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Assessing of project management process knowledge area: procurement based on project management maturity model pmmm) (case study of pqr company)

S M Putri¹, D Pratami², W Tripiawan³ and G Rahmanto⁴

School of Industrial Engineering, Telkom University, Bandung, Indonesia

¹sandiamohan@student.telkomuniversity.ac.id, ²devipratami@telkomuniversity.ac.id,

³wawan.tripiawan@gmail.com, ⁴gatot.rahmanto@gmail.com

Abstract. PBO (Project Based Organization) is one of the ways for organization in improving their business value and benefits. Organization is challenged to continually improve their project management performance through their capability management process. In other words, applying the measurement of management maturity is needed to gain the determinants of project performance. PQR company is a project-oriented public sector company in its work. Currently it is important for PQR company to know the achievements of its project management. Therefore, the research was conducted to identify the level of maturity of the current project management implementation in the procurement area. This research utilizes a framework by way of Project Management Maturity Model (PMMM). The measurement is conducted to knowledge area Project Procurement Management which the processes are Plan Procurement Management, Conducts Procurements, and Control Procurements. The primary data will be collected by interview the top managers of the company using Self-Assessment Survey. The results show for the overall process Procurement Management rated as level 3 maturity regarding to the standards and process management in organization. By using the PMMM framework enabling organization to enhance the performance of Project Procurement Management through the best practice given.

Keywords: PBO (Project Based Organization), Project Management, Project Management Maturity Model (PMMM), Project Procurement management

1. Introduction

Economic globalization is the biggest challenge for organizations to compete. Organizations are required to create strategic innovation amidst highly competitive competition. Innovation strategy is expected to encourage the economy of the organization in maintaining the business. One of the innovations made by the organization is to change its business orientation to be project-based or commonly referred to as PBO (Project-Based Organization) [1]. This is conducted since the project is the main way to gain business value and benefits for the organization [2].

The organization has made significant progress over the past decade because of its strategic initiative [3]. Many projects experience success in terms of meeting their original goals and completing them on time and within budget. This includes improvements for the organization because it benefits in line with the organization's goal of being able to add value to business, advance strategy and increase competitive advantage [3].



The results of a study by the [4], assert that managed project effectively is the key to implementing organizational strategy. Organizations that invest in using project management practices are shown to experience higher project success compared to organizations that do not implement project management practices. This is evidenced by a 92% success rate while only 32% for organizations that have poor project performance. Over the past 10 years as many as 9.9% of organizations lost money due to poor project performance, of which \$1 billion invested, the organization would lose \$99 million.

Poorly performing organizations generally do not pay attention to their project management capabilities and thus tend to experience project failures. Business benefits and low output quality, increased project costs and failed scheduling are frequently problems resulting from poor project management [1]. This is reinforced by research conducted by [5] which states that more than 90% of projects are late due to not paying attention to project management capabilities.

Performance measurement is the most important aspect for an organization to know the extent to which the achievement of the goal is done. According to the [2], one of the factors affecting project performance is the level of project management maturity. The maturity level of project management allows organizations to identify how to improve project performance [6]. According to [7] argues that in order to gain performance improvements, it is important for the organization to continuously evaluate all of the project management processes in finding improvement areas to improve project management maturity. Research and evaluation are also conducted to ensure that the operational execution of the project is executed appropriately [8].

There are various models of project management maturity that are used to determine how well organizations are improving their performance [9]. In this research, the framework of PM Solution's Project Management Maturity Model (PMMM) is applied as a instrument for improving the strategic management performance. During in the last decade, research has center the attention on studying the benefits of high level of maturity in the context of PMMM [10]. The utilization of PMMM for improvement the process brings with the valuable benefits in completing times of project shortly, controlable of costs, build on organizational strategic, and sustainable development and profitability to a long period of time [11].

Further analysis on this research was performed in a public sector company in Indonesia which is focused on telecommunication and network public. All over the work of this company have adopted a project-oriented in delivering their product or services. Futhermore, the procurement performance becomes the main topic discuss to gain the critical importance in public sector company [12]. Therefore, the aim of this research is focused on assess the performance of procurement process in managing project using the PMMM framework, in order to gain the strategic method in attaining the the higher maturity levels.

2. Method

2.1. Project Management Maturity Model (PMMM)

The maturity model that used for this research to measure organizational maturity in implementing continuous improvement is PM Solutions Project Management Maturity Model (PMMM). Project Management Maturity Model (PMMM) is a development of SEI Capability Maturity Model that has been used in many organizations in improving organizational performance. PM Solutions also utilizes the PMI knowledge areas to get more specific measurements, so the maturity model has 5 SEI Maturity Levels as the basic framework adjusted based on 10 areas of knowledge PMBOK Guide as shown by figure 1 Project Management Maturity Model [13].

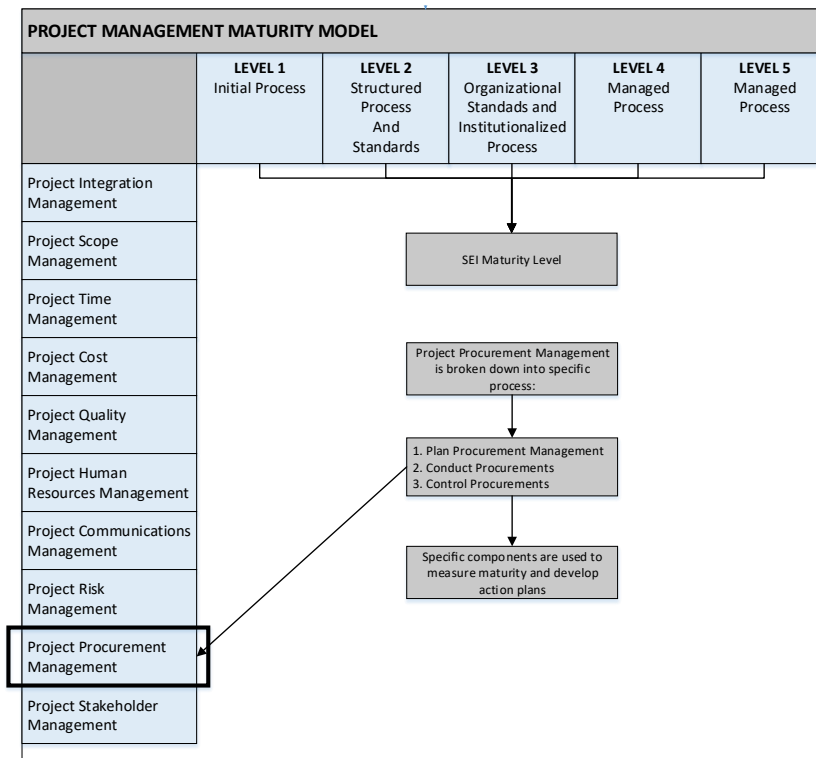


Figure 1. Project management maturity model.

Conducted by the author, the measurement is defined by its component processes of the Project Management Procurement knowledge area in accordance with the standardization of PMBOK Guide 6th Edition. Each processes were further described by the criteria assessment of maturity levels of PM Solutions Project Management Maturity Model (PMMM).

2.2. Determining Assessment Criteria for Project Procurement Management Maturity Level

Based on [11], the determination of the procurement maturity criteria for Project Procurement Management refers to the process standards contained in the Project Management Book of Knowledge (PMBOK) 6th Edition. There are 5 levels of each process. The following are the criteria on each of these processes.

Table 1. Assessment criteria of PMMM level.

Project Procurement Management Processes	Maturity Levels	Description
Plan Procurement Management	Level 1: Initial Process	There is no recognize practice; ad hoc process to develop planned approach.
	Level 2: Structured Process and Standards	There is Statement of Work (SOW) of product details; SOW describe requisite goods and services; procurement planning contains procedures, item details, costs, quantities, quality requirements, and delivery schedule.
	Level 3: Organizational Standards and Institutionalized Process	Formal documentation mandated throughout organizational and client management

	Level 4: Managed Process	A policy of acquisition is performed by a team include project managers, organizational management, client management, and purchasing unit.
	Level 5: Optimizing Process	Periodically and continuously the procurement planning is evaluated and refinement are added; Through the efficiency and effectiveness metrics the acquisition policy are evaluated; just-in-time procurement system.
	Level 1: Initial Process	No particular procedure for acquiring materials for projects; no standards or practices encompassing the contracts management, evaluations, and decisions; the organization purchases from the various vendors for comparing the material prices.
	Level 2: Structured Process and Standards	There are processes for considering the contract strategy, key potential vendors, choosing the suitable contract type, documenting process and determining the best strategy procurement systems.
	Level 3: Organizational Standards and Institutionalized Process	There is a preferred vendors list; procedure in expanding the procurement process documentation has established; Consistently in using the proposal evaluation criteria
Conduct Procurements	Level 4: Managed Process	Project requisitions are fully integrated with the organization's procurement systems.
	Level 5: Optimizing Process	Utilization of effectiveness and efficiency metrics in evaluating the project manager and team vendors and contractors at the end of the project
	Level 1: Initial Process	Poorly in managing the contracts for projects; no procedures in handling the amendment and risks project and being communicated with vendors; informal procedure in close out the contract; payment procedures are conducted outside the field of project managers.
	Level 2: Structured Process and Standards	There are status periodic reports reflecting progress of key milestone; vendors report on a regular basis (usually weekly) according to requirement in contracts; there is formal admission and contract closure, but have no standard or documented process; informally lessons learned are conducted
	Level 3: Organizational Standards and Institutionalized Process	Contractors and vendors are required to follow company standards; all vendors must perform progress reports related to the sequence of activities; any amendment and issues communicated to the project manager right away; clients take part in product
Control Procurements	Level 1: Initial Process	Poorly in managing the contracts for projects; no procedures in handling the amendment and risks project and being communicated with vendors; informal procedure in close out the contract; payment procedures are conducted outside the field of project managers.
	Level 2: Structured Process and Standards	There are status periodic reports reflecting progress of key milestone; vendors report on a regular basis (usually weekly) according to requirement in contracts; there is formal admission and contract closure, but have no standard or documented process; informally lessons learned are conducted
	Level 3: Organizational Standards and Institutionalized Process	Contractors and vendors are required to follow company standards; all vendors must perform progress reports related to the sequence of activities; any amendment and issues communicated to the project manager right away; clients take part in product

	testing and sign a settlement contract; admission and closing of contracts are formal or standardized and documented
Level 4: Managed Process	Vendors are compulsory to report progress that is integrated with the scheduling plan using company standards and also integrated with corporate reporting mechanisms; vendors included in the project planning; the admission and closing out the contract being documented, repeatable using, and declare as organizational standard; there are regular audits especially in contract and vendors management
Level 5: Optimizing Process	Organizations consider alliance strategies with preferred vendors; neither organizations nor vendors adhere to high performance and quality standards in products or services; there is database of vendor and contractor performance organizations require lessons-learned compilations from project procurement documentation, following evaluation criteria to select the source; the closure of contract management is periodically evaluated and process improvement is consolidated on an ongoing basis; there are lessons learned that are part of the continuous improvement of the procurement process.

2.3. Designing Self-Assessment Survey

The Primary data will be collected by interview the top managers of the company using Self-Assessment Survey. There are four top managers which are Senior Manager of General Affairs unit department, Procurement Manager, Officer-1 Procurement and Project Manager. The design of the Self-Assessment Survey is based on a description of the criteria assessment of each process in Project Procurement Management along with evidence supporting the assessment. The collected evidence will be validated whether it matches the criteria requested or not. There should be a synchronous between available evidence for the assessment to avoid analysis paralysis [14].

2.4. Analysis of Project Procurement Maturity Level

Assessment is applied by reviewing aspects of each Project Management Procurement Maturity Level process. The achievement of maturity level given by the organization is cumulative so for every level of PMMM achieved then all criteria at the previous level must be met. Level achievement cannot move to the next level before all criteria have been met. After completing the assessment of each process, then further assess the assessment of the Project Procurement Management process and picking the lowest level of maturity in accordance with the criteria that are met. In other words, the overall maturity level cannot be higher than the score of each individual process which is lowest. As shown figure 2 is a rating of Project Procurement Management to review the maturity level of each process. From the measurement of the maturity level obtained process Plan Procurement Management rated as level 3, Conduct Procurements rated as level 5, Control Procurements rated as level 3. Thus, the process of Project Procurement Management is obtained level 3.

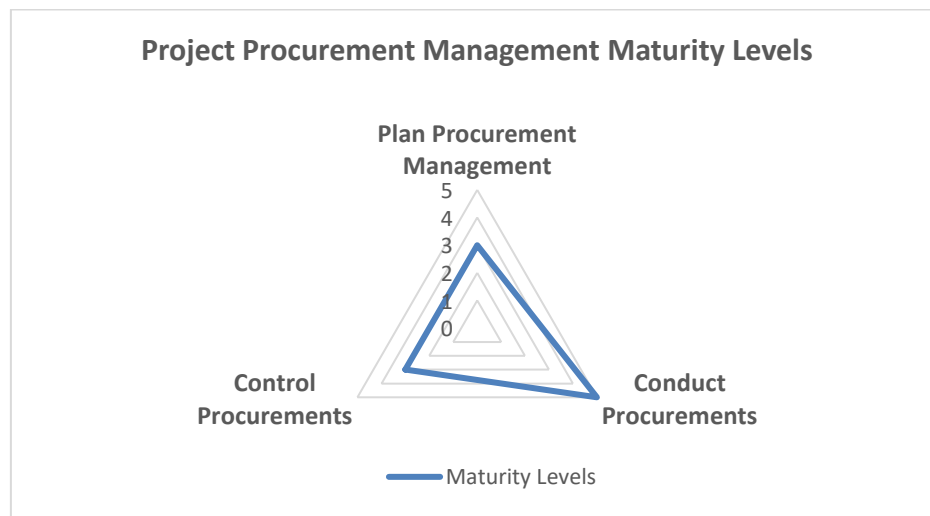


Figure 2. Project procurement management maturity levels.

2.4.1. Plan Procurement Management

In the process of Plan Procurement Management there are several criteria that are based on maturity level. Each of the criteria has evidence to support the organization's assessment. Based on the results of interviews using the Self-Assessment Survey obtained information that of the 9 criteria there are 7 criteria that are met by the current condition of the organization. Therefore, the level of organizational maturity in this process is at level 3 of Organizational Standards and Institutionalized Process. The procurement process has been used as an organizational standard and used by most projects. The criteria for Level 3 in Plan Procurement Management process is project team and procurement division present analysis and recommendation report for company and client for decision of acquisition of goods or services together. This is demonstrate by the organization evidence through documents Justification of Needs Goods and Services. Where Justification Needs Goods or Services contains related to the results of mutually agreed recommendations and acquisition decisions. The 2 criteria that are not fulfilled of maturity level 4 and 5. Where at level 4 the organization has not met the criteria related to decision making of goods / services made by project manager, procurement division, and client. This is because only some projects meet the criteria and have not been implemented for all projects.

In addition, at level 5 there is 1 unfulfilled criteria of procurement with a just-in-time system to accelerate procurement planning and reduce inventory costs. This is because the organization has no authority related to the inventory system in the warehouse. The organization only has the authority to ensure that whether suppliers / vendors / partners have a proper warehouse, including the availability of material stocks at site visits to suppliers. Since the maturity rating is cumulative and all of criteria at each level must be met, so the level of maturity in the Plan Procurement Management rated as level 3 although some criteria at level 4 and 5 have been met.

2.4.2. Conduct Procurements

In the Conduct Procurements process there are some criteria that are based on maturity level. Based on the results of interviews using the Self-Assessment Survey obtained information that all criteria have been met by the current condition of the organization. In other words, the organization is now at level 5 of the Optimizing Process where at this level suppliers/contractors/vendors/partners are periodically evaluated in line to metrics of effectiveness and efficiency in relation to project attainment, the company has preferred contracts and a list of particular vendors that respond the demand process immediately. The collection of evidences related to the criteria to be the eligibility of the process maturity level.

2.4.3. Control Procurements

In the *Control Procurements*, the process include with the closing out contract [2]. There are several criteria that are arranged based on the level of maturity. Based on the results of interviews using the Self-Assessment Survey obtained information that the organization is at level 3 of Organizational Standards and Institutionalized Process. At this level contractors and vendors are required to follow company standards; all vendors have to make progress reports related to the sequence of activities; any amendment and issues communicated to the project manager right away; clients take part in product testing and sign a settlement contract; admission and closing of contracts are formal or standardized and documented.

In addition, at level 4 there is 1 unfulfilled criteria where the vendor is not included in the project planning. Although some criteria have been met and there is evidence but if there are still criteria that are not met then the level will remain at the previous level of level 3. Then three criteria are not met at level 5 where the organization does not use lessons learned from major projects with procurement, especially in line to the metrics of effectiveness and efficiency include process documentation, adhere to the evaluation criteria in determining suppliers, and the length of time necessary to process change orders.

3. Result and Discussion

3.1. Analysis Action Plan for Attaining the Higher Maturity

Process improvements need to be implemented to upgrade the maturity level of Plan Procurement Management and Control Procurements processes. By adopting the level 4 maturity, the company's procurement process related the contract management and standards must be fully integrated with other corporate systems such as financial management, schedule management, etc in applying to each project. The company's information systems must include with the process in managing the efficiency and effectiveness metrics periodically to make decisions going forward. In optimizing procurement process at level 5, it is such an important in adopting the continuous improvement of procurement process by the reflecting results of performance metrics. Furthermore, at the end of the process conducting the project and evaluation results, the company has established Lessons Learned and Best Practices programs to improve procurement process in the future.

As the following as shown in Table 3, there are several points of criteria regarding to attain level 4 and level 5 maturity. As all two processes are dealing with relatively low levels maturity. Hence, the unfulfilled criteria must be met in attempt to achieve the higher level.

Table 2. The unfulfilled criteria.

Maturity Level	Plan Procurement Management	Control Procurements
Level 4: Managed Process	1. Acquisition decisions are made by a team composed of the project manager, organizational management, client management, and purchasing department	1. Vendors included in the project planning.
Level 5: Optimizing Process	1. Just-in time procurement system	1. Organizations require lessons-learned compilations from project procurement documentation, following evaluation criteria to select the source.

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2. There are lessons learned that are part of the continuous improvement of the procurement process.
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4. Conclusion

From the results of the research presented in this paper, was conducted to assess the perceived maturity the project procurement knowledge area of project management in public sector company. By the results in determining the overall process maturity, in could be conclude that the company performs on the level 3, by the details for Plan Procurement Management process on the level 3, otherwise the Conduct Procurements process obtained level 5, while in Control Procurements process obtained level 3.

By the discussion of the findings, the company has to upgrade from level 3 to the higher level by adopting the unfulfilled criteria from level 4 and 5 in their project management process. It enabling the company in moving to higher maturity levels to scoop up the benefits strategic by its project. It is important in providing the consistent benefits by evaluating the company using the assessment likely.

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