

Audit E-Signature Public Service Project Using Knowledge Quality Management

Gde Brahupadhya Subiksa^[1], Kadek Ary Budi Permana^[2], Made Sudarma^[3]

[1][2] Department of Electrical and Computer Engineering, Post Graduate Program, Udayana University

[3] Department of Electrical Engineering, Udayana University

email: brahupadhya@gmail.com

Abstract — Management Information System Project (E-Signature) is a collaborative project between the Department Investment and Integrated Service Denpasar City with Institute for Research and Community Service of Udayana University. This project is commenced on 21 April 2017 and must be completed on 21 August 2017, the project is supervised and controlled directly by the Section Data Processing and Investment Information System. The plan of this project will be launched in January 2018. Before the system is launched and used by permit applicants and related officials, we need to have an audit on the quality of project management. To measure the quality of project management we used one of the knowledge in the Project Management Body Framework of Knowledge (PMBOK) that is Management Quality Project. We also use Capability Maturity Model (CMM) to help define the maturity level of information systems management. With this we can know the quality of Project Management Information System Management License (E-Signature) at the Department Investment and Integrated Service Denpasar City and provide recommendations or information related to the results of the audit we have done.

Keywords — PMBOK, Management Quality Project, Capability Maturity Model (CMM).

I. INTRODUCTION

Easy, cheap and fast public service is the hope of the community. Currently the city government has implemented various innovations to support the people's expectations by implementing the joint agreement between Denpasar City Government and Udayana University number 415.4 / 07 / KB / BKS / 2015 on 10 March 2015, about implementation of Tri Dharma University in development and strengthening regional infrastructure and improving the quality of human resources in Denpasar City [1]. To accelerate and maximize public services the city government expects all time-consuming manual activities to be electronic and systematic.

Department Investment and Integrated Service Denpasar City is a regional apparatus organization serving the licensing needs. It handles 122 kinds of permits from various sectors including housing, settlement and land area, industry, trade and creative economy, environment and hygiene, agriculture, fisheries and food security, competency certification, tourism, health, education [2]. In 2016 the Department Investment and Integrated Service Denpasar City serves a permit application of 14,736. With an average permit application each month around 1200, with the amount of permission application is large enough so that the Department Investment and Integrated Service Denpasar City carried out self-managed with the

Institute for Research and Community Service Udayana University to build Licensing Services System which one of its features is E-Signature. All signatories and permits are still manually executed by heads of departments or heads of related fields, while heads of departments and heads offices often carry out other official duties outside the office so that the licensing process becomes obstructed and impressed slowly resulting in a negative perspective from the applicant. With the E-Signature system is expected to maximize the service of the Department Investment and Integrated Service Denpasar City so that in accordance with the motto of service that if can be accelerated why should be slowed [3].

Cooperation agreement between authorize Budget User Department Investment and Integrated Service Denpasar City with Institute for Research and Community Service Udayana University held on 19 April 2017. E-Signature Management Information System Project (E-Signature) began on 21 April 2017 with a contract self-managed between the Committing Officer at Department Investment and Integrated Service Denpasar City with the Head of Executing Team of the Research and Community Service Institute of Udayana University with Number 027/372 / DPMPSTP. The system must be completed on 21 August 2017 [4]. Management information system (E-Signature) will be launched around January 2018. This project is supervised by one area of Department Investment and Integrated Service Denpasar City, namely the Section Data Processing and Investment Information System.

Management information system project (E-Signature) has been completed and submitted to the Department Investment and Integrated Service Denpasar City on 21 August 2017 by the Institute for Research and Community Service Udayana University. Before the system is launched and used by permit applicants and related officials, we believe that an audit of the quality of project management is required.

The quality of project management is a process undertaken to ensure the project meets agreed needs through rules on quality, procedures and guidelines. To measure project quality management, we used one of the knowledge in the Project Management Body Framework of Knowledge (PMBOK) that is Management Quality Project. In Knowledge Management Quality Project there are 3 related process groups that are plan with the area of planning quality, execution with the area of quality assurance, and monitoring / controlling with the area of quality control.

In this study we used questionnaires with respondents Head of Section Data Processing and Investment Information System with the staff involved in the project. The questionnaire

statement is based on the Knowledge Management Quality Project, so we can know the quality of the E-Signature project management at the Department Investment and Integrated Service Denpasar City and provide recommendations or information regarding the results of the audit that we have conducted.

II. STUDY LITERATURE

A. Literature Review

Many researches on the use of audits using the PMBOK framework have been widely discussed and implemented. Project management audit using 10 knowledge areas of PMBOK in one of the dormitory building contractor services company, questionnaires were built using 57 statements classified into 10 knowledge areas. The findings obtained on the dormitory development project are dormitory building projects considered not in accordance with the standards of project management guidance [5]. To improve the success and smoothness of the various projects the PMBOK framework is also implemented in the redesign of information technology systems and infrastructure at one of the international schools. Information technology audit is conducted to meet the needs and evaluation of information technology implemented in international schools. The results of such security research have been implemented and have good standards in certain areas such as identification, authentication, authorization and implementation, but still need improvement in the area of responsibility and monitoring [6].

B. Project Management Body of Knowledge (PMBOK)

Project management is the result of the implementation of science and skills, the best technical means and with limited resources, to achieve the project objectives which have been determined by the stakeholders in order to obtain optimal results in terms of cost performance, quality and time, and safety (Husen, 2009). PMBOK is a standard issued by Project Management Institute based in the United States (PMI, 2013) [7]. The benefits gained if the project refers to PMBOK are:

1. Better cost control and human resources
2. Improve customer relationships
3. Summarize the phase of project development
4. Lower cost
5. Better quality and high reliability
6. High profit margin
7. Increase productivity
8. Internal coordination is better
9. Higher worker morale, reducing the stress experienced by workers.

Project management discusses how to achieve project success. In PMBOK there are 10 knowledge areas, namely:

1. Project Integration Management is the integration of all project area knowledge rather project can succeed in every phase. This knowledge area is a buffer that affects and is influenced by all knowledge areas in project management because it is an element that coordinates all aspects of the project.
2. Project Scope Management defines project work that will and does not work.

3. Project Time Management is an activity covering all processes and procedures related to the completion time of a project.
4. Project Cost Management is the activity of ensuring a well defined project, having an accurate time and a realistic cost estimate.
5. Project Quality Management is an activity that includes the processes and activities that determine the quality policy, objectives, and responsibilities so that the project will proceed as satisfactorily as planned.
6. Project Human Resource Management is the process of organizing and managing the people involved in the project, so that the person can be utilized its potential effectively and efficiently.
7. Project Communication Management involves communications planning or identification of needs from related parties and the project as a whole.
8. Project Risk Management is a structured approach in managing uncertainty related to risk assessment and developing strategies to manage it using resource empowerment.
9. Project Procurement Management manages products or services acquired or purchased outside the company in order to complete the project.
10. Project Stakeholder Management is an activity of identifying parties either individually, group, or organization that may influence or be influenced by the decisions, activities, and outcomes of a project before the project itself begins.

In each area knowledge on PMBOK is connected with 5 process group which have been determined that is:

1. Initiate
In this phase, three main points are the scope of work, price and schedule determined. The determination can be made based on the agreement of the project owner and the recipient of the work, or only based on the project owner's decision. Typically, in projects involving government authorities, prices and schedules have been determined on the basis of budgeting in the current year. Therefore, the recipient of the work needs to negotiate for the problem of the scope of work so that there is no loss on both sides.
2. Planning
Planning is an iterative process. The plan will be reviewed continuously in accordance with the progress of the project and in accordance with increased knowledge and better understanding of team members.
3. Execution
A project execution is closely related to cost estimation, where the two are interdependent and will not be fulfilled either if one of them is not resolved. Usually a project manager is not directly bound in a complex schedule of a project especially if it is a large-scale project. But a project manager must ensure that the project must run any obstacles that may be faced.
4. Monitoring & Controlling
Measure and monitoring periodically the progress of the project and identify any misappropriation of the implementation of the pre-made plan.
5. Close

Formalize project results, in the form of products, services, or special results of the project.

C. Capability Maturity Model (CMM)

Capability Maturity Model is a model developed by the Software Engineering Institute at the request of the Department of Defense (DOD) of the United States with the aim of making an entrance screening test for contractors enrolling on a project [8]. CMM can also be defined as a framework for assessing the maturity level of the development of an organization's information system and process and product management [10]. CMM consists of 5 maturity levels, among them:

1. Level 1 – Initial

This level is the lowest level in CMM, where there is no consistency from one project to another. The initial level is characterized as follows:

- a. no project management
- b. no quality assurance
- c. there is no change management mechanism (change management)
- d. no documentation
- e. highly dependent on individual ability

2. Level 2 – Repeatable

The project management process and its practices have made rules about project costs, schedule, and functionality. This level has the following characteristics:

- a. there is a simple project management
- b. there is a simple quality assurance
- c. there is a simple documentation
- d. there is a simple software configuration management
- e. lack of knowledge management
- f. vulnerable to organizational structure changes

3. Level 3 – Defined

At this level the project standard will get consistent results and documentation of good quality. The process will be stable, predictable, and repeatable. Level defined is characterized by:

- a. the quality of processes and products is still qualitative rather than quantitative (not measurable just about)
- b. there is already a commitment to follow the rules of project planning, project quality,
- c. there is no team of experts who check the quality of the project.

4. Level 4 – Managed

At this level have had goals and quality that has been measured with the characteristics of level 4 are:

- a. there is already a process of project quality assessment,
- b. there is a team of experts who check the quality of the project, there are rules and documentation on the project,
- c. there is no prevention and improvement of process quality.

5. Level 5 – Optimized

This level is the highest level in the CMM which states all has been very well documented, standards and rules have been made and run very well, monitoring and controlling is running and always monitored.

III. METHODOLOGY

A. Proses Group Project Management Quality

Project Management Quality aims to determine the suitability of performance and results with quality standards. In Project Management Quality includes 3 process groups involved are plan, execution and monitoring & controlling and sub process group respectively as in figure 1.

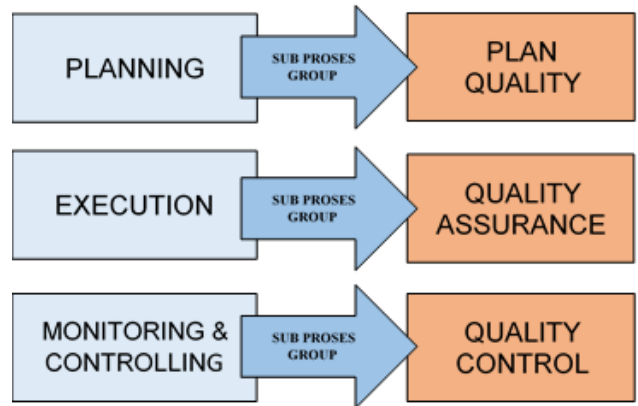


Figure 1. Process group involved in Project Management Quality

The statements in the questionnaire will be compiled based on 3 sub-process groups is plan quality, quality assurance and quality control.

1. Plan quality to identify and set relevant quality standards for the project and to formulate its achievement strategies to ensure the project and the resulting work can meet acceptable quality standards.
2. Quality assurance to evaluate overall and regular project performance to provide confidence that the project meets relevant quality standards.
3. Quality control to determine whether the implementation of the project has been in accordance with predetermined quality standards and whether has been implemented identification of project results.

B. Responden

Respondents used in this research are employees of the Department Investment and Integrated Service Denpasar City which directly responsible and oversee the course of the project information system services licensing (E-Signature). Respondents can be seen in table 1.

Table 1. Respondents in this research

Position	Amount
Head Section Data Processing and Investment Information System	1 Person
IT Staff Section Data Processing and Investment Information System	3 Person
Total	4 Person

C. Questionnaires

Questionnaires are separated based on 3 sub-process groups is plan quality there are 4 statements, quality

assurance there are 5 statements, and quality control there are 4 statements. The statements can be seen in table 2.

Table 1. Statement of questionnaire representing sub process group

No	Code	Statement
1	PQ1	E-Signature project already has quality standard documents.
2	PQ2	E-Signature owns and has appointed the person in charge of the project.
3	PQ3	E-Signature project already has the underlying regulation / guideline for the project.
4	PQ4	E-Signature project already has a feature completion plan, the cost and time of the desired work.
5	QA1	E-Signature project is in line with what has been expected.
6	QA2	E-Signature project has achieved quality in accordance with the set
7	QA3	E-Signature project meets the requirements, testing and evaluation.
8	QA4	E-Signature project meets the completeness of features that match the expectations or previous designs.
9	QA5	The implementation of the E-Signature project work in terms of time, quality and cost has been well planned.
10	QC1	E-Signature project has been examined by a team of experts and project managers.
11	QC2	E-Signature project has been tested (try & error) by a team of supervised experts in charge of the project.
12	QC3	E-Signature has been declared ready for use by the project expert team.
13	QC4	Supporting documents and E-Signature Regulations are ready.

The assessment of the statement uses a scale of 1 to 5, of which scale 1 as the lowest weight states the respondent strongly disagrees with the statement and the highest scale is 5 which states that the respondent strongly agrees with the statement. The rating scale is shown in table 3.

Table 2. Answer value of Questionnaire

Answer	Value
Strongly Agree	5
Agree	4
Doubt	3
Disagree	2
Strongly Disagree	1

IV. RESULT ANALYSIS

A. Calculation Questionnaire

From the results of questionnaires distributed to 4 respondents obtained the results of the questionnaire that

has been calculated total and capability of each statement, can be seen in table 4.

Table 4. Total and capability value of each statement

No	Code	Value Statement		Total	Cap.
		4	5		
1	PQ1	2	2	18	4,5
2	PQ2	0	4	20	5
3	PQ3	3	1	17	4,25
4	PQ4	2	2	18	4,5
5	QA1	0	4	20	5
6	QA2	0	4	20	5
7	QA3	3	1	17	4,25
8	QA4	1	3	19	4,75
9	QA5	0	4	20	5
10	QC1	1	3	19	4,75
11	QC2	2	2	18	4,5
12	QC3	3	1	17	4,25
13	QC5	2	2	18	4,5

If based on 3 sub-process group is plan quality, quality assurance and quality control then get value comparison capability as in picture 2.

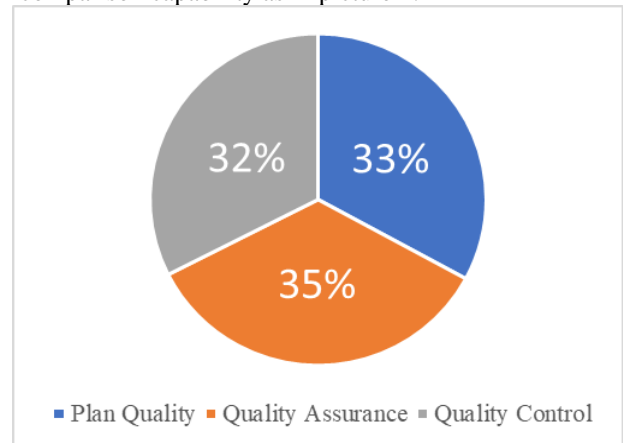


Figure 2. Comparison of average capability values in each sub-group

B. Analysis of Results

Based on the results of questionnaires consisting of 3 sub-process groups is plan quality, quality assurance and quality control, it can be analyzed each capability value in the sub-process group.

1. Plan quality

There are 4 statements that have the highest value in PQ2 stating that the E-Signature owns and has appointed the person in charge of the project. It can be shown in written documents and regulations. While the lowest value of capability is found in PQ3 which stated that E-Signature does not have the underlying regulation of the project, this is because there is no cooperation MOU between Department of Communications, Information and Statistics Denpasar City with Electronic Certification Center. Comparison of capability values can be seen in Figure 3.

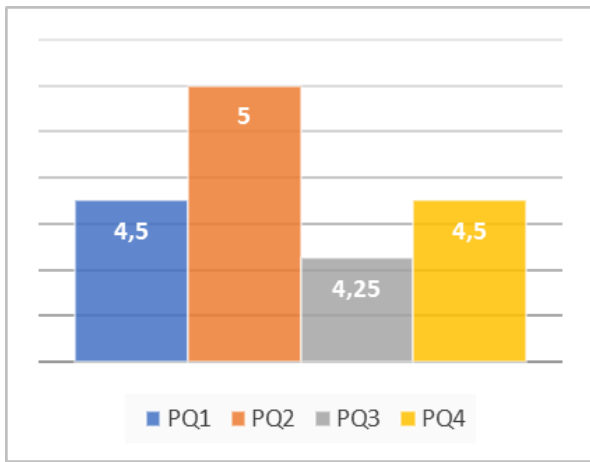


Figure 3. Capability plan quality value in each statement

2. Quality assurance

There are 4 statements regarding quality assurance, the highest capability value is found in QA1, QA2 and QA5 stating that the E-Signature has been in accordance with the expected and has reached the quality in accordance with the established and supporting documents such as system decisions and standard operating procedures of system usage is ready, but there is the lowest capability value in QA3 stating that the E-Signature project has not met the requirements, testing and evaluation, the current testing and evaluation on E-Signature is only implemented by the examiner and the expert team internal office of Investment and Integrated Services Denpasar City. Comparison of capability value can be seen in figure 4.

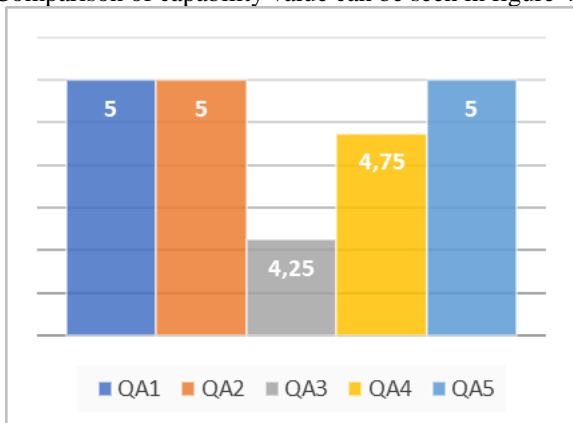


Figure 4. Capability quality assurance value in each statement

3. Quality control

There are 4 statements regarding quality control, the highest capability value lies in the QC1 statement stating that the E-Signature has been examined by a team of experts and project managers within the internal Department Investment and Integrated Service Denpasar City. While there is the lowest value in the QC3 statement which states that currently E-Signature has not been declared ready to be used according to the project expert team, this is because the new system is

tested by the internal team and has never been tested on a larger scale. Comparison of capability value can be seen in figure 5.

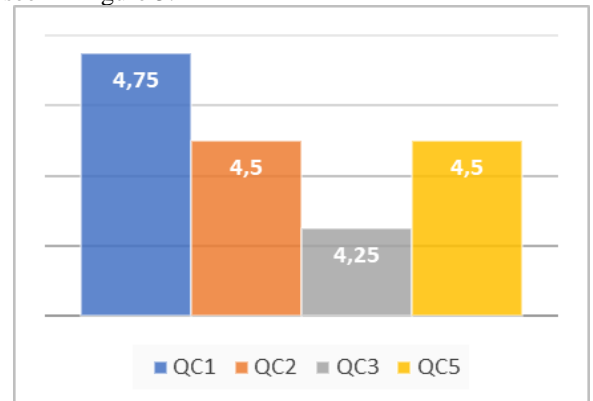


Figure 5. Value of capability quality control on each statement

V. CONCLUSION

In the research on the project audit of Licensing Service Information System with the main feature of E-Signature to know the quality of project management get the final value of the average capability Project Quality Management is 4.6208 which means the project of E-Signature has run areas on Project Quality Management. In this project there are quality standards, project responsibility, legal basis and project planning requirements. Implementation of project work also has been in accordance with the planning of the time, quality and cost. In ensuring the quality of the project has been carried out the identification of work results such as examination and testing system conducted by a team of experts.

There are several findings in each sub-process group that is on the plan quality regarding the unregulated regulation of cooperation with Lemsaneg Electronic Certification Center which is currently being followed up by the Communications, Informatics and Statistics Office of Denpasar City. In the sub-process group quality assurance, there are findings that currently the E-Signature information system has not been executed, the test is only conducted to the supervisor team and IT team at the One Stop Service Integrated Investment and Service Department. Going forward will be tested on a larger scale by input permission application directly to the system. While in the sub-process group quality control there are findings that have not known the bug or problems contained in the system, the plan will be tested with the actual data system before the official launching.

In the future development of E-Signature can be audited using different knowledge in PMBOK so that will get more specific and detailed findings.

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