QUALITATIVE CASE STUDY OF CRITICAL SUCCESS FACTOR IN THREE ERP IMPLEMENTATION PROJECTS

Mellyuni Sitinjak [1)], **Riyanto Jayadi** [2)]

[1, 2)] Master of Information Systems Management Bina Nusantara University
email : mellyuni.Sitinjak@binus.ac.id[1)], riyanto.jayadi@binus.edu [2)]

Abstraksi

Pandemi COVID-19 telah berdampak besar pada setiap aspek kehidupan di seluruh dunia. Proyek implementasi ERP juga mengalami dampak yang cukup besar karena setiap tahapan proses dilakukan secara online (pertemuan tatap muka terbatas). Ketidaksiapan manajemen proyek dalam mengimplementasikan pandemi COVID-19 menjadi salah satu critical success factor yang dibahas dalam kajian ini. Studi ini menyajikan tiga studi kasus kualitatif dan mencoba mengidentifikasi apa yang menyebabkan masalah dalam implementasi proyek ERP selama pandemi COVID-19 dengan membandingkan keselarasan literatur PMBOK dengan praktik metodologi proyek. Studi ini menemukan bahwa beberapa faktor tidak memenuhi standar efisiensi yang kurang berdasarkan standar implementasi proyek ERP (Metodologi SAP). Faktor-faktor tersebut mempengaruhi target proyek dalam karakteristik utama dari setiap langkah implementasi SAP ERP, yaitu integritas data dan praktik terbaik. PMO membutuhkan komitmen dari setiap pemangku kepentingan untuk melaksanakan kegiatan proyek sesuai rencana. Evaluasi proyek harus dilakukan secara berkala agar PMO tetap dapat menyelesaikan proyek sesuai rencana.

Kata Kunci:
Manajemen Proyek, Metodologi Proyek, PMBOK, ERP, Critical Success Factor

Abstract

The COVID-19 pandemic has tremendously impacted every aspect of life worldwide. The ERP implementation project also experienced a considerable impact because each stage of the process was carried out online (limited face-to-face meetings). Project management's unpreparedness in implementing the COVID-19 pandemic is one of the critical success factors discussed in this study. This study presents three qualitative case studies and tries to identify what caused an issue in ERP project implementation during the COVID-19 pandemic by comparing the alignment of PMBOK literature to project methodology practices. This study found that several factors do not meet the lack of efficiency standards based on ERP project implementation standards (SAP Methodology). These factors affect project targets in the main characteristics of each SAP ERP implementation step, namely data integrity and best practices. PMO requires commitment from each stakeholder to carry out project activities according to plan. Project evaluations must be carried out periodically so PMO can still complete the project according to plan.

***Keywords**:*

Project Management, Project Methodology, PMBOK, ERP, Critical Success Factor

Introduction

Developing companies are competing to make breakthroughs in following the development of digital technology. One of the IT investments made is implementing an ERP system which is quite promising in standardizing and implementing best practices from existing business processes. Therefore, ERP implementation projects with satisfactory outcomes need to be very concerned. Research on case studies[1] provides evidence of many ERP (Enterprise Resource Planning) project implementation failures. Several studies tried to explore the critical success factors of ERP implementation [2] [3], assessing key success factors in an ERP implementation [4] [5][3], risk mitigation in Enterprise Resource Planning [6], framework & challenges of ERP implementation [7] [8] [9], process improvement for ERP implementation [10]. Therefore, considering that these critical success factors need to be understood and evaluated in ERP implementation project management and are relevant to the conditions of the COVID-19 pandemic, which are impactful and have a considerable influence on the success of ERP implementation projects. First, this article aims to explain the gaps or gaps related to implementation and perceived obstacles during project work during the COVID-19 pandemic, and second to present conceptual project management principles and adjustments to project domain performance based on PMBOK 7th edition methodology. This methodology is relevant to several statements that can be a reference, including:

- You are adding or completing relevant critical success factors in the literature related to project management subjects in the project life cycle based on the PMBOK 7th edition methodology, especially in the context of Enterprise Resource Planning (ERP) implementation.
- PMBOK 7th edition is the latest project management methodology released in 2021.

PMBOK is the world's most recognized and comprehensive methodology for project management. The adjustment of principles and performance of this new project domain is relevant to further exploring critical success factors in ERP implementation projects.

- This work contributes significantly to academia in broadening the horizon for empirical research and adding to the existing literature review in the future for practitioners in project management to serve as a guide for those who need effective methods in achieving ERP implementation project success.

The structure of this paper consists of the following: The first part is the introduction. This section explains this paper's topic, context, drivers and research problems. The second section analyzes the literature review regarding the evaluation of project management in ERP implementation in several industrial areas, proving the gaps related to the topic of this paper. The third section discusses the methodological framework used as a reference for the evaluation, namely PMBOK 7th edition. It captures maturity levels to assist in assessing the research objects' results. The last section of the paper, the fourth section, contains discussions and conclusions, future research directions, practical and theoretical implications, and limitations of the research conducted.

Literature Review

The failure of Enterprise Resource Planning (ERP) project implementation has been widely proven in research studies [1]. The strategy's focus is no longer objectively centered on the ERP itself but on the benefits that are in the interest of certain parties. Commitment is an important thing that needs to be owned by the project organizational structure, starting from top-level management, project management officers, and change management to the ERP implementation team itself will significantly affect the success of ERP implementation. It was found that training-education from vendor management is no longer considered optimal to be able to support the success of ERP implementation.

One of the challenges that PMOs must face in an ERP implementation project is communication; it involves a group of people with different characters but has a shared responsibility to carry out the ERP implementation. It is essential for every party involved in the project to follow an effective change management strategy at every stage throughout the ERP implementation. Many factors can lead to unsuccessful ERP implementation, including team member resistance, suboptimal commitment from top management, lack of understanding and training, etc. In the research study, the study of [2] is emphasized that communication is very influential in achieving successful implementation, and change management is convincing enough so that the project can achieve the full involvement of employees to support the process of running ERP implementation.

The successful implementation of ERP is highly sought after as an investment that provides significant value or benefits to the company, both in terms of human resources assets and financial, time, and information resources used in operational activities. But on the other hand, implementation failure can be a considerable loss if it occurs in a company or organization. In this research study[4], the analysis results show that the involvement of several entities in an ERP project is not optimally fulfilled. In this study, two variables with medium risk were found: the division project into steps and the development of precise planning. Top management support and realistic expectations are two variables with insignificant risks but potential opportunities.

A well-thought-out ERP implementation planning is beneficial for companies to have an overview and understanding that helps in controlling the ERP implementation can run well. In a research study in [5], the authors analyzed and evaluated the conditions that often occurred in most ERP implementation projects and investigated which areas are instrumental in becoming obstacles throughout the implementation project. There are six factors found in this study: consistent scope, project team readiness and adequate training, budget, and inappropriate planning. In this study, it is conveyed that the factors that cause failure are not necessarily the same as those that contribute to the success of ERP implementation. Therefore, management needs to focus on these factors as a whole.

In this research study[6], several large companies that re-implemented ERP were evaluated because the final results perceived from the initial ERP implementation did not match what was needed. Researchers identified several important factors that need to be present in ERP implementation: benefits from realized needs, pressure factors from the inner side of the company, optimal IT performance, adequate IT infrastructure, and a series of evaluations carried out at each phase throughout the ERP implementation project.

Organizations around the world widely recognize ERP systems. This research study[7] developed a framework to identify the issues faced while running an ERP system implementation. Nine phases consist of three major groups: input, process, and output. The current performance phases are adjusted to the changing business conditions impacted by the COVID-19 pandemic, which significantly changes the relationship between individuals, businesses, services, supplies, and customers. Indications of a pandemic are a record for every organization to be aware of and learn the implementation strategies that the project must do in the future amid unpredictable conditions.

Predicting future political and social trends can be essential in building management perceptions/principles in improving or maintaining future performance. A research study [9]found that the importance of management principles in analyzing and identifying social factors that impact the organization can be the basis for future organizational plans and goals. The principles considered necessary to be carried out effectively include the principle of team member

utilization, the principle of management information systems, and the principle of organizational development. Project management is supportive and can coordinate each existing field into an integrated concept. In this research study[11], a discussion and analysis of researchers related to understanding the impact of ERP systems on accounting management are carried out. Flow factors related to transactional processes and information in the company focus on the impact of ERP implementation extended to the data of processes that run operationally. Examination of the impetus and response regarding skills and knowledge of ERP systems helps direct companies in analyzing and evaluating existing management accounting after the benefits of ERP implementation are obtained.

In this case study[3], the authors analyzed critical challenges in ERP implementation in the Oil and gas industry in Canada. This study found that critical challenges have a high potential to occur throughout the ERP implementation. How project management methods can overcome these challenges, improve these challenges, optimize performance and achieve better project success needs to be reviewed and added to the company's body of knowledge to become the company's capital in facing the critical challenges of SAP implementation in the future.

Improving business processes in a company with ERP implementation planning is different. This study[10] paper found that improving business processes from the company's organizational side can provide value that can be an asset for ERP implementation planning to run smoothly and be more mature in preparation. The six benefits revealed in this study are standardized general business processes, integrated system integration, reporting with valid standardization, KPIs from each department in the company showing good improvement, easy data access, and consolidation in one system. These benefits help the company as the first step in preparation for planning a significant investment in an ERP system.

Medium-sized companies still in their infancy are also choosing ERP as one of the IT solutions to keep up with the development of digital technology in Indonesia. In this research study [12], the project found common factors to be the main supporting factors of ERP success in developing companies. Some of the factors include: ensuring the quality of the vendor who will carry out the implementation by looking at the vendor's portfolio in carrying out ERP implementation, data readiness in terms of accounting and operational data, the optimal level of focus of the project team or future ERP users, effective and optimal communication, supportive top management in supervising and monitoring the course of the ERP implementation project in related developing companies.

Methodology

Data Collection

For the identification process of inhibiting factors, data will be collected by a distribution that is divided into two stages, namely:

- The questionnaire contains questions that are the key factors in the 12 principles of project management in PMBOK 7th edition [12]. Questionnaires to fulfill key factor attributes will be distributed for the first stage. This questionnaire contains questions about whether the critical factor attributes in the project have been met or not, with yes and no answer choices. Questionnaires will be distributed either to respondents from PT. ABC as well as from clients. Meanwhile, from the existing project documents, it can be seen what targets the implementation of activities is outside of what was previously planned. Interviews will be conducted to determine the relationship between the non-fulfillment of the critical factor attributes in the project and the implementation of activities that are not to the plan. Because an ERP system is a system that integrates business processes, in addition to the project manager, the interview will also involve the Business Process Owner (BPO). The questions for the interview were in the form of causal relationship questions. Respondents will be asked to provide their opinion on the causes of activities they cannot execute according to plan. The attributes identified as the cause will be referred to as inhibiting factors.
- After the respondents completed the interview, the researcher assessed each existing project performance domain using the maturity level (0-5) [13]. This stage aims to assess how mature and optimal each existing project performance is based on interviews with several respondents. This assessment can be submitted as a reference for improving the ERP implementation project and to provide direction for increasing the maturity of an organization.

PMBOK 7th Edition

In the 7th edition of the PMBOK® Guide[12], updates are made from the previous version PMBOK® Guide 6th edition. Project management process groups are converted into project management principles, and knowledge areas are converted into project performance domains. The previous process-based and principle-based standards certainly have slightly different approaches and perspectives. Project management principles guide the behavior of all stakeholders in the project in carrying out each project performance domain to achieve effective and optimal quality and value of the final project results.

In this study, the twelve project management principles in PMBOK 7th edition became a reference in preparing a questionnaire for each research respondent to provide their respective assessments of the ERP implementation project that the team had carried out. In addition, the

eight project performance domains become the essential reference for questions in interviews (one on one) conducted with each respondent.

Capability Maturity Level

CMM defines five levels of maturity of a process. Each level allows the organization to assess the maturity level process and assists the organization in determining priorities for what processes need to be improved in terms of maturity[13]. The five levels of maturity are as follows:

- L1: Initial – most processes are ad-hoc. There are only a few defined processes. It has no standard procedures and very weak documentation.
- L2: Repeatable – Basic processes and rules have been developed, but no standardization exists. Documentation has started to exist, but it is still fundamental. There is no visible relationship between the documentation of one activity with another activity.
- L3: Defined – The process has been standardized and documented.
- L4: Managed – The project's progress against the plan has been monitored, reported, and controlled.
- L5: Optimizing – Project performance is continuously evaluated to produce continuous quality improvement.

In this study, capture maturity level is a framework used for researchers to assess each project performance domain in PMBOK 7th edition, associated with the results of interviews with respondents from each ERP implementation project 1, 2, and 3. The maturity model is used in this case study as the basis for determining whether a critical factor can be said to have been appropriately implemented or not. The maturity model is a systematic, repeatable, and ready-to-use model to improve the performance of a project[14].

Result And Discussion

During the COVID-19 pandemic, PT. ABC has carried out three implementation projects with the process of working with the limited face-to-face meeting (PTMT) method, and this case study was conducted in all three projects. The research projects in this case study include ERP 1 implementation project, 2 ERP implementation projects, and three implementation projects.

Identifying critical success factors was conducted through interviews with nine respondents from the three ERP implementation projects 1, 2, and 3. The respondents consisted of project managers, business process owners, and implementors. PMBOK 7th edition is a project management framework that is the basis or reference in discussing critical success factors in ERP implementation projects 1, 2, and 3 in this case study.

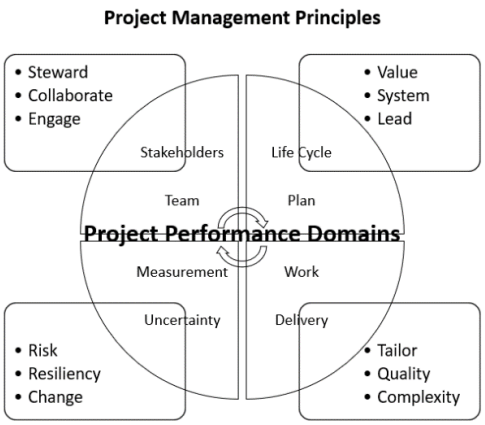

Fig. 1. Relationship Between Project Management Principles and Project Performance Domain

Adjustments and adaptations need to be made in the approach or direction of the project, coordination stakeholders, and the process flow structured in project management that is adapted to the needs of the project and the environment in which the team will carry out the project. This adjustment relates to the development, process flow, project stages, deliverables, assignments, and team in the project organizational structure, culture, and values that exist in an organization.

Adjustments are made to better adapt to the organization, operational environment, and project needs. Adjustments generate direct and indirect benefits for the organization. Includes but is not limited to:

- Practical commitment to customization and approach from all project teams involved
- The customer is the primary focus, as the critical factor of development is the needs of that customer
- Project resources are effectively and efficiently used or utilized.

Result Project Perfomance Domain vs. Capability Maturity Level

PMBOK® Guide 7th edition has a Project performance domain comprising a group of critical activities that are very important. The project performance domain in this guide consists of eight domains: stakeholder performance, team performance, development approach and life cycle performance, planning performance, project work performance, delivery performance, measurement performance, and uncertainty performance domain. The following are the assessment results from interviews conducted with nine respondents from the three ERP implementation projects 1, 2, and 3.

TABLE I. STAKEHOLDER PERFOMANCE DOMAIN

OUT COME	CHECK	MATURITY LEVEL Project Implementation		
		ERP 1	ERP 2	ERP 3
Working relationships among stakeholders are excellent and productive.	Effective and productive working relationships between stakeholders can be monitored by intensive	4	3	2

OUT COME	CHECK	MATURITY LEVEL Project Implementation		
		ERP 1	ERP 2	ERP 3
	engagement as an indicator of satisfaction with the project.			
Project objectives based on mutual agreement among stakeholders	Modifications to project requirements where product requirements are out of scope indicate the poor alignment of stakeholder engagement with the original project objectives.	2	3	2
Stakeholders who do not support the project do not negatively impact the final project outcomes perceived by project beneficiaries.	Project identification efforts through interviews, discussion forums, and surveys are some ways PMOs can determine the satisfaction level of project beneficiaries. The results of this identification challenge stakeholders in analyzing existing problems, obstacles, or risks.	2	3	2

In the first table, the stakeholder performance domain table, the first ERP implementation project has a pretty good role and involvement value from stakeholders. Still, beneficiaries feel that the introduction and counseling related to the implementation project are less clear. The second ERP implementation project involvement and introduction to project understanding from the start have been relatively standardized and well documented. The third ERP implementation project is considered very lacking in involvement, understanding, and introduction, but it has not been transparent and clear enough since the beginning of the project.

TABLE II. TEAM PERFORMANCE DOMAIN

OUT COME	CHECK	MATURITY LEVEL Project Implementation		
		ERP 1	ERP 2	ERP 3
A shared sense of belonging	All project team members understand and are aware of the vision and mission to achieve the project deliverables.	3	4	2
Team performance is optimized	Effective collaboration and trust between project teams adapt to unpredictable conditions and challenges. Mutual reliance and cohesion among project teams			
Project team members have skills, are leaders, and take responsibility.	Critical thinking, innovation, and leadership team project current needs of the project environment.	3	3	3

In the second table, the team performance domain, the ERP implementation project one is considered to have a pretty good team building overall so that a reasonably conducive project environment is created. Some obstacles are related to the project team but can be resolved quickly and appropriately. The second implementation project is considered to have a solid project team, so that collaboration and cooperation between teams run effectively. PMOs assessed the third implementation project in terms of the team having good enough capabilities to face the challenges and conditions, which were quite tricky and severe.

TABLE III. DEVELOPMENT APPROACH AND LIFE CYCLE PERFORMANCE DOMAIN

OUT COME	CHECK	MATURITY LEVEL Project Implementation		
		ERP 1	ERP 2	ERP 3
Project outcomes that are in line and aligned with the developed development approach	The development approach (adaptive, predictive, hybrid) reflects the product, project, and organization needs.	3	4	1
The series stages from the beginning to the end of the project become a platform that facilitates the delivery of business value from stakeholders.	Each stage of project work follows the output criteria and best practices from the start to the end of the closure.	3	4	3
The steps of the project stages become a medium that facilitates the development and approach to producing the required project outcomes.	The Development methods and project deliverables have certain special conditions to run in parallel or stages that need to be repeated to be carried out.	2	2	2

In the third table, the development approach and life cycle performance domain, the first ERP implementation project in development, runs well following the well-standardized project phases. In terms

of time, it is considered less facilitated as the needed rhythm of the work and the final results are less than optimal. The second ERP implementation project is considered entirely consistent, well supervised, and monitored, but a reasonably short project time affects the project's rhythm during the COVID-19 pandemic. The third ERP implementation project, in terms of development approach, is not optimal and does not follow the current development phase. This factor impacts the rhythm and environment and the course of the project, which becomes less conducive.

TABLE IV. PLANNING PERFORMANCE DOMAIN

OUT COME	CHECK	MATURITY LEVEL Project Implementation		
		ERP 1	ERP 2	ERP 3
Projects run according to well-coordinated and organized planning.	Performance measurement of project results is aligned with planning with the gap to project actualization within normal limits.	3	4	2
Project results are delivered with an overall approach.	Project preparation is done thoroughly, from resources, funding, procurement, timely delivery, and so on. This condition is to minimize misaligned gaps in each project area.	3	3	2
Project objectives are formed and represent all the information outlined To be in line with the result of the project	The process of extracting information that becomes a reference with the information obtained becomes a good elaboration to analyze the business case needed. As a result to be achieved.	2	4	1
Plans are made according to the time required	Maturity of planning level according to project needs	2	3	1
Stakeholder expectations inform the planning process.	The communicative attitude of project management to develop planning information and the needs or expectations of stakeholders.	2	3	1
Conditions and needs can arise unpredictably, requiring adaptation planning in every part of the project.	The project backlog is a vital part of creating to show the planning and changes that occur in each phase of the project so that it helps control the changes that have been or will be implemented.	4	4	1

In the fourth table, planning performance domain, for the first ERP implementation project, the project is run by the initial planning that has been prepared and well documented. The second ERP implementation project is considered quite good in planning and line with the actualization of project implementation. The third implementation project is considered to lack careful planning, and actualization of implementation found various problems due to planning and project references that are less directed and not well documented.

TABLE V. PROJECT WORK PERFOMANCE DOMAIN

OUT COME	CHECK	MATURITY LEVEL Project Implementation		
		ERP 1	ERP 2	ERP 3
Effectiveness and efficiency of each project phase undertaken.	Some reports prove the project has been carried out effectively and efficiently.	3	4	0
Processes executed in the project are aligned with the project's environment.	Audit processes or quality assurance activities are a reference for assessing that the project process has been carried out in a relevant and effective manner.	1	1	1
Communication and stakeholder engagement are well and truly in place.	Misunderstandings are very likely to occur during a project; effective communication is one of the bridges that can maintain relationships between stakeholders and be well established in achieving harmony in project activities.	2	4	1
Physical resources efficiently coordinated	the project can utilize resources used in each stage of the project as effectively and efficiently as possible.	3	2	2
The procurement process runs effectively	A procurement audit controls and evaluates the contractor's work plan, the process is in place, and the procurement process is adequate.	2	2	2
the project can effectively manage change	Some project approaches are predictive, and some are adaptive. The predictive approach can show a log of changes and considerations evaluated regarding schedule, resources, budget, scope, and even the impact of risks that can arise. The adaptive approach has a backlog that shows new milestones and scope additions.	3	4	2
Increased capability derived from learning toward	Skills have improved as learning has continued as the project has improved its processes.	4	4	1

OUT COME	CHECK	MATURITY LEVEL Project Implementation		
		ERP 1	ERP 2	ERP 3
continuous process improvement				

In the fifth table, project work performance domain, the first and second ERP implementation projects are assessed in terms of functions and activities that are determined to run well but still need to be evaluated in each project stage. In terms of project activities and functions, is considered less than optimal and needs significant improvement.

TABLE VI. DELIVERY PERFORMANCE DOMAIN

OUT COME	CHECK	MATURITY LEVEL Project Implementation		
		ERP 1	ERP 2	ERP 3
Strategy and business objectives achieved as a result of project contributions.	A project authorization document that shows business objectives are aligned with project outcomes. This alignment can be seen by evaluating the business plan and the organization's strategic plan that the team developed at the beginning of the project.	2	4	1
The project delivers or materializes the results needed by the beneficiaries.	Data and business cases are one of the bases for assessments that show misalignment or results that do not match what is needed.	3	4	2
Achievement of project needs is realized within the time frame created during planning.	Achievement of project needs is realized within the time frame created during planning.	3	4	3
A clear understanding of the needs of the project team	The initial requirements reflect the understanding of the development to be undertaken. With a predictive approach, there is an evolution of the project requirements, and it takes a long time to understand the requirements.	3	4	2
The initial requirements reflect the understanding of the development to be undertaken.	The number of complaints or hostile feedback beneficiaries provides project outcomes satisfaction. PMOs can identify this factor through observation, interviews, and stakeholder discussion forums.	2	4	1
With a predictive approach, there is an evolution of the project requirements, and it takes a long time to understand the requirements.				

In the sixth table, the delivery performance domain, the assessment of the first ERP implementation project in terms of delivery of project scope and quality achievements is quite good, but some are not well documented. The second ERP implementation project, in terms of delivery of scope and quality achievements, is standardized and documented with somewhat effective monitoring and supervision. In the third ERP implementation project, the delivery of achievements is considered less than optimal and not centralized, so there is confusion and lack of understanding due to ineffective delivery.

TABLE VII. MEASUREMENT PERFORMANCE DOMAIN

OUT COME	CHECK	MATURITY LEVEL Project Implementation		
		ERP 1	ERP 2	ERP 3
Understandable, monitorable project status	Audit reports and measure data to assess whether it is reliable.	2	2	2
Data that becomes a medium or facility for decision making	Measurement of project performance, how many gaps are found, and whether there are deviations.	3	3	3
The project performance path is a priority that PMOs must maintain to be on time and on track.	Status is a crucial indicator for measuring whether project actions are timely and every decision is appropriate.	3	3	1
An evaluation is conducted to assess the target against the business value generated, whether it is timely and whether the information is reliable.	The team can achieve project value actualization by accurately reviewing past and present performance.	3	4	1

In the seventh table, the measurement performance domain, the first implementation project, in terms of measuring the status and performance of the project is quite good but still not optimal in monitoring and supervision. The second implementation project, measuring project status and performance, is well facilitated, monitored and followed up. The third ERP implementation project is considered very lacking in measurement and evaluation, so the lack of steps

that need to be taken in anticipation of the existing evaluation results.

TABLE VIII. MEASUREMENT PERFORMANCE DOMAIN

OUT COME	CHECK	MATURITY LEVEL Project Implementation		
		ERP 1	ERP 2	ERP 3
Team awareness of the technical, market, economic, social, and political project environment	The project team consolidates the evaluation of risks, uncertainties, and responses to project environmental considerations.	4	4	3
Proactive attitude in responding to and exploring uncertainty	Responses to risks are evaluated against prioritized project constraints such as scheduling, performance, or budget.	3	3	1
Interdependencies need to be recognized between the various variables in the project.	Responses or actions to address volatility, ambiguity, and complexity in the project	3	3	1
Capability to see the consequences of problems and anticipate threats and opportunities.	The system helps see and capture potential risks that are strong enough.	3	3	1
The system helps see and capture potential risks that are strong enough.	The Achievement of a met schedule and budget performance is still within the tolerance of deviation limits.	4	4	1
Project results can be improved and enhanced by realizing opportunities.	The realization of established mechanisms can support the project team's identification and utilization of opportunities.	4	4	4
The realization of established mechanisms can support the project team's identification and utilization of opportunities.	Active efforts or measures to avoid or prevent threats to be able to limit schedule setbacks or use of cost reserves	4	4	4

In the eighth table, the uncertainty performance domain, in the first and second ERP implementation projects, it is assessed that activities related to risk and uncertainty can be evaluated and decided regarding the pros and cons of each decision so as not to harm project results. The third ERP implementation project assessed the lack of a proactive response in facing the challenges of any existing risks and uncertainties.

Project Implementation ERP 1

The business process owner of the ERP 1 implementation project felt a lack of approach, introduction, and counseling regarding the ERP system to be implemented. In addition, there is no joint planning discussion in aligning project objectives and the goals or needs of the company, so when BPO follows each stage of the project. They feel confused and ultimately follow what the implementor directs without having a definite reference to the desired needs of the company. The BPO is disappointed with the final project results obtained because it felt from BPO is that the ERP system does not provide the expected solution. In the end, the user feels difficulties in carrying out company operations using the ERP system that has been implemented.

The unprepared client/company in business processes that have not been well mapped between departments and divisions. SOPs or policies that have not been standardized make the impact that the implementation project is felt to be quite tricky. The processing time is also quite limited.

Project Implementation ERP 2

The project manager assesses the importance of forming a dedicated project team both from the user and implementor sides. From the client side, having a double event that runs concurrently with the ERP implementation project, and from the implementer side, there is a double assignment of projects that can cause conflicting schedules that hinder project work, the project team from the project team side. Users and implementors find it challenging to divide the time, so they are less focused, and the work becomes less than optimal.

The respondent felt the communication conditions when the project was running to be less than optimal. One of which was the steering committee which should have been carried out at least once a month but could not be achieved due to the lack of time available from the BOD client and BOD implementor. Communication lines are considered less flexible because they follow existing procedural organizational structures and are increasingly rigid because communication is done online (limited face-to-face meetings). Apart from this, the communication that has been established is going quite well where there is mutual respect and respect between the PMO and the project team so that collaboration or cooperation can run quite smoothly.

The decision taken has a risk, namely the go-live decision on time, but when cut over, a lot of accounting data is not ready, and the team is forced to adapt and handle the incident or issue. The implementor has given the pros and cons of the decision, but in the end, the go-live data that is raised is only data that is ready, and data that does not yet exist will follow sometime later. This condition impacts financial reports, which sometimes need to be adjusted, reconciled, corrected, etc., to catch up or correct incomplete data when the go-live system is implemented. Overall the client considered the project entirely satisfactory; it can be seen from the client's decision to use the services of a consulting company PT. ABC in ERP implementation roll-out project.

Project Implementation ERP 3
Stakeholders are perceived as less intensively involved in ERP implementation projects. The presence of participation is only for ceremonial project events, such as kick-offs, critical managerial decisions, and the inauguration of project go-lives. The respondent felt the communication between stakeholders and the PMO or the project team was lacking because the steering committee, which was supposed to run periodically for evaluation, was not carried out. Lack of monitoring, monitoring, and evaluation raises several issues at the project's end that lead to dissatisfaction from the beneficiary side (user/client). This study found that the political and economic conditions in which coal prices decreased enough that the stakeholders from the client side were more focused and concentrated on the company's operational and managerial activities. Therefore, this ERP implementation project did not receive sufficient attention from the stakeholder side.
Evaluation, daily meetings, coordination, and brainstorming need to be done intensively in an online project environment. This study found that the factor did not routinely carry out these critical things in this ERP implementation project. The procurement of the infrastructure system was deemed ineffective and had experienced a delay of several weeks; this hampered several project development processes in the ERP system realization phase.

Disccusion

In previous research [2] [3] [4] [5] [6], researchers found communication, commitment, professional human resource management, project environment, and infrastructure. This factor is part of the critical success factors that must be owned and monitored correctly in project management and every stakeholder involved. ERP implementation projects carried out during the COVID-19 pandemic faced considerable challenges in terms of people factors, technological factors, and organizational factors. Management measures in adapting to changing conditions must be very effective at each project phase. Communication is an essential factor that needs to be prioritized because the project is carried out online (limited face-to-face meetings). Many success factors are based on well-supported communication. Here are some things that are part of the project management principles that provide some of the factors that lead to a successful ERP implementation project.

User Involvement
It is necessary to identify the right ERP users from the beginning when planning the ERP implementation project to be carried out. This factor ensures the project team can understand the needs of those who adapt to the ERP system. Users assigned to project teams need to be specifically dedicated to following the project to focus on following every stage of the project from the beginning to the end of the project.

Top Management Support
Project management needs to motivate and convince top management as a critical company leader to provide support for ERP implementation projects. Top management needs to be informed of the detailed plans for the project to be executed so that top management can be actively involved in making critical decisions that are needed at any time during the implementation of the ERP implementation project.

Clear Definition Needs
It is necessary to clearly describe each functional requirement required with the solution to be developed in the ERP project. The project manager needs to analyze and map out the needs and related ERP solutions to be used as milestones that determine the success of the ERP implementation project.

Developing Clear Planning
The project's benefit and the problem must be fully documented, along with the targets and solutions to be developed. It is necessary to select people with appropriate capabilities with the right roles and responsibilities. Every planning certainly has the possibility of changes and adjustments in each phase or stage, so related parties need to be able to adjust or adapt to every condition faced.

- Realistic Expectations

Overall project planning and targets need to be compiled and documented with realistic and clear explanations so that the expectations of both parties, users and implementers, are in line and avoid miss communication and misinterpretation of the ERP project goals and targets.

- Division of Project into Steps

The effectiveness and efficiency of the project are based on the project design consisting of structured and well-organized steps. PMOs can initiate the design by discussing major and critical issues and then gradually discussing the project's design strategy details.

- Project Team Competency

The competence of the project team is a crucial part of the ERP implementation project, so it is necessary to clearly describe the expertise or skills required of each project team. The project manager and project team included in the project team structure must have capabilities following the needs orientation so that there is no misplacement of the project team that can cause problems and poses a risk to the Achievement of expectations or the agreed final project results.

- Ownership Of Project by Stakeholders

The roles and responsibilities of each stakeholder in the project need to be clearly defined. The organizational structure helps the coordination process of all members

so that each member understands what must be done and done. Project management can link special prizes to stakeholders who are judged to have achieved each work target well and satisfactorily.

- Clear Visions of Project Objectives

Formally clarify vision short, medium, and long-term goals and purpose. It needs to be mapped between determined in terms of objectives and strategies with the company's overall goals. This factor avoids the occurrence of different views and references that become the benchmark for the project's success.

- Motivation And Focus of The Project Team

Build team motivation using premiums, bonuses, promotions, and so on. Creating a team mindset that success is one for all creates a collective work culture that creates a homogeneous atmosphere that supports each other in achieving project success.

CONCLUSION

ERP implementation project management performance at PT. ABC. Most of the ERP implementation at PT. ABC is considered less successful and is felt unsatisfactory by the client side of the beneficiaries of the ERP system implementation. This paper has been investigated through qualitative research and provides insight into the success factors, failure factors, obstacles, and impacts of the ERP implementation project implemented by PT. ABC in several mining companies. Success factors are influenced by the commitment of every organizational stakeholder, full support from top management, effective communication and collaboration between project teams, implementation strategies that follow needs, and change management. Failure factors or obstacles can come from a team member or project team resistance. The commitment aligns with the project's vision and mission; improper resource management, unrealistic expectations, non-optimal ERP implementation strategies, heavy customization, and change management are less than optimal.

Future research is suggested to understand the cost, time, and scope of successful ERP implementation projects. The research topic often uses a technique, namely the critical chain project management (CCPM) technique. With this project planning method, we can analyze the resources needed to carry out the tasks and assist each. This method is carried out by eliminating team member syndrome, multitasking, Parkinson's law, and giving time tolerance at the end of the project. CCPM can help companies save budgets or budgets but with optimal results or not reduce the quality of the project itself.

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