# The Evaluation of Personnel Application System to the Reliability of Transaction using CMM

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Abstract: IT Audit is a testing control process of information technology infrastructure which is related to the problem of financial audit and internal audit. It serves to check whether systems and applications according to the needs of the organization or company, namely, powerful, has a fairly good control to ensure the validity, reliability, on-time and security on the input, process, output at all levels of activities of the system. Nowaday, there are many problems in systems and applications that exist in organizations and companies. Audit and evaluation would find the problem and the best solution to solved these problems. One method for that is the Capability Maturity Model (CMM). The personnel application system evaluated in this research is CV. Mahkota Jati which is engaged in household furniture. From the results of the questionnaire measurement, obtained the maturity level is 0.63 which means it is still in the range enough to pretty. The maturity value is obtained at 2.89 which is at level 3-defined process.



## 1 INTRODUCTION

The company is an organization consisting of human beings with various characters that work together in accordance with their respective functions of position, but each has the same purpose. Information Technology today is growing very fast, so that information technology plays a role and become an increasingly complex human needs, as well as its dependence on information technology. The current development of information technology includes many things such as systems and applications. The development of information technology is very easy for the community in carrying out various activities including in the aspect of organization and business. In the business world of an organization, information is the most important key component as a basis for decision making. In addition to the company, information technology is used to help simplify the activities that exist within the company, the better informatics technology used faster the response of a company to the needs of companies and consumers (Fisher, 2000).

The uses of computer technology more increased as one form of information technology development has changed the processing of accounting data manually to be automatic. Automation of information technology based on the computer in performing various functions quickly and appropriately. Information technology in a company will help the provision of information quickly in accordance with the needs of managers in decision making, in addition to information technology is not only used in data processing, but also can be used to find out faster if problems arise in the organization and focus on a particular source to take The right action.

Information technology is used to improve the performance of individuals as members of business organizations that are expected to improve aggregate organizational performance (Pradana, 2016). Therefore, the most important thing to be considered by the business in applying information technology is the extent to which the success of the system brings a positive impact in improving the performance of both individuals and organizations as a whole. Benefits of the use of information technology can be measured through an evaluation that can provide a picture of the



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success of the system itself (Norton, 1995). Many ways that companies can do to implement information technology is to buy, build your own, or submit to others for its development (Almalki, 2017).

This study will examine the application system whether it is in accordance with the needs of the organization and discuss about the application of information technology applied by the organization. Based on the background of the above problem, general problems that can be identified as follows:

1) The existence of cases in companies that the existing application system is unsatisfying in terms of input or output process.
2) Existing applications less meet the needs of the company so as to make the company's performance becomes less effective and efficient.

Currently there are several methods in determining the maturity level of an application system, such as CMM (Capability Maturity Model). The advantage of this model is because it has 5 maturity levels that can clearly map the state of an application system.

CV. Mahkota Jati is a company engaged in furniture. This company also has an personnel application system. However, there has never been do any measurement of the application.

In this study, the system has been measured and evaluated. This is done to find out how far the reliability of the transactions provided by CV. Mahkota Jati to its customers through their personnel application system.

Previous study concludes that CMM is not just a method, but is developing into the business side, so that CMM becomes a product (Yeh, 2017). Other research (Domingues, 2016) evaluates the system using a new method called Integrated Management Systems Maturity Model, a hybrid six-level maturity model that allows comparison between integrated management systems regarding their relative stage of evolution. Other research analyzes case studies on engineering companies using CMM methods. This research is based on a case study methodology and investigating the real life situation in a Russian engineering company (Titov, 2016). Other study proposes a new model to develop a maturity model in business intelligence (BI) that is applied to health applications (Brooks, 2015). Applied lean and green house strategies based on the seeking and eradication of wastes in production processes. The results are gathered and highlighted in the original Lean and Green house. The last section presents a detailed CMMI-based Lean and Green maturity model (Verrier, 2015).

# 2 LITERATURE REVIEW

## 2.1 Effectiveness and Efficiency

Effectiveness comes from the effective word that contains the sense of achieving success in achieving the established goals. Effectiveness is always related to the relationship between expected results and actual results achieved (Qushem, 2017). Effectiveness can be seen from different points of view and can be assessed in various ways and has a close connection with efficiency (Bamel, 2017).

Based on the above opinion, that if the achievement of the goals of the larger organization, the greater the effectiveness. From this understanding can be concluded that the achievement of a big goal than the organization, the greater the results to be achieved from these objectives. Effectiveness has a different understanding with efficiency. As stated by (Zide, 2017) that effectiveness (yields) is emphasized in its effect, results and is less concerned with the sacrifices afforded to obtain such results. While efficiency, emphasis in addition to the results to be achieved, also the magnitude of sacrifices to achieve these results need to be taken into account (Denis, 2017). Based on the above opinion, there is a difference between effectiveness and efficiency. The difference of effectiveness and efficiency is that effectiveness emphasizes the outcome or its effect in the achievement of objectives, whereas efficiency tends to the use of resources in achieving goals.

Next on efficiency, (Stich, 2015) states the following: "We are talking about efficiency when we imagine the use of our resources optimally to achieve a certain goal." Based on that opinion, that efficiency will occur if the use of resources optimally empowered so that a goal will be achieved. The study of effectiveness refers to two interests that are both theoretically and practically, meaning that there is a comprehensive and profound rigor of efficiency and goodness to gain input on productivity. Effectiveness is a condition that affects the things that memorable, efficacy, success of the business, the action or things that apply (Katou, 2015).

According to (Mihaiu, 2010) defines effectiveness, as follows: "Effectiveness is the relationship between output and objectives, the greater the contribution (contribution) of output to the achievement of objectives, the more effective the organization, program or activity".

## 2.2 Measures of Effectiveness

The output generated more intangible output that is not easy to quantify, then the measurement of effectiveness often faces difficulties. Difficulties in measuring the effectiveness are due to the achievement of outcomes are often not known in the short term. However, in the long run after the program succeeds, so the effectiveness measure is usually expressed qualitatively (based on quality) in the form of a judgment only. This means that if the quality is good, then the effectiveness is good as well. In the opinion (Croucher, 2018), (Mohrman, 2014) and (Pradana, 2016) mention the effectiveness measure, as follows:

1) The number of results that can be issued, meaning the results in the form of quantity or physical form of the organization, program or activity. The results can be seen from the ratio (ratio) between input (input) with output (output).
2) The level of satisfaction gained, meaning the measure in this effectiveness can be quantitative (based on the amount or number) and can be qualitative (based on quality).
3) Creative products, meaning the creation of a conducive relationship conditions with the world of work, which will be able to foster creativity and ability.
4) Intensity to be achieved, meaning to have high adherence in an intense level of something, where the sense of belonging to each other with high levels.

Based on the above description, that the measure of effectiveness must be a comparison between input and output, the measure of effectiveness must be the level of satisfaction and the creation of a conducive working relationship and high intensity, i.e. the size rather than the effectiveness of the presence of a sense of belonging with a high level.

Discussing the size of effectiveness does vary greatly depending on the angle of fulfillment of some final criteria. In the opinion of (Pradana, 2016) mentions several measures of effectiveness:

1) Quality means the quality produced by the organization;
2) Productivity means the quantity of services produced;
3) Preparedness is a thorough assessment of the possibility of completing a specific task well;
4) Efficiency is a comparison of some aspects of achievement to the cost to produce such achievement;
5) Income is the amount of resources remaining after all costs and obligations are met;
6) Growth is a comparison of its present existence and its past;
7) Stability i.e. maintenance of structure, function and resources over time.
8) Accidents are frequencies in terms of repairs that result in time losses.
9) Morale is the feeling of being bound in terms of the attainment of the goal, which involves additional effort, togetherness of purpose and feeling of belonging;
10) Motivation means the existence of the power that appears from each individual to achieve the goal;
11) Cohesiveness is the fact that members of the organization like each other, meaning cooperating well, communicating and coordinating;Adapted Dexterity means the existence of a new stimulus to change its standard operating procedure, which aims to prevent the constriction of environmental stimuli.

## 2.3 Information Systems

In the development of this computer-based information, local governments are also required to be ready in operate all services to the community by using a computerized system. Completing the view, it describes the system, data and information, according to (Zwass, 2017) describes the notion of the system, the system is a set of interconnected components and work together to achieve multiple objectives. While the sense of data according to (Fred, 1989), the data is the raw material of information, defined as a regular group of symbols representing quantities, actions, objects and so forth.

According to (Aregbesola, 2017), information is the result of processing data into a form that is more useful for those who receive it that describes a real events and can be used as a tool for making a decision. Usefulness of information to reduce uncertainty in the decision-making process of a situation.

## 2.4 CMM (Capability Maturity Measurement)

The CMM at its inception was a framework of Carnegie Mellon University to improve the development of a software process they possessed. CMM is often viewed in contrast to the Agile development, which denotes a method used especially for software development that is characterized by the splitting of tasks into short

phases of work and regular reevaluation and adaptation of ideas (Hackos, 2017). Initially CMM was a method, but now it has led to the business side, so CMM becomes a product (Yeh, 2017). CMM maturity level is divided into 5 (five) levels as in Table 1. The highest level of maturity obtained, the maturity level of the organization or business institutions. Nowadays, interoperability is clearly a relevant requirement that comes out along the journey towards the digital transformation with refering according (Carolis, 2017) to table 1.

Table 1: Maturity Level's Definition

| No. | Maturity Level | Description |
|---|---|---|
| 01. | 0 – Non-Existent | At this level there is no alignment of the process, so it is not controlled at all. |
| 02. | 1 – Initial / AdHoc | The process is poorly controlled or not controlled at all, process management is reactive and does not have the proper organizational |
| 03. | 2 – Repeatable but Intuitive | The process is partially planned and implemented. Process management is weak due to lacks in the organization and or enabling technologies |
| 04. | 3 – Defined Process | The process is defined thanks to the planning and the implementation of good practices and management procedures. |
| 05. | 4 – Managed and Measurable | Being the process built on the integration and on the interoperability of some applications and on the information exchange, it is fully planned and implemented. |
| 06. | 5 - Optimized | At this level an organization has achieved a perfection, both in the management process and in the resulting product. |

# 3 RESEARCH METHODOLOGY

## 3.1 Method of Collecting Data

Data collection techniques in this study is by interview. This technique is done by asking written questions to related parties and know about the personalia application system. This technique is to obtain information used for the evaluation of personnel application systems. Interview conducted to administrator CV. Mahkota Jati. There are 24 questions asked which are shown in table 2.

## 3.2 Equations

### 3.2.1 Data Gathering

The data collection process begins by submitting a permit to the CV. Mahkota Jati to get permission to do research in CV. Mahkota Jati. The author gives a list of questions to the administrator on the CV. Mahkota Jati to obtain the necessary data.

### 3.2.2 Descriptive Analysis

Descriptive analysis is a way of analysis by describing the data that has been collected as is without making conclusions that apply to the public or generalization. This is to keep the audit results that are objective.

# 4 RESULTS AND DISCUSSIONS

## 4.1 Interview Questions and Assessments

In this research, the question is asked as many as 24 items. Here is the list of questions asked in a live interview on CV. Mahkota Jati as seen as table 2.

Table 2: Interview Result

| No. | Maturity Level | Description |
|---|---|---|
| 01. | 0 – Non-Existent | At this level there is no alignment of the process, so it is not controlled at all. |
| 02. | Does an existing application already have a good database? | It's good enough. |
| 03. | Will existing applications and their database be used for long periods (± 5 years)? | Yes, the existing database can be used for long periods of time. |
| 04. | Is there a coordinator in the use of the application? | There is, there is a coordinating administrator chair. |
| 05. | Can the application be used at any time, regardless of the time of day? | Can be used anytime, anytime application is required. |
| 06. | Does the app contain all archives already stored in previous periods? | The app can load the entire archive. |
| 07. | Are there any guides in how to use the app? | No guidance whatsoever. |
| 08. | If there are no guides in how to use the app, how | Admin will teach you how to use the app. |

| No. | Maturity Level | Description |
|---|---|---|
| | to use apps to people who are app to the app? | |
| 09. | What can access and change data is the authorized person? | Yes, who can access the app is only an authorized person. |
| 10. | Does the application make it easier to work and save on operational costs? | Off course. |
| 11. | Can existing applications be repaired if there is damage? | Yes, it can be repaired if there is damage. |
| 12. | Can existing apps be updated and updated by adding certain functions? | Could be renewed and updated. |
| 13. | If it can be updated whether the app will not change in the performance of the app itself? | Will not. |
| 14. | Has the application ever encountered an error and can be fixed? | So far no error have been made. |
| 15. | Does the app diminish its functionality or affect the access speed when used in conjunction with other applications? | Yes, if the app is used in conjunction with opening other apps like the internet or online games, then the application access speed becomes sluggish. |
| 16. | Does the application have backed up data whenever there is damage to the PC or the application itself? | No back up data. |
| 17. | If there is no back up data then how to solve the problem if the data is lost because the application is damaged? | Maybe by inputting data from scratch based on data already stored in the archive manually. |
| 18. | Is there an application that needs to be added functionality? | Need, if added function is expected to further facilitate the work. |
| 19. | Can existing apps be moved without adding or subtracting or interfering with the functionality already in them? | Can be moved without changing or decreasing its function. |
| 20. | Is there maintenance of existing apps? | No maintenance. |
| 21. | If there is no maintenance, how to solve if the application is damaged? | By calling someone who is an expert in the application field or to the app builder itself. |
| 22. | Is the application already equipped with a good security system? | Already, the room is locked and also equipped with CCTV. |
| 23. | If already equipped with a security system, how the security system in the application itself? | Applications in passwords and passwords are known only to people who have access rights and who have authority. |
| 24. | Has the existing application so far fulfilled the need to facilitate the input / output process? | It's enough to meet the needs. |

## 4.2 Assessments and Answer Score

After the answers to interview questions are obtained, further answers are required to answer each question. Provided 4 answers are: not at all, enough, pretty, very. And each answer has a value score like table 3.

Table 3: Scoring Interpretation

| Interpretation | Score |
|---|---|
| Not at all | 0 |
| Enough | 0,33 |
| Pretty | 0,66 |
| Very | 1 |

## 4.3 Interview Statement

Results of interviews we have done on employees who are staff Administrator at CV. Mahkota Jati, with 24 questions. And based on answers from interviews that have been done that the personnel application system on the CV. Mahkota Jati has not been in accordance with the needs of Input Output process, also already has a fairly good database system. Applications and databases can be used and have been used for a long time (± 5 years).

In the application use there are coordinators because of the chairman Admin. Applications can be used anytime, regardless of the time of day. Applications can save archives and load archives in previous periods. The app does not come with an app usage guide, and that can change and access apps only authorized people. The application has also been said to save and minimize the operational costs. And if there is damage to the application then there are experts who make improvements and improvements in the application. Applications can be changed, updated, and updated and added certain functions. This application has also never experienced an error.

Applications experience reduced functionality if at any time using other applications simultaneously and affect at the application access speed itself. The data stored on the application has not been backed-up in case of damage to the computer or to the application itself. And if there is a loss of admin data

input data back from scratch manually. Admin feel the application needs to be added function that can further facilitate the input input process. The app does not experience any functionality or performance reduction if it is moved on another PC. No maintenance to the app yet. For security systems in the application comes a password that is only known by the admin. Applications perceived admin enough to meet the needs of the input input process to the reliability of the transaction.

## 4.4 Maturity Level Measurement

The following is the result of the questionnaire with the answer already filled.

Table 4: Interview Result

| No | Statement | Your Opinion | | | | Score |
|---|---|---|---|---|---|---|
| | | Not at all | Enough | Pretty | Very | |
| 1 | Application used in accordance with input output needs | | | X | | 0.66 |
| 2 | The application has a good database | | | X | | 0.66 |
| 3 | Applications can be used for long periods of time. | | | | X | 1 |
| 4 | There is a coordinator in the use of the application | | | X | | 0.66 |
| 5 | Applications can be used anytime. | | | | X | 1 |
| 6 | Applications can load entire archives in previous period. | | | X | | 0.66 |
| 7 | The app has a guide in how to use it. | X | | | | 0 |
| 8 | Only those with authority can access the app. | | | X | | 0.66 |
| 9 | Applications save on operational costs. | | | X | | 0.66 |
| 10 | There is an improvement if the application is damaged. | | | X | | 0.66 |
| 11 | Applications can be updated. | | | X | | 0.66 |
| 12 | Application not experiencing errors. | | | | X | 1 |
| 13 | The app remains reliable with other applications. | | X | | | 0.33 |
| 14 | Application has back up data. | X | | | | 0 |
| 15 | Applications need to be added functionality. | | | X | | 0.66 |
| 16 | Applications can be moved without compromising performance and functionality. | | | | X | 1 |
| 17 | There is maintenance of the app. | X | | | | 0 |
| 18 | The application has a good security system. | | | | X | 1 |
| 19 | The application meets the needs in the company's need for transaction reliability. | | | X | | 0.66 |
| **Total Score Value** | | | | | | 11.93 |

From the table IV, it will be calculated Maturity Level to measure the system maturity level based on the questionnaire data. The formula used to calculate the Maturity Level index as seen as equation 1.

$$\text{Maturity Level: Index} = \frac{\sum(\text{Answers})}{\sum(\text{Questionnaires})} \quad (1)$$

$$\text{Maturity Level: Index} = \frac{11.93}{19} \quad (2)$$

For more details of the results of the questionnaire, we can see in Figure 1. Then Maturity Level based on the questionnaire results are as follows:

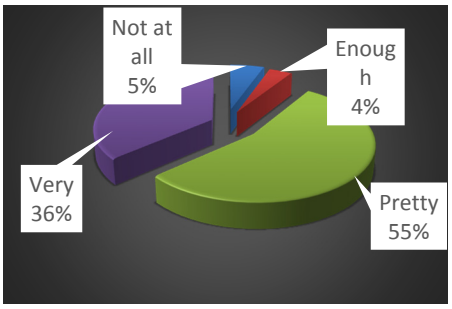


Figure 1: Questionnaire result each respondent

Then, Maturity Level index value can be seen in table 5.

Table 5: Maturity Level Index

| Index | Maturity Level |
|---|---|
| 0 – 0,49 | 0 – Non-Exisent |
| 0,50 – 1,49 | 1 – Initial / Ad Hoc |
| 1,50 – 2,49 | 2 – Repeatable But Intutitive |
| 2,50 – 3,49 | 3 – Defined Process |
| 3,50 – 4,59 | 4 - Managed and Measurable |
| 4,50 – 5,00 | 5 – Optimize |

# 5 INTREPRETATION RESULT

Based on the results of measurements that have been obtained from the answers to the questionnaire and with the scoring interpretation, then the results obtained 0.63 which means based on table 3, it still in the range of between enough to pretty. At this level, the responses of the respondents to the questions are quite acknowledged and based on the reality of the field. Therefore the question includes a question that is acceptable and can be calculated for the level of maturity.

The next step is to find the level of maturity level of the question respondents who have been known before. To know the value of maturity is by multiplying the weight value of each question answered by the respondent, then summed and divided the number of questions. Then got the maturity. Each score questions to not at all is 1, enough is 2, pretty is 3, and very is 4. Then the maturity value is 2.89. The interpretation of its maturity is at the level 3 (defined process). This result is known from the comparison shown in the table 5.

# 6 CONCLUSION

Based on the evaluation and discussion and analysis of data that has been raised about the effectiveness of the audit of personnel application system on the CV. Mahkota Jati of transaction reliability, we obtained the results of the questionnaire and scoring interpretatioin calculation of 0.63 which is included in the range of enough to pretty. For the maturity value, the result is 2.89 which means entering level 3-defined process. From the calculation results it can be concluded that the personnel application system on the CV. Mahkota Jati the process is well defined. Personnel application system at CV. Mahkota Jati should be used and still need a lot of improvements to make it easier to work especially on the input output process

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