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KNOWLEDGE MANAGEMENT SYSTEM FOR MEASURING MATURITY LEVEL OF INFORMATION TECHNOLOGY SERVICE QUALITY USING INFORMATION TECHNOLOGY INFRASTRUCTURE LIBRARY (ITIL V3) FRAMEWORK (A Case Study at IBI Darmajaya Bandar Lampung)

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ABSTRACT

The implementation of technology information and communication is needed in the field of education and business as a tool for carrying out businesses. It changes all patterns and ways in all fields, especially in a field of businesses so that a company must use information technology in order to be a competitive organization. Information technology service quality and continuous improvements are the important factor used to encounter competitions, to improve performances, and to provide customer satisfaction. Informatics and Business Institute (IBI) Darmajaya is one of the private universities that use the information technology for academic activities. One of the information technologies used by IBI Darmajaya was the Academic Information System. This objective of this research was providing convenience for companies or colleges on IT services to measure the maturity level of the IT service quality using the Knowledge Management System-based Information Technology Infrastructure Library (ITIL) V3 framework. This system was designed to obtain online IT service rates about the information technology quality so that the current level of information technology that the current maturity and the expected maturity were known. The validity and reliability of the research instruments had already been tested using SPSS 23 so that the result of this research was the recommendations for improvements on the IT service quality for the future.

Keywords: Knowledge Management System, Maturity Level, Current Maturity, Expected Maturity, Validity, Reliability, ITIL V3

INTRODUCTION

Information technology develops rapidly so that it changes the pattern and the way of organization. The fact is that the increasing dependence on IT to achieve strategic goals and organizational needs becomes the main driver of the importance of IT because IT is a tool to increase productivity and to make business processes effectively and efficiently so that companies are not able to be competitive on condition that they have not utilized IT.

Processes and services of IT need to be organized and supported at an appropriate level so that the company's goal is achieved. Informatics and Business Institute Darmajaya is one of the private universities that utilize the information technology in carrying out businesses. Informatics and Business Institute Darmajaya requires adequate information about managements. Management information systems services that are not managed properly had an impact on the low quality of service, low levels of customers, and student satisfaction so that it influences the level of stakeholder trust in the institution. Therefore, it is necessary to measure the level of maturity (Maturity Level) quality of information technology services to determine the level of information technology maturity recently and it is expected that it supports the company's main tasks and can also be used as a reference for the quality information technology services.

Some of the previous studies that the authors made as a reference were tehe research of AR Anggun Cahyaningtyas et all in 2012 on Audit Information Systems with ITIL Version 3 Sub Domain Service Desk, Incident Management and Problem Management in the Field of Finance Dishub kombudpar Salatiga City, Dewi Kumala Tri Meva about 2013 improve Competitive Advantages of the Company With Knowledge Management Malang, Peter Javier Sahuleka in 2015 on Quality Analysis of Information Technology Services by Using Framework Information Technology Infrastructure Library Version 3 (ITIL V. 3) Service Operation and Tadessa Dabi in 2017 on Developing A Tailor It Service Management Framework Based On ITIL Framework For It Service Management Processes

LITERATURE REVIEW

Knowledge management system is the integration of technology and its mechanisms developed to support the knowledge management process (Fernandez and Sabherwal, 2010). The stages of the research carried out in this research were adopted from Knowledge Management System Life Cycle (Awad and Ghaziri, 2010). Research methodology with Knowledge Management System Life Cycle can be seen in Figure 1.

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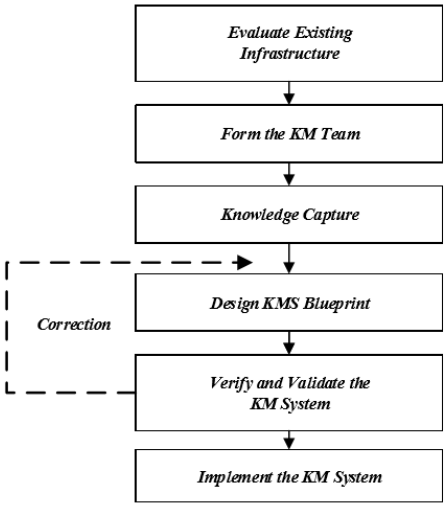

Figure 1. Research Method using Knowledge Management Ssytem Life Cycle

The Information Technology Infrastructure Library (ITIL) has a Framework developed by the Office of Government Commerce (OGC) in the UK. ITIL is the most widely accepted IT service management approach in the world. ITIL is a set of the most consistent and comprehensive practices regarded as the best for IT service management to present a quality approach in achieving business effectiveness and efficiency in the use of information systems. ITIL is also the framework that can be developed and adapted in the development of a system (itSMF 2004).

ITIL V3 Framework has 5 components i.e., service strategy, service design, service transition, service operation and continual service improvement. These five parts of the ITIL V3 component can be explained in Figure 2.

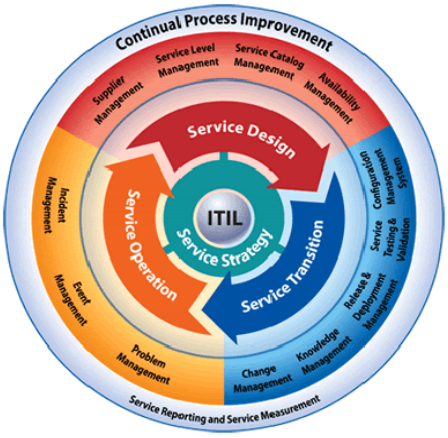

Figure 2. ITIL V3 Components

The service strategy is used as a guide to determine goals/objectives and expectations of performance values in managing IT services and to identify, to select, and to prioritize various operational and organizational improvement plans within the IT organization. The processes of this service strategy include service portfolio management, financial management, and demand management. The service transition provides a guide to develop IT organizations and a capability to change the results of new IT service and changeable IT service into the operational environments. The processes of this service transition are change management, asset and configuration management, and release and deployment management.

The service operation is the lifecycle stage covering all daily operational activities in managing IT services. There are various guidelines on how to manage IT services efficiently and effectively to and ensure the level of performance that has been agreed with previous customers in this operation. The processes of this service transition are event management, incident management, problem management, request fulfillment, and access management. Continual Service Improvement (CSI) provides the important guide in developing and maintaining service quality from the designing, transitioning, and operating processes. CSI combines various principles and methods of quality management. One of this principles and methods is Plan-Do-Check-Act (PDCA) known as Deming Quality Cycle. The processes of this CSI include service measurement and reporting and 7-step improvement processes.

To obtain valid and reliable data, it is necessary to implement a concept that produces variables or indicators. The result of these variables or indicators showed a continuous consistency with the reliability of these indicators (Lupiyoadi, 2014). This data testing used SPSS 23.

RESEARCH METHOD

The framework of this problem solving in this research was seen on flowchart of Figure 3:

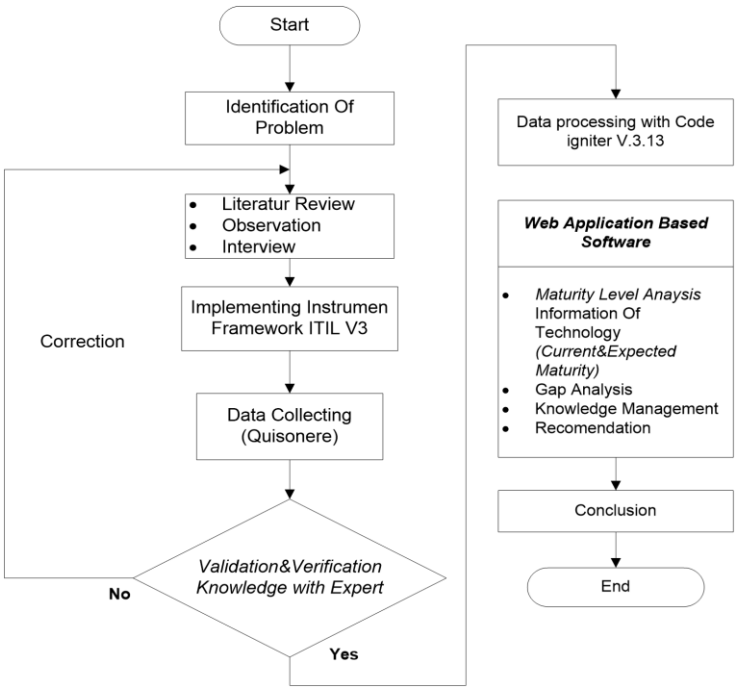

Figure 3. Framework of Problem Solving

The research instrument used in this research was questionnaires referring to ITIL V3 framework used to determine the condition of maturity level of information technology used today known as current maturity and expected maturity. The rating scale of this research instrument uses a Likert 1-5 scale i.e., the value 1 was very bad (VB), the value 2 was for bad (B), the value 3 was for enough (E), the value 4 was for good (G), and the value 5 was for very good (VG). The usecase diagram was used to describe the correlation among tables in the database management of the measurement diagram of the maturity level on the information technology service quality using the Information Technology Infrastructure Library (ITIL) V3 framework. The usecase diagram was seen in Figure 2.

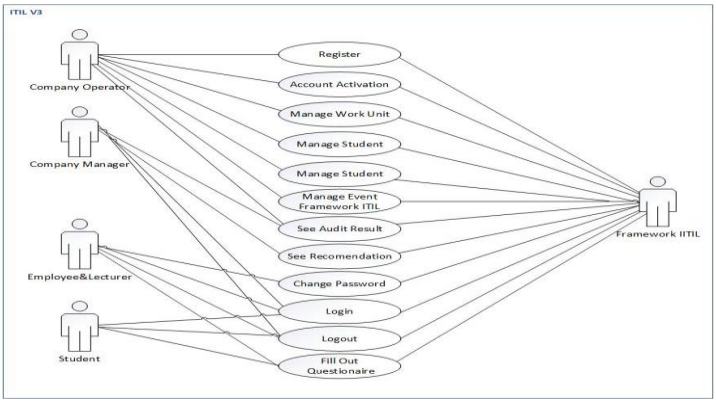

Figure 4. Use Case Diagram

Karyawan/Dosen/Mahasiswa	: mengisi kuisoner penelitian menggunakan framework ITIL V3
Admin/Operator	: Registering and verifying an account, Processing the Data
Level of Manager	: Receiving the report of Maturity Level of TI Service Quality, Maturity Level Diagram, and Recommendation
Staffs/Lecturers/Students	: Filling questionnaires on ITIL V3 Framework

FINDINGS AND DISCUSSION

This research created software used to measure the maturity level o the information technology services quality using ITIL V3. Number of samples was 100 respondents who filled out the questionnaire. Before calculating the capability level, the validity and reliability was tested through SPSS 23 data from respondents.

To determine the significant or insignificant value, the validity was tested by comparing the r score with r_{count} value with r_{table} by alpha 0.05. The results of this analysis showed that the minimum value was 0.211 to 0.744. This value was greater than r_{table}. It meant that if $r_{count} > r_{table}$, so that the instrument was valid. The reliability testing used Cronbach's alpha test was carried out to build the construct of reliability of this research. The alpha coefficient ranged from 0.714 to 0.850 which indicated that the item question (instrument) was reliable Aziz, R. A., & Morita, H. 2016).

4.1 Menu Page and Questionnaire

The menu page was the hyperlink provided to the users to gain access to the system. Each access right was different from each particular user level. Moreover, the questionnaire page was the page for respondents to fill the assessment instrument on the IT services quality.

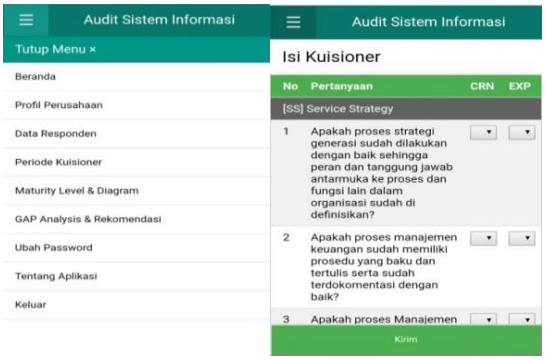

Figure 5. Menu and Questionnaire

4.2 Maturity Level Page and Maturity Diagram

A maturity level & diagram page was the page that described the maturity level of an organization's / company's IT services into a diagram.

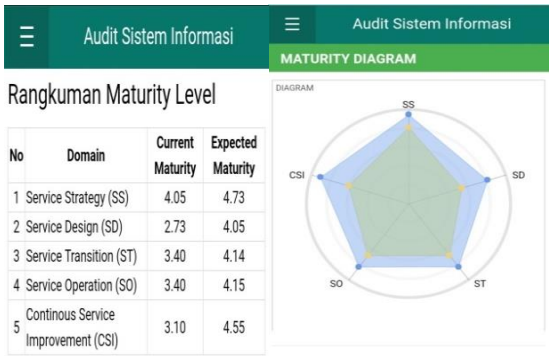

Figure 6. Maturity Level and Maturity Diagram

Figure 6 indicated that the results of Service Design (SD) maturity level obtained the maturity level for the current maturity by 2.73 at level 3. The defined process and the expected maturity obtained the maturity level by 4.05 at level 4 (managed and measurable). The service strategy (SS) obtained the maturity level in the current maturity by 4.05 at level 4 (managed and measurable). The expected maturity obtained the maturity level at the level 4 (managed and measurable).

4.3 Gap Analysis and Recommendation

Gap Analysis and Recommendation page was the page showing a comparison of the maturity level of the maturity level with expected maturity and improvement recommendation based on figure 7

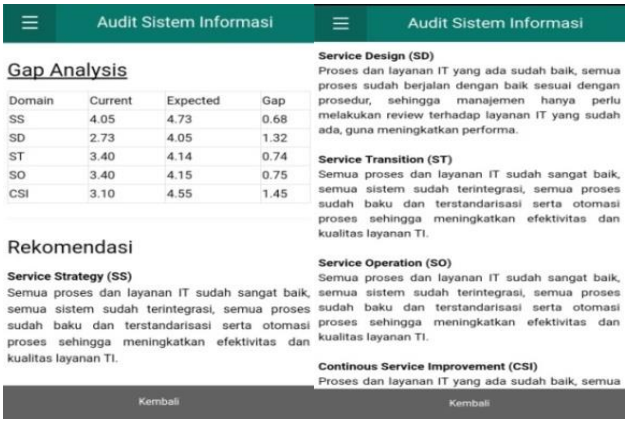

Figure 7. GAP Analaysis and Recommendation

The results of the maturity level in Figure 7 showed that the gap analysis in the SS had a high level of maturity compared to the other domains for current conditions (4.0) and for the expected maturity by 4.73 so that the gap analysis was by 0.68. It meant that the company or organization had to make improvements to existing IT services so that the quality of IT services reached the maturity level at level 5 from which all running processes were the best practices and all systems were integrated so that it was able to improve the quality and the effectiveness of existing IT services in the company. Moreover, the gap analysis results on SD had a low level of maturity compared to other domains for current maturity by 2.73 and the expected maturity was by 4.05 so that the gap analysis was 1.32. It meant that the company or organization had to improve the

existing IT services so that the IT services quality reached the maturity level at level 4 from which the company had to monitor procedures so that all processes were able to run properly on condition that the problems occurred.

CONCLUSION

The conclusion of this research showed that the quality of information technology services was better because the gap analysis was smaller than the current conditions with expected maturity. The knowledge management software was reliable and vallid and it was able to measure the level of maturity service. This information technology was making corrective actions on the quality of IT services on an ongoing basis. For the further research, the researchers suggest that the further research can add or develop knowledge capture from several IT experts to maximize the best recommendations.

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