**IDENTIFICATION OF CAPABILITY LEVELS OF MEDIS CARE**

**INFORMATION SYSTEM USING COBIT 2019**

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**Abstract:** In the health sector, information technology was initially used for exchanging information between patients and doctors, health services, and exchanging health documents. The aim of applying information technology to the health sector is to increase the effectiveness and efficiency of the performance of doctors and clinic staff. This research uses COBIT 2019 as a framework for evaluating information technology governance. Primary data is collected directly from the research subjects through observation and interviews, while secondary data is sourced from other materials, such as documents or websites related to the research subject. This research focuses on Risk Profile and I&T Related Issues, with domains: APO11 – Managed Quality, and APO13 – Managed Security. Through interviews and evaluation, each priority objective was found to be at capability level 2 with ratings of 100% and 86% respectively. There are no significant gaps between the current capability levels; both are at level 2.

**Keywords:** Auditing; COBIT 2019; Telemedicine

**Abstrak:** Di sektor kesehatan, teknologi informasi awalnya digunakan untuk pertukaran informasi antara pasien dan dokter, layanan kesehatan, dan pertukaran dokumen kesehatan. Tujuan penerapan teknologi informasi di sektor kesehatan adalah untuk meningkatkan efektivitas dan efisiensi kinerja dokter dan staf klinik. Penelitian ini menggunakan COBIT 2019 sebagai kerangka kerja untuk mengevaluasi tata kelola teknologi informasi. Data primer dikumpulkan langsung dari subjek penelitian dengan melakukan pengamatan dan interaksi langsung, sementara data sekunder diperoleh dari sumber lain. didapatkan dari jurnal atau situs website yang berkaitan dengan subjek penelitian. Penelitian ini berfokus pada Risk Profile dan I&T Related Issues, dengan domain : APO11 – Managed Quality, dan APO13 – Managed Security. Melalui wawancara dan evaluasi, setiap tujuan prioritas ditemukan berada pada level kapabilitas 2 dengan nilai masing-masing 100% dan 86%. Tidak ada kesenjangan signifikan antara tingkat kapabilitas saat ini; keduanya berada pada level 2.

**Kata kunci:** Audit; COBIT 2019; Telemedis

**INTRODUCTION**

Technological gains is very important for human life [1]. In the health sector, information technology was initially used for exchanging information between patients and doctors, health services, and exchanging health documents [1]. E-health is a public service in the form of an Information Technology application that is integrated with various functional components and supports the health sector, apart from that it also acts as a knowledge base. [2]. E-health is commonly used in the health sector for the purpose of facilitating the exchange of health information [1].

E-health is expected to help overcome new challenges in the digital era by providing consumers with the ability to interact online [3]. Telemedicine allows patients to receive medical care according to the doctor's and patient's wishes [4]. Thus, telemedicine reduces the risk of contracting infections that may occur while in a hospital or clinic environment [4].

The aim of applying information technology to the health sector is to increase the effectiveness and efficiency of the performance of doctors and clinic staff [5]. The use of information technology must be accompanied by effective governance management to ensure optimal management of all company resources, in accordance with established objectives [6].

Information Technology Governance is one part of organizational governance which is tasked with ensuring that the implementation of information technology is in accordance with the organization's strategy and goals [7]. Regular evaluation is necessary to ensure effective governance, so that errors can be detected and corrected quickly if necessary [8]. There are many frameworks used to evaluate technology governance, such as COBIT, ISO, ITIL, TOGAF and others [9].

This research uses COBIT 2019 as a framework for evaluating information technology governance. COBIT 2019 is a development of COBIT 5, which is designed to implement information technology governance in accordance with organizational strategy [10].

**METHODS**

**Research Data**

This research employs both primary and secondary data [11]. Primary data is gathered firsthand from the research subjects through observation and interviews, while secondary data is sourced from other materials, such as documents or websites related to the research subject.

**Research Flow**

 In this study, the research flow is presented in Figure 1. The initial stage involves identifying issues related to the capability level assessment of the medical care information system. Following the problem identification, a literature review is conducted, focusing on relevant journals and books to support the research. The next stage is the determination of domains from COBIT 2019. The researcher utilizes design factors provided by the COBIT 2019 framework to identify objectives with a high level of importance, focusing on Risk Profile and I&T Related Issues, through interviews with the owners of the medical care information system. Based on the calculations of the design factors, objectives with a high level of importance are identified.

Figure 1. Research Flow [12]

Subsequently, interviews are conducted with the selected respondents. The results of these interviews will be utilized by the researcher for the final stage, which is data analysis. In this stage, the researcher will calculate the capability levels, analyze the gaps, and provide recommendations. The data obtained from the interviews will be processed and analyzed to determine the capability levels of the processes under investigation.

 The final process involves assessing the achievement level of each capability in each domain using the NPFL criteria: Note, Partially, Fully, and Largely [12].

The percentage information for each evaluation criterion is as follows: Fully (F) - Capability level achieved is more than 85%; Largely (L) - Capability level achieved is between 50% and 85%; Partially (P) - Capability level achieved is between 15% and 50%; Note (N) - Capability level achieved is less than 15% [13].

**RESULTS AND DISCUSSION**

**Domain Selection**

The selection of domains in this study utilizes the Toolkit Design Factor, focusing on Design Factor 3: Risk Profile and Design Factor 4: I&T Related Issues.

Design Factor 3: Risk Profile identifies all I&T-related risks faced by the organization through a risk profile designed by this factor.

There are four types of risks categorized as very high risk. The first type is Logical Attack, the second is Third Party/Supplier Incidents, the third is Noncompliance, and the last type of risk is Data & Information Management. These are illustrated in the following figure:

Figure 2. Design Factor 3 Results [14]

After determining Design Factor 3, the next step is to identify Design Factor 4: I&T Related Issues. In Figure 2, the issues related to I&T for the medical care information system are presented. Design Factor 4 highlights two categories of issues: No Issue (This category indicates the absence of any problems or issues affecting the company); Normal Issue (This category encompasses issues that have occurred or are currently occurring within the company but do not have a significant impact on its operations)

Figure 3. Design Factor 4 Results [14]

**Determining Priority Objectives**

The results of the design factor focusing on Risk Profile and I&T consist of two main objectives with a value of 85, based on and aligned with the company's situation. There are two main objectives: APO11—Managed Quality, APO13—Managed Security.

These can be observed in the presentation in Figure 3 as follows:



Figure 4. Governance and Management Objectives Importance Result [14]

**Audit Planning**

Measuring the level of application capability within the COBIT 2019 framework is an essential process to assess how well applications support business objectives and meet IT governance needs. In this process, interview questions are designed according to the activity levels within each domain previously established, namely APO11 and APO13.

**APO11 Level 2 Activity**

Based on the interview results regarding the priority objectives of APO11 at level 2, the obtained data is presented in the following table:

Table 1. APO11 Level 2 Activity [14]

|  |  |
| --- | --- |
| **Activity** | **Is Activity Performed?** |
| meetings between the quality management team, IT department and stakeholders to formulate quality management procedures that comply with the requirements of the I&T control framework | **Y** |
| Create a platform to share practical experiences and lessons learned during business processes or product development. | **Y** |

Next, the calculation of the capability level at level 2 for the priority objectives of APO11 is conducted, and the percentage obtained is 100% with a Full Achieved rating. Thus, it can be concluded that the APO11 objectives have achieved a capability level rating at level 2.

**APO11 Level 3 Activity**

Based on the interview results regarding the priority objectives of APO11 at level 3, the obtained data is presented in the following table:

Table 2. APO11 Level 3 Activity [14]

|  |  |
| --- | --- |
| **Activity** | **Is Activity Performed?** |
| Conducting a comprehensive review and analysis of existing roles and responsibilities within the organization to identify gaps and overlaps in quality management. | **Y** |
| Organize forums or discussion meetings with upper level management and various external and internal stakeholders | **N** |
| Organize joint working sessions between the business management team, IT team and various stakeholders to define business needs and expectations | **Y** |
| Organizing forum sessions or regular meetings between the project management team, medical care application development team, | **N** |
| Conduct a thorough audit of existing key processes and solutions across the organization to identify system strengths and weaknesses | **N** |
| Conduct a comprehensive analysis of the benefits and costs involved | **Y** |
| Plan and conduct regular and formal quality training programs | **Y** |

Next, the calculation of the capability level at level 3 for the priority objectives of APO11 is conducted, and the percentage obtained is 57% with a Largely Achieved rating. Thus, it can be concluded that the APO11 objectives have not yet achieved a capability level rating at level 3.

**APO13 Level 2 Activity**

Based on the interview results regarding the priority objectives of APO13 at level 2, the obtained data is presented in the following table:

Table 3. APO13 Level 2 Activity [14]

|  |  |
| --- | --- |
| **Activity** | **Is Activity Performed?** |
| Hold a meeting with the information security department | **Y** |
| Conduct cross-departmental analysis to understand security management approaches | **Y** |
| Submit proposals to management to obtain support to operate the ISMS | **Y** |
| Organize meetings with the team responsible for drafting the ISMS applicability statement. | **Y** |
| Create a document on the roles and responsibilities of the information security management team. | **N** |
| Presentations with stakeholders regarding the ISMS approach | **Y** |
| Meeting to define the scope of the ISMS | **Y** |

Next, the calculation of the capability level at level 2 for the priority objectives of APO13 is conducted, and the percentage obtained is 86% with a Full Achieved rating. Thus, it can be concluded that the APO13 objectives have achieved a capability level rating at level2.

**APO13 Level 3 Activity**

 Based on the interview results regarding the priority objectives of APO13 at level 3, the obtained data is presented in the following table:

Table 4. APO11 Level 3 Activity [14]

|  |  |
| --- | --- |
| **Activity** | **Is Activity Performed?** |
| Regular meetings between the information security team, senior management and stakeholders | **Y** |
| Conduct a thorough audit to identify and document all solution components related to information security risk management | **Y** |
| Organize a project team to develop a proposal detailing the steps required to implement an information security risk treatment plan. | **N** |
| Participate in design and development meetings to provide information security input and perspective on practices and solutions selected from the risk treatment plan. | **N** |
| Carry out information security and privacy training and awareness programs for all members of the organization. | **N** |
| Hold cross-departmental meetings to ensure that information security and privacy planning, design, implementation, and monitoring are well integrated. | **N** |

Next, the calculation of the capability level at level 3 for the priority objectives of APO13 is conducted, and the percentage obtained is 33% with a Partially Achieved rating. Thus, it can be concluded that the APO13 objectives have not yet achieved a capability level rating at level 3.

From the evaluation of each priority objective of APO11 and APO13, no gaps were identified because the obtained capability levels are in line with expectations. Therefore, the recommendation for each objective is to continue the activities that have been carried out by medical care up to this point.

**CONCLUSION**

After filling out the design factors in the COBIT 2019 toolkit, which in this study focuses on Risk Profile and I&T Related Issues, the results yielded two priority objectives: APO11 – Managed Quality, and APO13 – Managed Security. Through interviews and evaluation, each priority objective was found to be at capability level 2 with ratings of 100% and 86% respectively. There are no significant gaps between the current capability levels; both are at level 2.

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