because clerical tasks can be automated by the system. ERP can also reduce paper usage (paperless), so it can be said that ERP is capable of reducing budget or acting as a cost saver for expenses typically incurred in financial reporting systems.

The decision to choose the ERP platform used by PT. X is not without a long journey in implementing ERP at PT. X. There are various ERP platforms available in the market, each with its strengths and weaknesses. There are three major ERP brands globally: SAP, Oracle, and Microsoft Dynamics. However, PT. X chose SAP as their ERP implementation tool. SAP stands for Systems, Applications, and Products in Data Processing, which was developed by five former IBM software engineers in 1972, headquartered in Walldorf, Germany (Simmonds, 2021). In 2021, SAP ranked as the third-largest software company in the world, after Microsoft and Oracle, with annual revenues reaching €27.8 billion. SAP controls 87% of global trade, with transactions totaling \$46 trillion managed through SAP customer systems. Among the top 100 largest companies in the world, 99 are SAP customers, and 85 of them use SAP's latest ERP solution, SAP S/4HANA (Simmonds, 2021).

The selection of SAP as the ERP platform at PT. X, revealed by WS (Investment Auditor Coordinator) who at the time of ERP implementation SAP served as Head of IT and ERP Department, for five reasons. The SAP system has been tested for more than 40 years is the first reason. SAP has relatively reliable data integrity, for example, if there is some incorrect data, SAP can immediately detect the error. In line with the DA's explanation, SAP is considered the most major in terms of ERP experience because it has been established for more than 40 years in Germany. HS as Senior Manager, Head of ERP Business Operation Department also stated the same thing about the quality of SAP and the reason why PT. X chose SAP as its ERP platform:

"Why PT. X choose SAP, the first one is if we take from this select hub Top 10 ERP Software there are the best oracles and SAP, in general, yes, not seen from construction companies..."

The second reason is that SAP has been widely used by companies at home and abroad. SAP has also been widely used in several construction industries in particular, although in Indonesia it may still be rare at that time in 2015. DA revealed that a study was conducted on SAP in 2015, namely when in Indonesia the use of SAP in the construction industry was still rare.

"... If it is by the construction process business itself, there is no history in Indonesia, because it is still rare in the construction industry to use ERP. Maybe we are also SAP one of the early ones for construction. For manufacturing, if it is private, there is a private sector. Like Astra, it has also used the subsidiary of Astra."

DA added that the selection of SAP ERP is a best practice considering the experience of large companies that have used SAP, even though PT. X started the implementation of SAP in Indonesian construction companies, especially BUMN Karya at that time (in 2015). However, HS said that now almost all BUMN Karya have used SAP. It can be said that PT. X is leading the implementation of SAP in BUMN Karya.

WS stated that the third reason is because of the sophistication of SAP HANA technology. SAP has used the latest technology, namely Hana in memory processing. According to WS a long time ago, in the implementation of ERP, a company must have two engines, namely the first engine is an engine to process data and the second machine to store data. So that there must be two computers with separate places, there must be a processor and also a hard disk to store data. WS also said that in SAP, RAM and hard disk become one. The advantage of SAP's latest technology that other similar products do not have is that the data is stored and the data is processed in one place. This advantage of SAP is what allows data to be real-time.

“Like e-commerce, the data update is already in milliseconds, in one second there are millions of people transacting on Amazon or eBay. Purchase transactions per second are millions of people. If this system were to be separated, it would be overwhelmed.”

The fourth reason, according to WS, is the reliable and complete service from SAP. So, if there is a problem, the company can directly communicate by sending an email to SAP support in Germany for troubleshooting and solutions. WS also added about SAP's Early Warning Alert (EWA) technology, which is that there will be an information warning about SAP problems at the moment before the company sends an email about the problem. Furthermore, WS explained the fifth reason why SAP is chosen is because SAP has a fairly high adaptability to the business world. SAP can be designed according to the business needs of each company. SAP can not only be used in manufacturing and construction businesses, SAP can also be used in transportation businesses such as Gojek, and even online retail businesses such as Zalora, all of which can be adapted easily and quickly by SAP. According to WS, SAP's competitor, Oracle, is less adaptive because it is more widely used in manufacturing companies.

STAGES OF IMPLEMENTING PT. X'S ERP SYSTEM

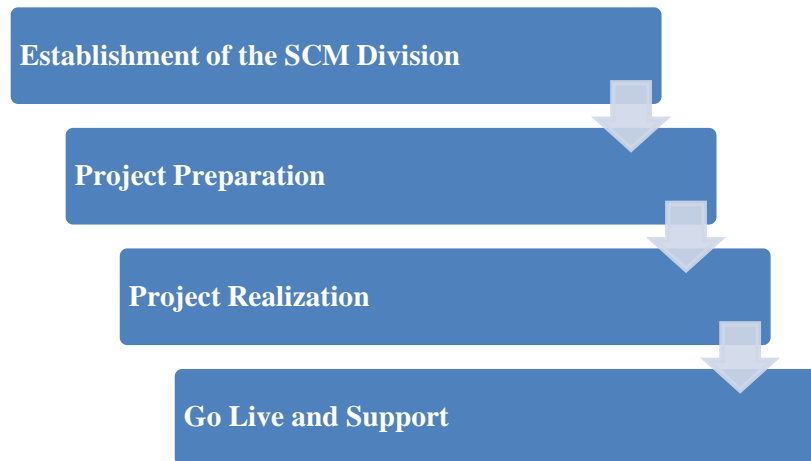


Figure 2. Stages of Implementing PT. X's ERP System

Establishment of the SCM Division

In 2016, PT. X carries a new vision, namely to become a sustainable ASEAN-class construction company. This further encourages the management of PT. X to make changes in the direction of digital in the face of global competition in the construction services business. In line with what was expressed by NW when the directors of PT. X is interested in the efficiency resulting from the establishment of the SCM (Supply Chain Management) Division.

"... Why SCM? Maybe it is a means because SCM can result in or we believe that SCM can make efficiency as big as it used to be even up to 5%, right? So one day when there was a coordination meeting, Mr. K invited the Director of Indika Energi. They talk about the efficiency caused by supply chain management. Material management with a supply chain management system. Then the board of directors at that time, the president director of Mr. BT was very interested."

By also considering the increase in competitiveness in increasing vendor and customer satisfaction, PT. X ultimately decided to form a Supply Chain Management Division. Supply Chain Management or SCM is a series of activities that include coordination, scheduling, and control of the procurement, production, inventory, and delivery of products or services to customers which includes daily administration, operations, logistics, and information processing starting from customers to suppliers. The

SCM process results in a more strategic procurement process, increases vendor trust with systematic payments, and increases customer trust with cost efficiency, good quality, and accuracy in the implementation of work.

The establishment of the SCM Division at PT. X was carried out on March 29, 2016, and is expected to be able to implement integrated SCM internally and externally involving vendors and customers of PT. X. Table 1 illustrates the differences in the procurement process of PT. X before and after the establishment of the SCM Division.

Table 1. Differences in the Procurement Process of PT. X Before and After the Establishment of the SCM Division

COMPONENT	BEFORE SCM	AFTER SCM
Organizational Character	Decentralization (Operational activities in the Operations Division)	Centralized (Centered on UKP/Head Office Unit)
Transparency	Low	High, integrated
Organizational Structure	Bureaucratic, Long	Flat, Widened
Relationship with Vendors	Traditional (Transactional, price focused, & short-term)	Strategic Partnering (Joint planning, technology sharing, & long-term)
Number of Vendors	Many distributors	As Needed (key vendors, factories)
Contract Type	Fixed price with delay penalties	Risk & sharing contracts

Project Preparation

The Project Preparation stage involves selected personnel from various divisions of PT. X, namely the Accounting and Finance Division (DVAK), Operations Division (DVO), Research and Technology Division (DVRT), projects, and even the board of directors. At this stage, a discussion was carried out about the ERP system through an intense discussion until it was concluded that indeed PT. X needs change and ERP fits.

After all agreed to work together, PT Telekomunikasi Indonesia Tbk (Telkom) was chosen as the SAP implementation consultant. Telkom's main task is to assist in the implementation of ERP SAP PT. X in various forms of a series of activities that must be carried out by PT. X passes through to change management.

1. Business Blueprint

One of the important stages during project preparation is the creation of a Business Blueprint. A Business Blueprint contains a master plan and details on how a strategy, activity, or work program can be implemented. The SAP ERP implementation blueprint must be owned by PT. X to explain the SAP ERP system implementation plan and strategy. This document aims to create an SAP ERP system that is by the business process flow of PT. X. The function of the blueprint is to achieve a general understanding of how PT. X will carry out its business processes using SAP ERP.

2. The Basic Concept of Work Breakdown Structure (WBS)

WBS is a framework or structure of the work hierarchy, there is also a work schedule, RAB (Rencana Anggaran Biaya), or the value of the contract, and related to budget issues or planned budgets. At the time of WBS planning, the next step is the placement of project personnel who will carry out WBS planning operations. The new team will evaluate whether the WBS created at the beginning of the project is by the real situation or not. WBS is related to how we divide the work into smaller elements so that it functions optimally as a control. There were significant changes in the past using the PT. X's old system, namely PCCS (Project Cost Control System). The main characteristic of WBS is the WBS hierarchy.

The WBS hierarchy divides project work into smaller work elements. WBS explains the costs related to planning issues at the beginning of the project listed in the RAB (Rencana Anggaran Biaya).

3. Change Management

Change Management activities in the SAP ERP implementation project at PT. X uses the ADKAR methodology (Tim ERP, 2017). ADKAR stands for Awareness, Desire, Knowledge, Ability, and Reinforcement which are the five basic elements that drive change (Hiatt (2006) in (Angtjan, 2019)). The ADKAR model is a practical approach to effectively managing change for individuals and organizations. For a project to succeed in the aspect of human or individual change, the organization must achieve five outcomes that are elements of the ADKAR Model, namely awareness of the need to change (awareness), desire to participate and support change (desire), knowledge of how to make change (knowledge), ability to apply desired skills and behaviors (ability), as well as reinforcement to maintain change (reinforcement).

Project Realization

The implementation of SAP ERP by Telkom at PT. X refers to the standard method owned by SAP, namely Accelerated SAP (ASAP Methodology). PT. X has certain activities that are already standard as explained by HS (Senior Manager ERP).

"We use the ASAP Methodology, including for socialization in the "Realization" stage, in addition to conducting UAT (User Acceptance Test) or SIT (System Integration Testing)."

With the implementation of the ERP system at PT. X, then policies in the field of technology and information are also needed, including regarding IT Governance, as well as policies related to IT compliance. PT. X, in addition to forming the SCM Division, also formed an IT Department to prepare personnel for the IT security section, and related to the use of new technologies such as cloud computing systems and the internet of things. To facilitate the socialization of the ERP system, PT. X also formed a team as an agent of change. PT. X refers to it as the Champion Team or Change Agent or ERP Task Force.

1. Training of Trainer (ToT)

To facilitate the adaptation of this new system, PT. X has a strategy during the implementation of training. The first strategy is PT. X selects representatives of each division to be given training called Training of Trainer (ToT). The main purpose of ToT is to train and educate prospective trainers, with the hope that the ToT participants will be able to combine experience and knowledge related to the business process of PT. X with new knowledge from the SAP system so that it can be conveyed to other users more effectively. ToT involves key users from each section for each module.

2. User Acceptance Test (UAT)

User Acceptance Test (UAT) is the final stage in software testing before launching to production (go live) (Fajri, 2022). During UAT, software testing is carried out to ensure that the functions and tasks of the software are to the requirements or needs of users and business requirements set. UAT at PT. X involves the representative of the end user (end-user). UAT is essential to ensure that the software meets the expectations and needs of the end user, and can function properly in the day-to-day operational environment.

3. System Integration Test (SIT)

System Integration Testing (SIT) is a high-level software testing process in which testers verify that all related systems maintain data integrity and can operate in a coordinated manner with other systems in the same environment (Rouse, 2014). This testing process ensures that all subcomponents are successfully integrated to deliver the expected results. The main purpose of SIT is to find problems that may arise when various components of the system interact with each other. The main point of SIT is that the system can be read end to end. The process starts with the project, the project inputs data, the project team plans the work hierarchy, schedule, and cost, then orders goods, procures goods, and pays to close the project. SIT is essential to ensure that all parts of a complex system can work together well before the system is rolled out to the end user.

4. Training on WBS Preparation

A training program of up to 5 batches has been prepared for all Site Engineering Managers (SEM) and Production Project Controller (PPC) from all PT. X spread across Indonesia. The WBS training is in collaboration with Lembaga Teknologi Universitas Indonesia (Lemtek UI) which is a consultant in the field of Engineering, Management, and Human Resource Development. The hope of holding this training is that participants can relate to the controls that have been carried out in their projects daily so that they can get a comprehensive understanding of project management.

Final Preparation

1. Go Live Simulation

Go Live Simulation is a simulation of transactions from all units in carrying out the business process of PT. X. Each unit conducts only one transaction in each business process, but transactions from upstream to downstream or end-to-end simulation. After conducting the simulation, if the transaction is successful, read in the report and the business process flow is correct, then step on to the next process, namely Go Live SAP ERP system.

2. End User Training (EUT)

At the End User Training (EUT) stage, all personnel who have a job desk running the system or are called users are given training and immediately practice transactions in the system according to their respective modules. EUT participants are all users of each business process who will later use SAP.

3. Data Migration Process

Data migration is the process of moving all data from the old system to the SAP ERP system. During the data migration process, there are 150 active projects whose data will be migrated. Data from inactive projects that still exist, such as vendor debts and customer receivables were also migrated. The purpose of the data migration process is to the data and information owned by PT. X of the system that can be used in the new system, namely SAP. In general, data migration is the process of moving digital information that includes transferring information to a new location/system, a different file format, a new environment, a storage system, a database, a data center, or another application.

4. Support Phase

The main goal in the support phase is to maintain continuity and consistency in the use of the SAP ERP system as a daily transaction recording system of PT. X. The manifestation of the support phase carried out by PT. X is the formation of an ERP Support Team and an ERP Functional Team. The ERP Support Team consists of all the supporting components needed for the smooth daily operation of ERP, namely the ERP Functional Team, Key User, IT and Network Section, IT and Technical Section (Programmer & BASIS). The ERP Functional Team is tasked with providing support related to daily transactions and is also responsible for the development of the SAP ERP system in the future. In addition, the ERP Functional Team is also a representative of ERP PT. X to external parties.

SAP ERP MODULE INTEGRATION AT PT. X

Sales and Distribution Module (SD)

The Sales and Distribution (SD) module in SAP is one of the main modules that handles all processes related to the sale and distribution of products and services. This module helps in managing sales activities, processing orders, and arranging product delivery to customers. The SAP SD module at PT. X is a critical component of its ERP system, enhancing operational efficiency, improving customer satisfaction, and providing a robust framework for managing sales and distribution processes. The integration with other SAP modules ensures a cohesive approach to managing the company's resources and operations.

Project System Module (PS)

The Project System module is designed to help companies plan, manage, and execute projects from start to finish. This module is particularly useful for different types of projects, including new product development, construction projects, service projects, and more. The PS module is the best solution for the project management system of PT. X to be more optimal in carrying out its business processes amid increasingly fierce competition from construction service companies. The implementation of the SAP PS

module at PT. X has significantly improved project management capabilities, ensuring better control over project costs, timelines, and resources. This has led to enhanced efficiency, reduced project risks, and improved overall project outcomes.

Materials Management Module (MM)

The SAP Materials Management (MM) module is a core component of the SAP ERP system used by PT. X. It plays a vital role in managing the procurement and inventory functions of the organization, ensuring efficient material handling and supply chain management. MM Module at PT. X helps supervise the procurement process based on project cost performance. After the implementation of SAP ERP, the procurement process of PT. X is carried out centrally to facilitate the supervision and reporting process.

Human Capital Management Module (HCM)

Human Capital Management (HCM) is a module that focuses on managing human resources in an organization. The HCM module assists companies in managing various aspects related to employees, from recruitment to career development. The application of the HCM module in the ERP of PT. X functions in providing comprehensive solutions to manage employee data, administrative processes, and strategic functions of human resources.

Finance Module (FI)

SAP Finance, also known as SAP Financial Accounting (FI), is one of the key modules in the SAP system that is responsible for managing and recording financial transactions and providing accurate financial reports. This module assists companies in meeting legal requirements, managing cash flow, and conducting in-depth financial analysis. The SAP FI module is fundamental for managing PT. X's financial operations, offering accurate financial information, ensuring compliance, and supporting efficient financial processes. FI module at PT. X seamlessly integrates with other SAP modules like Controlling (CO), Sales and Distribution (SD), Materials Management (MM), and Project System (PS). This integration ensures a cohesive approach to managing the company's financial and operational activities, providing a comprehensive view of business performance.

Controlling Module (CO)

The controlling module (CO) provides information for management decision-making. The CO module focuses on planning, reporting, and monitoring a company's business operations. The CO module is a critical component of the SAP ERP system used by PT. X. This module is designed to provide detailed information and insights into the company's cost management and internal financial processes, enabling better control and optimization of business operations.

CHANGES FOR THE SUCCESSFUL IMPLEMENTATION OF THE ERP SYSTEM

Mindset Change

Author and business management expert from Indonesia, Rhenald Kasali said in his book, that to continue to grow in the current era of disruption, we need to have a growth mindset, not be constrained by a fixed mindset (Kasali, 2014). These two types of mindsets affect the way individuals deal with challenges and opportunities. Kasali defines a growth mindset as the belief that abilities and intelligence can be developed through effort, the right strategies, and learning from mistakes. On the other hand, a person with a fixed mindset has the belief that abilities and intelligence are innate traits that are fixed and cannot be changed.

To avoid being imprisoned and stuck in a fixed mindset, PT. X always builds a fresh view from all employees of the company on problems, especially in facing the dynamics that arise after the go-live ERP system policy in 2016-2017. To unravel the "tangled threads" in this system transition, PT. X then tried to instill a mindset in all employees of the company, that ERP is a business change project. ERP is not a project of the IT team or not just the project of the BoD, but part of a shared commitment to optimize performance and connect the company's business processes.

That is why if there is a unit that is reluctant to use it, then the ERP system will not run. The system cannot be stopped after going live. Therefore, ERP systems must be developed and adapted to the company's business movements and strategies that are constantly growing and evolving. This was also

stated by HS that the success of the implementation of the SAP ERP system at PT. X is also influenced by the acceptance and adaptation of users to want to use the new system.

"The definition of success has stages, maybe. First, we have gone through the early horror times, what are those early days? That time was the first time all users used it. Those were the first times. So even though we go through the ERP, if the user does not use it, the system will also be stuck, it will not be able to run."

Without a change in mindset from the employees of PT. X in accepting and adapting to the SAP ERP system, then the success of implementing the new system will be difficult to achieve. FN as one of the senior Site Administration Managers (SAM) explained how difficult it was to adapt to the new system. With the implementation of SAP ERP at PT. X makes him have to adjust to reading and understanding output reports from SAP that are slightly different from reports from the previous system.

"The way to read GL is different from ACCPAC in the past, ACCPAC is easy. If you read it, the problem may be the habit of reading journals, reading GL right and left. So now the credit debit is up and down, but there is a minus sign. How do you read the GL? If ACCPAC also has a balance, it's easy per account. Well, yes, now it's changing, so it's dizzy..."

Top Management Commitment

In addition to diligent efforts in changing the mindset of its employees, another factor that is the key to PT. X's success in implementing ERP is the active involvement of the company's Top Management. The role of Top Management is the key to ERP implementation can be carried out effectively through a top-down scheme. As the owner of "full power" over the company, Top Management has succeeded in encouraging the implementation of ERP with its various policies. Not only commanding, they also actively check the progress of the company's ERP implementation regularly.

Top Management also contributes to providing important directions for ERP development, one of which is emphasizing ERP as a control system, not just record-keeping. At the beginning of the ERP implementation, every week the Top Management of PT. X often visits the ERP team to check system development updates. HS explained that the change of the President Director of PT. X became a turning point in the implementation of SAP ERP. At that time, the President Director of PT. X from outside PT. X has not felt any meaningful benefits from the implementation of the SAP ERP system. This causes quite a complicated issue for the sustainability of the SAP ERP system.

"But finally the management felt that in 2021 or 2020 it was only finally that the management felt the specifics of the main thing when the president director at PP was replaced. When Mr. NA was there, he was indeed an outside official entering the street, he finally did an evaluation, and he went around everywhere, it turned out that his ERP system could not be used as a control system, it was the closure. Then he did an overhaul, he gave a choice whether this wanted to be replaced or whether it wanted to be optimized or evaluated."

Since then, in each Management Review, several Project Managers have been tested to operate their systems, to prove whether their systems can be used for control or not. Top Management's commitment to ERP is also conveyed in board meetings so that its development continues to be coordinated and evaluated. Before implementing the SAP ERP system, PT. X also publishes a blueprint as a guideline for the implementation of the ERP system. The content of the blueprint is mostly business processes that are mapped to make it easier for PP Group to see and review the construction business processes run by the company as well as the organizational structure in it, master data, and flows that are connected between business processes and what is in the system. The release of this blueprint is also one of Top Management's commitments to plan for future ERP development.

Change Management Program

ERP is the "newcomers" in the context of a large corporate program that requires collaboration and mutual support, not just individual efforts. Therefore, PT. X runs a Change Management program in ERP

implementation that involves various groups to ensure the success of the ERP system in the company. Some of the major programs carried out include:

1. Training and Education

Training and education aim to equip employees with the knowledge and skills necessary to use SAP ERP systems effectively. One of the training and education programs carried out by PT. X is Training of Trainer (ToT).

2. Communication and Socialization

Communication and socialization activities have the goal of increasing awareness and understanding of the importance of ERP and its benefits for the company. As one of the ways to succeed in the change management program, PT. X actively carries out various socialization and training. To centralize and accelerate the change management program, the socialization program is included in the HCM (Human Capital Management) and Management Development Road curriculum.

3. Stakeholder Engagement

PT. X involves stakeholders to get support and commitment from all parties involved in ERP implementation. In addition to using "subtle" methods to encourage users to switch to the new system, PT. X through the ERP Team also launched more creative ways to encourage users to "move on" from the dependence of the old system. One way is to "force" users to transact and be directly involved through the system by connecting employee payroll (salary and benefits) with the budget available in the system.

4. Evaluation and Monitoring

Evaluation and monitoring activities aim to ensure that the implementation of ERP has gone according to plan and make improvements if necessary. One of the monitoring activities carried out by PT. X is ERP Transaction Timeline Management. Manage & control of transaction closing timeline in the ERP system of PT. X is considered very important so that transactions can be carried out in real-time, accurately, accountable, and by Corporate Governance so that it can accelerate the issuance of the Company's Financial Statements (on a consolidated basis) up to the 5th of each month.

5. Technical Assistance and Support

PT. X provides assistance and technical support from the transition process to the SAP ERP system, until the new system is running well until now. In the form of assistance and technical support of PT. X on the implementation of SAP ERP, including the provision of admin helpdesk, glossary transaction code, and PP Insight, as well as the launch of books and training modules.

INTERPRETING THE IMPLEMENTATION OF PT. X

Better Project Control and Management

The implementation of the ERP system at PT. X since the end of 2016, has significant significance in various operational and strategic aspects of the company. In addition, the implementation of PT. X also holds various meanings for each individual, both positive and negative meanings. As explained by NW, the implementation of ERP gives a huge meaning to project control. NW said that project control becomes better after the SAP ERP, especially because of the WBS-based PS module, so that the project budgeting process is more controlled and can be monitored from the beginning of the project to the completion of the project.

"So project control is better. Project control, yes, this is the bottom line. The problem is that I have interviewed several people as well, controls. Yes, project control is much better for sure, because of the WBS, because of the WBS base. So there is budgeting, there is planning, in WBS there is planning, budgeting, then there is implementation, and the third is controlling and monitoring. Yes, those three points have made it that when for example a project before there was an ERP, the project was found to be at a loss, it was held back first, not caught, so at the end of the day when it was finished, it was a big loss."

HS also has the same opinion as NW regarding the implementation of ERP SAP PT. X has various benefits and also many features that have been developed to date. HS stated that the implementation of ERP SAP PT. X is not only useful as a recording system but can also be used as a control system.

"Moreover, the ERP system is not only a recording system but also a control system. Because several features can be used. The remaining work feature, the WIP lock feature, the operation feature on risk issues, is also there now."

In line with NW and HS, AM (Procurement Manager) also said the meaning of implementing ERP at PT. The first PP is control. From a procurement point of view, AM said that the implementation of ERP can be a monitor for the difference between PR and PO so that control can be carried out.

"The first is easier to control, whether it is efficiency or inefficiency, it needs to be monitored in the system. So the difference between the PR and the PO is now also locked in the system. The controller is more controlled."

FN as a project personnel also has the same opinion regarding the positive meaning of the implementation of the SAP ERP system at PT. X, but FN also explained the other side of the implementation of ERP systems that are less flexible when applied in the field (project or site).

"There are many positives because it is better controlled. The control is also for the company as well. Maybe in terms of control, it is very good but in terms of flexibility on the field, it may be a bit difficult."

It can be said that with the implementation of the SAP ERP system at PT. X is very beneficial in controlling and covering various aspects that are important for effective and efficient management in organizations. The controlling function in SAP ERP allows for detailed and comprehensive budget planning, as well as the ability to track performance against that budget. SAP ERP also helps in the monitoring and optimization of all processes in the organization, from the consumption of production factors to the services provided. With the implementation of SAP ERP, PT. X can compare actual data with planned data, identify variances, and take corrective action if necessary. SAP ERP enables effective cost control by monitoring expenses and identifying areas that require cost reduction or efficiency improvement.

The controlling function of the ERP system, according to the theory put forward by Mcleod (1995), the information system is a set of interconnected components that function to collect, process, store, and distribute information to support decision-making and supervision. The implementation of SAP ERP in control helps organizations such as PT. X in improving operational efficiency, making better decisions based on data, and ensuring that all processes are run by the company's strategic goals.

More Structured Project Planning

PT. X has a construction services business whose projects are spread throughout Indonesia, requiring careful and structured planning. The planning function in a construction service company is key to ensuring that construction projects are executed efficiently, on time, and within budget. According to NW, the implementation of the SAP ERP system at PT. X has an important meaning in terms of planning. NW stated that with good planning of WBS (Work Breakdown Structure) at the beginning of the project can help minimize unexpected project losses.

"In WBS, there is planning, budgeting, then there is implementation, and the third is controlling and monitoring. Yes, those three points have made it that when for example a project before there was an ERP, the project was found to be at a loss, it was held back first, it wasn't caught, right, so at the end of the day when it was finished, it was a big loss."

SAP ERP Implementation at PT. X is meaningful as a comprehensive planning tool. With the ability to integrate various business functions into a single platform, SAP ERP helps companies in planning resources, finances, projects, and operations more effectively. This not only improves efficiency and productivity but also ensures that the company can adapt to future changes and challenges.

Transaction Speed

SAP ERP Implementation at PT. X has an important meaning in terms of increasing transaction speed. The benefit of SAP ERP implementation in terms of transactions is that the time becomes faster and real-time. In the past, before the implementation of the SAP ERP system, transactions in projects were often delayed in recording. An example of this is when goods or materials arrive at the project warehouse, irresponsible project personnel in the field often delay recording the transaction near the close of the book at the end of the month. If this is not regulated in the system, then PT. X will not get any benefits. With the implementation of the SAP ERP system at PT. X, transactions are required for real-time, according to a certain timeline. WS as the Production and Cost Manager stated that currently, every transaction has a limit or deadline in its timeline, so if there is a transaction that exceeds the deadline, the system will automatically reject

"We currently have timelines, each stage of transactions, journals, it has been formed a fixed timeline, it has been agreed upon by each user, so that at first it may be a bit less disciplined because now it is from the management policy, so it must be disciplined."

The speed of input and posting after using the SAP ERP system when compared to the previous system, the benefits are greatly felt by the users of PT. X. YE as Senior Officer of the Accounting Data Mgt Section, revealed that SAP ERP has various conveniences, moreover the ease and speed of input and posting compared to the PT. X earlier.

"It's fast. If the input speed is more... This is compared to the last one, huh? Of course, it's faster. It depends on the internet connection, of course. It's nice if the current one is the one in the past, there were several inputs. Well, if it's now, let's say there is something automatic. So, now use bulk uploads with templates. So it must be faster."

YE also explained that the speed is back to the stability of the internet connection because the ERP system is an online system that depends on an internet connection. YE added that there is a change in the data input mechanism using the ERP system using mass upload templates to be faster than the previous system which required data input one by one. In addition to the ease of data input, the implementation of the ERP system at PT. X also makes it easier to correct data input errors. YE stated that corrections can also use templates if the corrected data is more than one, so corrections can be made faster, and data corrections can use mass reversal.

FN as a representative of project personnel also stated that with the implementation of the SAP ERP system, one of the benefits felt is the speed of transactions.

"Indeed, in terms of speed, this is immediately integrated, directly linked from our input, the center can immediately see it. It's not like we used to know. In the past, it was a book closed, sent, consolidated. Not to mention that later there will be unnatural data."

SAP ERP is equipped with advanced reporting and analytics tools, allowing companies to generate reports and analyses quickly. YE revealed that the output report generated by the ERP system in real-time is very helpful in presenting data quickly and has been adjusted to the needs of PT. X. The report produced by the ERP system of PT. X has been designed according to the company's needs.

"If the current one already has a t-code that suits the needs. Suppose you want to perform, yes ZCORP03. If you want business costs, yes, there is also a t-code. There are each of them. For WIP, there is its own. For turnover, it already has its own. So it's easier. If you want to add to your balance, just use the t-code ZFIT01, it's easier. Right, the Z report, it's customized. So it is more according to the company's needs. Yes, because many reports are by what the company wants, the reports will be faster."

In line with YE's statement, from the project's point of view, FN also stated the speed and accuracy of reporting after using the SAP ERP system.

"And the speed of presenting financial reporting is faster and more and more accurate. It's more accurate than it used to be."

Human Resource Management

An ERP system is a system that integrates various functions of a company, including human resource management functions. So the implementation of ERP also has an impact on the HRD (Human Resource Development) function of PT. X. SAP ERP module used by PT. X is called the HCM (Human Capital Management) module. The HCM module is a module that is responsible for human resource management activities, ranging from organizational structure, working hours, employee admission, development and training, mutation process, promotion and demotion, payroll, and performance assessment, to official travel and employee health insurance. It can be said that with the SAP ERP system at PT. X, the module can automate many processes in HR functions, and management can connect with employees through reporting tools.

Changes related to the implementation of the HCM module at PT. X is the preparation of KPIs. According to YA, as a Manager Head of the Human Capital and General Affairs Building Division, ERP PT. X has become a medium for compiling employee KPIs, especially now that PT. X has been using SAP SuccessFactor. SAP SuccessFactor is a cloud-based enterprise resource planning software solution from SAP. SuccessFactor is an integrated tool to manage the entire employee lifecycle in a company. At PT. X, SAP SuccessFactor is named SiaPP. After the implementation of SiaPP, it has made it easier for employees of PT. X in compiling KPIs (Key Performance Indicators), where the employee manually inputs himself to SiaPP (SAP SuccessFactor). In the previous system, namely PT. X, a central HR unit that uploads data using Microsoft Excel. So in the old system, the central HR unit was required to compile KPIs first. Meanwhile, for now, each employee can choose their own 'library', where each position can choose what KPIs or targets are their goals. In addition, according to YA, since using SAP SuccessFactors, the KPI preparation system has been integrated compared to the previous system which was not integrated and required manual uploads using Microsoft Excel.

Not only the preparation of KPIs has changed after the implementation of PT. X, but there are also changes to the assessment of employee KPIs. YA explained that the changes that occurred after implementation were automation and data integration, for example, sales and also project cashflow integrated with the project's employee data.

"If the value is in the KPI, if it is right before the ERP, we assess that most of the evidence is manual and validated internally. In the sense that no one system can be said to validate or validate whether the value is okay or not. Well, then the difference with after ERP is that he is numerical, whether it's sales, whether it's cashflow, all kinds of things have been connected to his ERP."

YA explains that the current ERP implementation for KPI assessment, it is much better because the numerical data used as a reference is already from one source from SAP and integrated with data from other functions. In the previous system, data was taken from various sources, some data was manual, some data was from ACCPAC and there were also data in various versions. YA explained that as of 2021, PT. X has implemented a special module from SAP SuccessFactors that focuses on KPIs, namely the PMGM (Performance and Goal Management) module. The SAP SuccessFactors PMGM module is an application that focuses on KPI assessment and competency assessment that records every progress and achievement of each employee. According to YA, with the use of PMGM, the data of the HCM module has been integrated with the data of other interrelated modules.

"Then as of 2021, we have implemented KPIs, the name is PMGM, performance and goal management, in the siaPP application, using the SAP success factor, where all kinds of sales figures have been linked to the status in SAP, have MM, have PS, other SAP modules, and so on."

YA said that the implementation of ERP has a great influence on the storage, processing, and reporting of KPIs. The impact after the implementation of ERP on the HCM function is that all data is integrated, from payroll to KPI assessment.

“... Yes, it affects us, because we follow the procedure. The salary has been connected to all. Yes, everything is connected.”

Storage, all data, reporting, and everything has used SAP SuccessFactors ERP, the last stage is that data can be imported using the dashboard. With the implementation of the ERP SAP PT. X reporting HR data can be displayed in real-time and if needed at any time, namely using the dashboard via Tableau. The Human Capital Management (HCM) module in SAP ERP helps in various aspects of workforce management, including recruitment, training, and payroll.

CONCLUSION

This study reveals that the implementation of the ERP system at PT. X has significantly influenced various aspects of the company's operations, bringing about a transformation in operational efficiency, decision-making processes, and strategic alignment within the organization. The implementation has necessitated a shift in the mindset of employees and management, emphasizing the importance of integrated and streamlined processes. The success of the ERP implementation heavily relied on the commitment and support of top management, whose involvement was crucial in driving change and ensuring the alignment of the ERP system with the company's strategic goals. Effective change management strategies were essential in facilitating the transition to the new system, helping to address resistance, ensuring smooth adaptation, and fostering a culture that embraces technological advancements. Additionally, the ERP system led to significant improvements in project control, transaction speed, and human resource management, contributing to better coordination, real-time data access, and more informed decision-making. Overall, the study highlights the transformative effects of the ERP system on PT. X, underscoring the importance of human factors, organizational support, and strategic management in achieving successful ERP implementation.

The study faced several limitations that should be acknowledged. Firstly, it was confined to PT. X, focusing exclusively on the ERP implementation within this organization. This narrow scope limits the generalizability of the findings to other companies or industries. Additionally, the research was conducted over a specific period, primarily from April to June 2024, which may not capture the full range of experiences and outcomes associated with ERP implementation. The reliance on qualitative data collection methods, such as in-depth interviews, observations, and document analysis, introduces potential biases as the findings depend on the honesty and recall ability of the participants. Furthermore, the study involved a relatively small number of key informants from PT. X, which may not provide a comprehensive view of the ERP implementation process and its impacts across the entire organization.

To address these limitations, future research should consider broader and more diverse samples, including multiple organizations across different industries, to enhance the generalizability of the findings and provide a broader understanding of ERP implementation success factors. Conducting longitudinal studies that track ERP implementation and its impact over an extended period would offer deeper insights into the long-term benefits and challenges of ERP adoption. Integrating quantitative methods, such as surveys and statistical analysis, could complement qualitative findings and provide a more robust evaluation of ERP implementation outcomes. Comparative studies examining ERP implementation experiences in different organizations, including public and private sectors, could identify common success factors and challenges. Additionally, future research should investigate the impact of external factors, such as economic conditions and technological advancements, on ERP implementation success to provide a comprehensive understanding of contextual influences on ERP projects. Finally, given the significant role of human and

organizational factors in ERP success, future studies should delve deeper into these aspects, exploring the influence of organizational culture, leadership, and employee engagement on ERP implementation outcomes.

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