
Enhancing IT Hybrid Projects in The Directorate General Of Customs And Excise of Indonesia: An Improvement Process**Tito Febrian Nugraha¹, Wahyu Setiawan Wibowo^{2,5}, Teguh Raharjo³, Bob Hardian Syahbuddin⁴**tito.febrian@ui.ac.id, wahyu.setiawan11@ui.ac.id, teguh2000@gmail.com, hardian@cs.ui.ac.id¹²³⁴Faculty of Computer Science, Universitas Indonesia, Depok, Indonesia⁵Directorate of Statistical Dissemination, BPS-Statistics Indonesia, Indonesia

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Abstract

The Directorate General of Customs and Excise (DJBC) confronts mounting challenges due to the expanding international trade. To address this issue, an optimal software solution is required for efficient service provision and supervision of transactions. However, the completion of IS projects faces significant delays, with only 25% reaching completion despite the immediate need for a reliable system. These delays stem from various problems encountered during project execution. This research employs the Kerzner Project Management Maturity Model to assess the IS project management maturity level at DJBC and categorise the identified problems. Subsequently, solutions extracted from PMBOK 7 are mapped to address these issues. Findings indicate an average maturity score of 390, falling short of the target of 600 required for level 1 maturity. Additionally, 13 problems have been identified and linked to solutions within the seven standards/domains of PMBOK 7. The research presents two strategic goals: improving project management processes and enhancing client satisfaction, assessed using seven measurement indicators. This study offers valuable insights for DJBC to address project management challenges, enhance maturity levels, and achieve desired outcomes.

A. Introduction

Various factors contribute to the success of businesses, including the effective implementation of project management practices that encompass specific competencies and methods to meet project expectations and requirements [1], [2]. Efficient project management holds a positive impact on both private and government organisations, particularly in the field of information systems (IS) development [3], [4]. IT project management entails activities from the pre-project phase to system lifecycle development and post-project tasks [5]. To keep up with rapid technological advancements, agile methods have become widely adopted in IS development [6]. However, project management faces challenges, with less than 40% of information system projects being completed within the designated time and budget [7], [8].

Considering the substantial costs associated with IT investments, organisations must ensure that IS development aligns with their needs and justifies the expenses incurred [9]. The Project Management Body of Knowledge (PMBOK) offers guidelines that increase the likelihood of project success and incorporate agile, hybrid, and waterfall methods [10], [11].

In Indonesia, The Directorate General of Customs and Excise (DJBC) confronts mounting challenges due to the expanding international trade—reflected in a 2.1% increase in exports and a 0.6% increase in imports [12]. As the government agency responsible for customs operations in Indonesia, DJBC must provide efficient services and supervision to customs service users [13]. In order to streamline operations and enhance the consumer experience, DJBC has developed software that facilitates all business processes [14]. Nevertheless, limited human resources, frequent regulatory changes, and unfinished projects hinder progress, resulting in only 25% of projects (see Figure 1) being completed on time—despite the Project Management Office (PMO) setting a 100% on-time completion target [12].

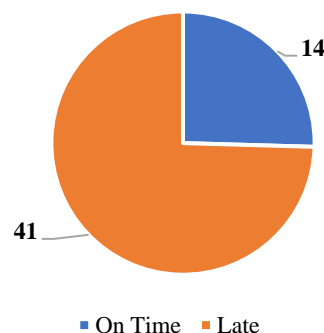


Figure 1. Punctuality Project Management IT 2021–2022 in DJBC

Addressing these challenges becomes crucial, given DJBC's pivotal role in supporting the President's vision for streamlining the bureaucracy and transforming the customs sector economically [12]. Efficient and effective software development remain imperative for DJBC to fulfil its responsibilities, which include trade facilitation, monitoring prohibited goods, and collecting customs revenue [15].

Interviews with the Project Manager (PM) at DJBC have revealed critical challenges, such as delays in Unified Modelling Language (UML) creation, incomplete utilisation of agile methods, suboptimal allocation of human resources,

limited understanding of agile processes among the team, lengthy documentation processes, and insufficient involvement of business process owners in software development. Presently, DJBC follows a hybrid project approach that combines elements of both agile and waterfall methodologies [14].

Previous studies in project management have employed various frameworks to assess maturity levels, such as OPM3, PMMM Kerzner, agile maturity model, scrum maturity model, and CMMI [1], [16]–[22]. PMMM Kerzner, renowned for its effectiveness and alignment with PMBOK standards, remains widely adopted [17], [18]. However, there is a dearth of recommendations utilising the latest PMBOK 7 edition in the context of hybrid project management within organisations. This research therefore aims to bridge this gap by offering recommendations and strategies for improving project management processes, leveraging PMBOK 7 as a guide. To address the existing gaps and challenges in IT project management at DJBC, this study plan to measure the maturity level of IT project management and propose strategies based on the analysis—addressing the following research questions:

RQ1: What are the findings of the maturity level measurement of IT project management at DJBC?

RQ2: What strategies can be implemented to enhance IT project management processes at DJBC?

This study assesses the maturity level of IT project management using Kerzner's maturity model and provide strategies for process improvement based on PMBOK 7. This research therefore consists of five sections: Section 2 presents a literature review relevant to the study; Section 3 outlines the research methodology, including the approach and stages; Section 4 discusses the collected data and present the research findings; Section 5 provides conclusions, practical implications, and theoretical contributions of the research.

B. Literature Review

The research method explains briefly and clearly about the stages of research, including research design, instruments used, data collection techniques, analysis techniques, system design, and several other things related to research problem solving strategies. [Cambria 12, space 1]

B.1. Project Management

Project management encompasses planning, organising, and effectively managing resources to accomplish specific objectives within the predetermined time, budget, and quality limitations [2]. It entails a series of five primary stages: initiation, planning, execution, monitoring and control, and project closure. Each stage necessitates distinct proficiencies, resources, and strategies to achieve successful outcomes [3]. Furthermore, project management extends its applicability to diverse project types, including technology, construction, and business and marketing ventures [23].

In the realm of IT projects, three distinct approaches have emerged: predictive (commonly known as waterfall), hybrid, and adaptive (referred to as agile) [11]: The predictive approach follows a pre-established plan and sequential stages, suitable

for projects characterised by clarity and stability, demanding meticulous planning to accommodate any contingencies; The hybrid approach amalgamates elements from both the predictive and adaptive approaches, presenting an optimal solution for projects necessitating precise scheduling while remaining flexible enough to accommodate potential modifications; The adaptive approach (agile) revolves around adaptability and flexibility throughout the project lifecycle, ideally suited for intricate and dynamic projects where changes frequently arise. Collaboration and iterative processes with stakeholders are central to its implementation, facilitating the development of products that align with evolving market demands and customer needs [11].

Research related to project management has explored many subjects, including using systematic literature reviews (SLRs) to synthesise the latest findings from multiple studies. These investigations have identified several key challenges and success factors in project management, such as effective stakeholder management, proficient project resource allocation, organisational hurdles, employee competencies, and infrastructure availability [3], [6], [24]. Those studies aimed to propose tailored solutions well-aligned with current circumstances, effectively resolving these challenges.

B.2. Project Management Maturity Model (PMMM)

PMMM serves as a valuable framework for evaluating and enhancing an organisation's project management maturity [18]. This model allows organisations to assess their effectiveness and efficiency in managing projects while pinpointing improvement areas [25]. Originally known as the Capability Maturity Model and Implementation (CMMI), the concept of maturity measurement has evolved to include various models such as the Scrum Maturity Model (SMM) and Agile Maturity Model (AMM) [26], [27].

PMMM comprises multiple stages or maturity levels that guide organisations from an initial ad-hoc stage to a more advanced level characterised by high maturity and effective leadership [28]. Each stage within the PMMM exhibits unique characteristics and necessitates the fulfilment of specific project management practices to progress to the subsequent level [18].

Albeit several maturity level measurement models exist with broader scopes encompassing domains beyond project management, the following models explicitly concentrate on evaluating maturity levels in project management:

Organisational Project Management Maturity Model (OPM3)

The utilisation of OPM3, a comprehensive framework for evaluating and improving project management maturity, aids organisations in seamlessly integrating project management with their business strategy and establishing a supportive work environment [16]. OPM3 encompasses three primary domains: assessment, knowledge, and improvement. The maturity levels within OPM3 are reflected in portfolio management, programme management, and project management, which are further classified into four levels: standardise, measure, control, and continuous improvement [18]. An exceptional attribute of OPM3 lies in its holistic approach, enabling organisations to assess project management capabilities at the organisational level rather than focusing solely on individual

projects [16]. This vantage point empowers organisations to pinpoint areas needing enhancement and formulate a cohesive strategy to bolster their project management maturity [29].

P3M3 (Portfolio, Programme and Project Management Maturity Model)

P3M3 stands as a powerful tool for assessing and elevating organisational maturity in portfolio, programme, and project management [30]. Developed by the UK Office of Government Commerce (OGC), P3M3 categorises its focus into these three vital management domains [31].

Within P3M3, five distinct maturity levels capture various stages of organisational growth [32]. Level 1, Awareness, emphasises comprehension of portfolio, programme, and project management concepts, even without established formal structures and consistent processes. Level 2, Repeatable, necessitates the establishment of structures and processes to enable consistent management, although complete integration with the organisation's operations remains a work in progress. Level 3, Defined, mandates the integration of structures and processes, along with the consistent implementation of practices across the entire organisation. Level 4, Managed, involves the vigilant oversight and measurement of integrated structures and processes to enhance portfolio, programme, and project management performance. Finally, Level 5, Optimised, directs efforts towards optimising management practices by embracing best practices and continuously refining processes to thrive amidst evolving business landscapes.

By utilising P3M3, organisations can effectively identify their strengths and weaknesses within portfolio, programme, and project management [32]. This dynamic model empowers organisations to formulate targeted action plans that enhance management maturity and elevate overall performance [33]. P3M3 hence facilitates valuable performance comparisons with peer organisations operating within the same industry [32].

Kerzner Project Management Maturity Model (Kerzner PMMM)

Kerzner PMMM, devised by Harold Kerzner, is a model aimed at advancing organisational project management performance by cultivating greater maturity in adopting effective project management practices [1], [18].

Comprising five progressive levels, Kerzner PMMM represents distinct stages of project management maturity [32]. Level 1, Common Language, focuses on equipping key project management personnel with fundamental knowledge in the field. The organisation ensures its dissemination by recognising the importance of project management expertise for all stakeholders involved. Level 2, Common Processes, underscores project management integration as a shared responsibility across the organisation, enabling knowledge transfer and lessons learned from previous projects. Level 3, Singular Methodology, entails establishing a clearly defined and integrated project management process within the organisation's operations. Level 4, Benchmarking, involves regularly exploring successful project management practices in other organisations, facilitating insights and the refinement of approaches. Finally, Level 5, Continuous Improvement, signifies the ongoing optimisation of project management processes through adopting best practices and continuous enhancement to meet project management objectives.

Kerzner PMMM facilitates evaluating project management performance and identifying strengths and weaknesses within project management processes, employing PMBOK-compliant groupings [1]. Organisations can utilise this model to devise action plans to elevate overall project management performance [17]. Rooted in various success factors, such as top-level management commitment, the role of project managers, and the selection processes for project managers [34], the Kerzner PMMM model stands out for its compatibility with specific case study conditions and its inherent advantages, thereby making it a fitting choice for assessing project management maturity levels in this research.

B.3. Kerzner PMMM

The maturity method discussed in this subsection was introduced in 2001 and has undergone updates, with its third edition published in 2019 [17]. Prior to its inception, existing maturity level measurement methods relied on CMM, prompting the development of a specific model tailored to assess project management for more precise outcomes [1].

Kerzner PMMM adopts a systematic phased approach, commencing at level 1, where a thorough evaluation is conducted on stakeholders involved in the organisation's project management. The outcomes are then classified based on PMBOK knowledge areas, encompassing scope management, time management, cost management, human resource management, procurement management, quality management, risk management, and communication management [35]. Once the minimum threshold at level 1 is successfully achieved, progression to level 2 entails gauging the establishment of a well-suited project management methodology that guides all ongoing projects within the organisation. Subsequent stages are pursued by meeting the achievement threshold at each level [35].

B.4. PMBOK 7

PMBOK, the standardised guide for project management, is a comprehensive framework that aims to elevate the quality of project management by categorising elements into distinct domains encompassing knowledge areas, techniques, and processes [10]. The latest iteration, PMBOK 7, introduces an expanded scope of seven project performance domains: stakeholders, uncertainty, team dynamics, measurement, development approaches and life cycles, project execution and tailoring, planning, models, methods, and artefacts [11].

Released in 2021, PMBOK 7 represents a significant departure from previous editions. Notably, it embraces a flexible and adaptive approach, granting project management professionals the freedom to tailor their practices to the unique requirements of each project [10]. Furthermore, PMBOK 7 places a greater emphasis on value management and benefits realisation, empowering practitioners to optimise project outcomes and maximise value [36].

Among the various domains within PMBOK 7, the project work performance domain stands out as it specifically addresses the effective management of team members and the cultivation of a learning-oriented project environment [11]. The guidance provided in this domain aims to enhance human resource management, promote seamless communication with stakeholders, ensure efficient and proficient project execution, and foster continuous growth and development among team

members through a culture of learning [11]. Consequently, this domain aligns perfectly with the challenges encountered by DJBC and their need for improvement.

C. Research Methodology

This section presents the research methodology and instruments. The study progresses through distinct stages, each with a specific objective, shown in Figure 2.

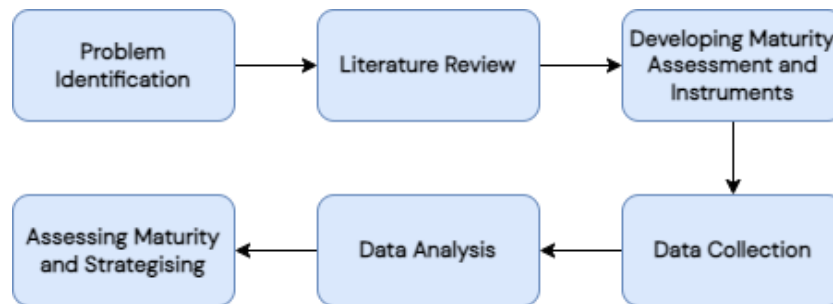


Figure 2. Research Diagram

C.1. Problem Identification

The initial stage focuses on identifying software development issues at DJBC. This involves conducting interviews with project managers and the project management office and analysing project implementation monitoring documents from 2021 to 2022. Expectations of the project management stakeholders are also considered. The primary problem and its underlying causes is then determined [30].

C.2. Literature Review

A thorough review of existing research is conducted to select an appropriate model for addressing the research questions. After analysing prior studies, the Kerzner PMMM, which aligns with PMBOK, has been chosen. To cater for hybrid software development, PMBOK 7 is also utilised in conjunction with previous studies [1], [11], [24]. The research approach encompasses quantitative measurements of maturity levels and qualitative analysis to generate recommendations for enhancing project management at DJBC [30].

C.3. Developing Maturity Assessment and Instruments

The maturity assessment relies on the Kerzner PMMM, comprising multiple levels, each with specific assessment criteria and instruments. Level 1 employs 80 multiple-choice questions to evaluate fundamental project management knowledge. Level 2 utilises 20 Likert-scale based questions to assess the project life cycle within the organisation. Level 3 involves 42 multiple-choice questions to gauge the integration of project management practices. Level 4 administers 25 Likert-scale based questions to assess the organisation's efforts in seeking benchmarking opportunities. Finally, Level 5 exercise 16 Likert-scale based questions to evaluate the organisation's condition after benchmarking. In addition to the questionnaire, interviews and a literature review supplement the data collection process [35].

C.4. Data Collection

Data collection involves the distribution of questionnaires to project managers and conducting interviews with project managers and the project management office. The collected data undergo analysis and scoring based on predetermined criteria for each level. Successful completion of each level allows progression to the subsequent level [35].

C.5. Data Analysis

Data analysis is conducted using Microsoft Excel to evaluate the responses provided by the participants at each level. Additionally, the results of interviews and literature studies are subjected to open coding techniques, focusing on topics in PMBOK 7 and prior research relevant to project management with hybrid methods [35].

C.6. Assessing Maturity and Strategising

Drawing on the maturity level results, interviews, and literature studies, an analysis is conducted to identify and assess the problems and their impact. Subsequently, solutions and recommendations are mapped to address these issues, culminating in the developing of a comprehensive strategy for implementing the proposed solutions. Additionally, measurement methods are established to evaluate the strategy's effectiveness [35]

D. Result and Discussion

The authors provide a detailed description of the measurement of maturity level 1 for DJBC, shown in Table 1. The average score obtained from the results presented in **Table 1** is further analysed in **Table 2**, totalling to a score of 390. Additionally, **Table 2** comprehensively analyses the results based on the knowledge areas.

Table 1. Respondents' Assessment

Respondent	Score	Status
SP	350	<i>Not Passed</i>
DT	410	<i>Not Passed</i>
IN	390	<i>Not Passed</i>
FT	330	<i>Not Passed</i>
BD	460	<i>Not Passed</i>
FB	400	<i>Not Passed</i>

Table 2. Average Respondents' Score in PMBOK Domain

Domain	Respondents						Average Score
	SP	DT	IN	FT	BD	FB	
Scope	80	70	70	50	80	70	70.00
Time	30	40	40	20	50	30	35.00
Cost	10	40	50	20	40	40	33.33
Human Resources (HR)	30	50	30	40	60	20	38.33
Procurement	60	50	40	60	30	60	50.00
Quality	30	70	70	40	80	50	56.67
Risk	50	50	50	50	60	80	56.67
Communication	60	50	40	60	70	60	56.67

The findings highlight that only one PMBOK domain, the Scope domain, has achieved the desired score of 60, surpassing it by 70 (see **Table 3**). Conversely, the remaining seven PMBOK domains have failed catching up to the target score of 60. As a result, the project management maturity level in DJBC is currently confined to level 1. These outcomes emphasise the importance of implementing initiatives to enhance project management capabilities in DJBC and meet the organisation's expectations. In order to identify the areas that require immediate attention, a thorough analysis must be conducted. The analysis, depicted in **Table 3**, provides an overview of the averages, targets, and discrepancies among the PMBOK domains. Hence, the first step in the proposed solution entails identifying the domain with the lowest score

Table 3. Gap PMBOK Domain

Domain	Average Score	Target	Gap
Scope	70.00	60	10.00
Time	35.00	60	-25.00
Cost	33.33	60	-26.67
HR	38.33	60	-21.67
Procurement	50.00	60	-10.00
Quality	56.67	60	-3.33
Risk	56.67	60	-3.33
Communication	56.67	60	-3.33

In the P3M3 model, the maturity assessment for each domain ranges from 0 to 100—with a target of 60 for each domain. Notably, cost, time, and HR domains exhibit significant differences in maturity assessment results. The following solution therefore prioritises addressing these three domains, recognising their importance in achieving overall maturity. The authors then attempted a mapping based on interview results to identify existing problems. **Table 4** posits on the identified factors from previous studies. The mapping outcomes presented below draw upon factors derived from previous studies [24]. To tackle those barriers, the authors adhere to the guidance from PMBOK 7 and come up with the feasible solutions shown in **Table 5**.

Table 4. Mapping of Identified Problems

Category	Challenges	Interview Results
Progress tracking and reporting	Insufficient progress tracking and reporting	Inadequate communication and lack of visible progress due to exclusive reliance on JIRA tools (x4).
Customer role definition	Customer role not well defined	The undefined role of the party requesting application development leads to uncertainty and a hands-off approach (x5).
Project governance	Lack of project governance	Limited involvement of the PMO, with their role restricted to monitoring weekly progress (x6).
Agile method implementation	Improper implementation of agile method	Partial application of Agile practices, focusing mainly on biweekly review sessions and neglecting other essential elements (x7).
Hybrid method	Lack of use of hybrid method to suite project characteristics	Absence of standardised methods for project managers, as there needs to be an established selection process (x8).
Agile vs traditional	Mismatch of utilisation of agile and traditional method	Lack of a balanced approach in the hybrid implementation of methods, resulting in inconsistency (x9).
Prioritisation and scheduling	Insufficient prioritisation and scheduling	Acceptance of projects by the IKC Directorate despite limited resources posing challenges (x10).
Project closure activities	Project closure activities neglected/downplayed	Lack of cooperation from business process owners during the project closing process, impeding smooth transition (x11).
Change management and control	Improper change management and control	Poor change management during the transition from traditional to hybrid methods leads to a trial-and-error learning process (x12).
Resource planning	Insufficient resource planning	The absence of documented project load mapping hinders resource allocation and management (x13).

Table 5. Possible Solutions

Challenges	Solutions	PMBOK 7 References
Lack of PM's knowledge in time management (x1) Lack of PM's knowledge in HR management (x2) Lack of PM's knowledge in cost management (x3)	Establish a collaborative knowledge repository for the project team containing proven theoretical and practical knowledge relevant to the organisation. This repository should be regularly reviewed to ensure all team members benefit from increased knowledge and competence.	Learning Throughput The Project
Insufficient progress tracking and reporting (x4)	Conduct periodic evaluations by the project manager to assess task alignment with targets, identify obstacles, and determine effective solutions. Prioritise activities that provide the most significant value, eliminate time-wasting practices and extract valuable lessons for future processes. Project managers should identify and address inefficiencies to optimise work performance.	Project Process
Customer role not well defined (x5)	Engage in formal and informal communication with customers, involving them in every stage of development through weekly progress meetings and soliciting their input. Regular reports should also be provided to keep customers updated on the latest developments.	Project Communication and Engagement
Lack of project governance (x6)	Implement essential and crucial activities within the PMO to ensure effective project management.	Appendix X3 The Project Management Office
Improper implementation of agile method (x7) Lack of use of hybrid method to suite project characteristics (x8) Mismatch of utilisation of agile and traditional method (x9)	Customise methods and steps through tailoring processes, applying a hybrid approach when necessary.	Tailoring and Development approach & lifecycle performance domain
Insufficient prioritisation and scheduling (x10)	Utilise prioritisation schemas and matrices in the project performance domain, implementing time boxing to manage project workloads and align them with defined objectives.	Models, Methods, and Artifacts
Project closure activities neglected/downplayed (x11)	Establish clear roles, responsibilities, and effective communication channels throughout the project lifecycle with stakeholders, particularly business process owners.	Stakeholders performance domain
Improper change management and control (x12)	Follow sequential and structured change management principles per established guidelines.	Models, Methods, and Artifacts
Insufficient resource planning (x13)	Develop and implement a comprehensive resource management plan during the project planning phase to ensure alignment of scope, time, and budget with available resources.	Models, Methods, and Artifacts

Considering the mapping results of problems and available solutions in PMBOK 7, the domains and standards outlined in PMBOK 7 are prioritised for implementation in project management at DJBC, shown in **Table 6**.

Table 6. Solutions and Prioritisation

No	Domain/Standard	Frequency	Priority
1	Learning Throughout The Project	3	1
2	Project Process	1	3
3	Project Communication and Engagement	1	3
4	Appendix X3 The Project Management Office	1	2
5	Tailoring dan development approach and lifecycle performance domain	3	1
6	Models, Methods, and Artifacts	3	1
7	Stakeholders performance domain	1	2

Priority 1 is determined based on the highest frequency of occurrence, indicating the need for greater attention due to its significant impact on project management at DJBC. Priority 2, however, is identified through interviews with the PMO and project managers, highlighting the nascent nature of the PMO and the crucial input required to manage large-scale projects within the organisation effectively. Priority 3 is equally important but can be addressed after successfully dealing with priorities 1 and 2, as they have a positive influence.

Strategic steps then can be taken to enhance the project management process in DJBC by defining relevant strategic goals that serve as critical indicators of organisational performance. **Table 7** highlights the viable strategic goals for DJBC.

Table 7. Strategic Goals And Performance Indicators

Strategic Goals	Performance Indicators	Year			Unit in Charge
		I	II	III	
Improve the quality of project management for information systems.	Measure the percentage of follow-up based on evaluation results throughout the project.	70%	80%	90%	PMO
	Track the percentage of timely progress reports delivered to stakeholders.	85%	90%	95%	PMO
	Evaluate the average score of project manager assessments.	70%	80%	85%	PM
	Assess the application of mapping models, methods, and artefacts within performance domains.	70%	80%	85%	PMO
	Measure the satisfaction index of working in an information system project team on a scale 5.	3.5	4	4.5	PMO
Elevate the satisfaction of business process owners through the outcomes of information systems projects.	Evaluate the satisfaction index of business process owners on a scale of 5.	4	4.25	4.5	PMO
	Monitor the percentage of information system projects completed within the allocated timeframe.	70%	80%	90%	PMO

E. Conclusion

The measurement results obtained from the Kerzner PMMM unveil an average overall score of 390 for level 1 maturity. This score indicates that all 6 Project Managers have not met the required passing grade of 600, preventing their progression to level 2, which encompasses standard processes. Consequently, the need for improvement arises, particularly in time management, HR management, and cost management. Notably, the scope management domain exhibits an average value that surpasses the set target.

By conducting interviews with PMs and PMOs, the authors administered a comprehensive project management assessment at DJBC, followed by identifying and mapping ten specific issues using the grouping method devised by J. Sithambaram et al. These findings have identified 13 problems distributed across seven domains and standards outlined in PMBOK 7. The prioritised domains and standards encompass critical areas: learning throughout project; tailoring and development approach & the lifecycle performance domain; models, methods, and artefacts.

With the identified priorities in mind, the authors then formulated two strategic goals to improve the project management process. Over a span of 3 years, these objectives will be measured using seven indicators, with the possibility of continuation based on evaluation results. The strategic goals primarily revolve around enhancing project management processes' quality, including optimising HR, activities, and adherence to guidelines. Additionally, the authors emphasise elevating satisfaction levels among business process owners, thereby emphasising the commitment to continuous service improvement. The successful implementation of PMBOK 7 guidelines has demonstrated its efficacy in enhancing the overall project management process at DJBC.

Implications

The findings of this study hold significant theoretical and practical implications. Theoretical implications are derived from the evidence showcasing the efficacy of the Kerzner Project Management Maturity Model in assessing project management maturity within government organisations that employ hybrid software development methods. Additionally, the study highlights the value of PMBOK 7 in addressing the challenges encountered during information systems project management, particularly in organisations that integrate agile and waterfall methodologies while being relatively new to these practices.

From a practical perspective, this research offers valuable guidance for enhancing project management processes in government organisations, especially those in developing countries grappling with similar issues. The methods employed in this study can also be replicated in organisations of varying sizes to evaluate their current standing in implementing information systems project management. For instance, DJBC can adopt the strategic goals proposed as a result of this research.

Limitations and Suggestions

Nevertheless, it is crucial to acknowledge the limitations of this study. The research was confined to a single organisation serving as a case study and relied on a solitary, uncomplicated maturity level measurement model applicable across

different types of organisations. Furthermore, the solutions provided drew exclusively from PMBOK 7. Future research endeavours can transcend these limitations by employing different models for measuring project management maturity levels or amalgamating multiple models. Additionally, conducting studies encompassing various case studies would enable a more comprehensive exploration of the challenges encountered

F. Conflit of Interest Statement

The authors hereby declare no conflicts of interest that could potentially influence the findings or conclusions presented in this academic paper. Should any conflicts of interest arise in the future, the author assumes full responsibility for addressing and disclosing them appropriately.

G. Acknowledgment

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