Evaluating the management of the official Pekalongan government website using COBIT 5

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Abstract. The Government of Pekalongan Regency has implemented e-Government, one of them is the official website of the Pekalongan Government. The website is managed by the Communication and Information Office of the Pekalongan Regency. The website is expected to improve the quality of governance. However, the Government of the Pekalongan Regency has never conducted an evaluation of website management. Therefore, evaluation of website management is needed to ensure that the website has supported governance and is in line with the Pekalongan Regency Government goals. The evaluation carried out refers to the COBIT 5 framework. COBIT 5 was chosen because it can help to align government goals with the website goals. The evaluation was carried out with several domains obtained through mapping the vision and mission of Regent of Pekalongan Regency to COBIT goals. Based on the mapping results, 3 domains were selected namely APO01 (manage the IT management framework), DSS03 (manage problems), MEA01 (monitor, evaluate, and assess performance and conformance). Each domain is assessed to get a capability level. From the assessment results obtained each domain is at level 3 (established process) that is the activity in the domain has been managed in a structured ad in accordance with standards.

1. Introduction
In realizing e-Government, the Government of Pekalongan Regency uses the website as a medium for delivering information to the public. A government website that has a strategic role in realizing good and clean governance must have good quality in its governance. However, the Government of the Pekalongan Regency has never conducted an evaluation of website management. Therefore, evaluation of website management is needed to ensure that the website has supported governance and is in line with the Pekalongan Regency Government goals.

Information systems audit has a number of standard frameworks that can be used, for example, is the Information Technology Infrastructure Library (ITIL) and Control Objective for Information and related Technology 5 (COBIT 5). ITIL is a globally recognized best practice methodology for IT service management that is used all over the world by leading organizations. ITIL ensures that their IT service is aligned with their business needs [1].

From the description above explains what ITIL has a focus on services for customers and does not provide a process for aligning the company’s strategy to the technology strategy developed. Whereas COBIT 5 provides an end-to-end business view of IT governance that reflects the central role of information and technology in creating value for the company [2].
This study using the COBIT 5 framework because COBIT 5 is general for all types of companies including the government sector. In addition, COBIT 5 can help align corporate strategic goals with IT goals. Therefore COBIT 5 can help align the objectives of the Pekalongan Regency Government with the government website goals.

An assessment of the quality of governance in the Pekalongan Regency Government website using the COBIT 5 framework by identifying capability levels that have been achieved. After obtaining the capability level, recommendations are given to improve the quality of website governance in terms of gap analysis so that it can reach the expected target level.

2. Literature review

2.1. Information systems audit
Information systems audit is a separate activity, separate from financial audits. In fact, information systems audit is essence one of the forms of operational audits, but now information systems audit is already known as a separate type of audit whose main purpose is to improve IT governance [3].

2.2. Information technology infrastructure library (ITIL)
ITIL is a globally recognized best practice methodology for IT service management that is used all over the world by leading organizations. ITIL ensures that their IT service is aligned with their business needs. ITIL provides trusted guidance on how business can use their IT services to support their goals and facilitate business growth [1].

2.3. Control objective for information and related technology (COBIT) 5 framework
COBIT 5 is the only business framework for the governance and management of enterprise IT. It is the product of a global task force and development team from ISACA, a nonprofit, independent association of more than 140,000 governance, security, risk and assurance professionals in 187 countries [2].

COBIT 5 combines the latest thinking in corporate governance and management techniques and provides principles, practices, tools and analytic models that are globally accepted to help increase the trust and value of information systems. COBIT 5 builds and expands COBIT 4.1 by integrating other major frameworks, standards and resources, including ISACA’s Val IT and IT Risk, Information Technology Infrastructure Library (ITIL) and standards related to the International Organization for Standardization (ISO) [2].

2.4. The reasons for using COBIT 5
New user demands, industry-specific regulations emerge every day. Maximizing the value of the intellectual property, managing risk and security and assuring compliance through effective IT governance and management has never been more important. No other framework focused on enterprise IT offers the breadth of benefits of COBIT [2]. It helps enterprises of all sizes:
1. Maintain high-quality information to support business decisions.
2. Achieve strategic-goals through the effective and innovative use of IT.
3. Achieve operational excellence through reliable, efficient application of technology.
4. Maintain IT-related risk at an acceptable level.
5. Optimize the cost of IT services and technology.
6. Support compliance with relevant laws, regulations, contractual agreements and policies.

3. Method
Firstly, a preliminary survey is conducted. The preliminary survey aims to gain an initial understanding of the environment of the Pekalongan District Office of Communication and Information. In addition, to obtain the information needed to support the course of research. The preliminary survey was carried out by coming to the Office of Communication and Information as of the website manager.
The second is selecting the domain carried out through mapping the vision and mission of the Regent and Deputy Regent of Pekalongan Regency to the COBIT 5 business process. There are 5 steps mapping process that can be seen in Figure 1.

![Domain selection process diagram](image)

**Figure 1.** Domain selection process

The third is selecting the research respondents. The research respondents were drawn from Pekalongan Regency Communication and Information Office staff who were mapped according to the RACI chart. RACI chart is a matrix used to select the parties involved in an activity or process. The RACI elements and their description can be seen in Table 1.

| RACI elements | Description |
|---------------|-------------|
| Responsible   | People who are directly responsible for the work. |
| Accountable   | The person most responsible for the work handled by staff or subordinates and he has the right to make decisions. |
| Consulted     | People who need to provide input and contribute to activities or work. |
| Informed      | People need to know what decisions or actions are taken. |

After selecting the domain and respondents, the questionnaire was distributed to respondents who had been selected. The questionnaire was used to measure the capability level of website governance. Questions on the questionnaire are taken from the COBIT 5 guide by taking each process in the domain. Each question on the respondent's questionnaire can be answered by choosing a weight according to the capability level contained in COBIT 5.

The next stage is to do the interview. The interview aims to get the actual conditions of the audit domain. The interview was held by asking questions to selected staff and had a role in managing the website. After that, the document is reviewed to obtain documents as supporting evidence in the assessment of capability level.

Capability level analysis is done by calculating the results of a questionnaire that has been distributed to respondents. In COBIT 5, there are 6 capability level assessment levels that can be achieved by each process:
1. Level 0 (*incomplete process*)
2. Level 1 (*performed process*)
3. Level 2 (managed process)
4. Level 3 (established process)
5. Level 4 (predictable process)
6. Level 5 (optimizing process)

Level selection in each activity is done by selecting the mode value or the value that appears the most in each activity. If the value that appears the most there are 2 or more levels then the value of the smallest level is chosen among them. After choosing the level of each activity, the next step is to calculate the capability level in each domain. The calculation of the capability level in each domain is done by calculating the average level chosen for each activity. Here's how to calculate the average value of a level [4]:

\[
\text{Capability Level} = \frac{\sum \text{selected level}}{\sum \text{questions}}
\]  

The next step is the gap analysis. Gap analysis is carried out to determine the gap between the website governance of the current Pekalongan Regency Government and the expected website governance. Website governance is currently obtained from data collection through questionnaires, interviews and documents. While website governance is expected to be obtained through interviews.

The last step is giving recommendations. Giving recommendations aims to provide suggestions for improvements to website governance so that it is better going forward. Recommendations refer to the results of an assessment of capability levels and expected target level indicators.

4. Discussion

4.1. Audit domain

After mapping, 3 domains were chosen as the scope of the study. The domains are APO01 (manage the IT management framework), DSS03 (manage problems), and MEA01 (monitor, evaluate, and assess performance and conformance). The reason for choosing a domain can be seen in Table 2.

| Domain | The reasons |
|--------|-------------|
| APO01 (manage the IT management framework) | The Pekalongan Regency Government needs to clarify the governance of the website to support the achievement of the vision and mission of the Regent of Pekalongan Regency. |
| DSS03 (manage problems) | Pekalongan Regency government website needs to be controlled for its performance. Good problem management is needed to improve performance to ensure the availability of website services. |
| MEA01 (monitor, evaluate, and assess performance and conformance) | An assessment of the suitability of the vision and mission of the Regent and Deputy Regent of Pekalongan Regency is needed and to ensure that the vision and mission are achieved. |

4.2. Respondents

Respondents were selected through the RACI chart adjusted to the organizational structure of the website manager at the Pekalongan Regency Communication and Information Office. A list of respondents can be seen in Table 3.

| Respondent | Total |
|------------|-------|
| Head of the Pekalongan Regency Communication and Information Office | 1 |
| Head of e-Government | 1 |
| Head of Public Relations | 1 |
5. Results

5.1. Capability level calculation
After the questionnaire is filled in by the respondent and the level of the question is determined, then the capability level is then calculated. The capability level indicates which level the domain is audited at. The capability level calculation is done by finding the average level of each domain contained in Equation (1). The capability level calculation results can be seen in Table 4.

| Domain                                      | Average level | Reached level |
|---------------------------------------------|---------------|---------------|
| APO01 (manage the IT management framework)  | 3.21          | 3             |
| DSS03 (manage problems)                     | 3.45          | 3             |
| MEA01 (monitor, evaluate, and assess performance and conformance) | 3.04 | 3 |

5.2. Existing conditions
The existing condition shows the real condition of the official website governance of the Pekalongan Regency government. The APO01 domain (manage the IT management framework) is at level 3 (established process). This is means that in the process of governance arrangements the website has been implemented and structured management has been carried out. There is a technical team managing the website and each staff has their roles and responsibilities. The government has the policy to regulate the management of the website. The policy updates have been made to the management of the website every year. But there are no specific Standard Operating Procedure (SOP) that handles the website governance.

The DSS03 domain (manage problems) is at level 3 (established process). This shows that the problem management process has been carried out structurally and according to the standard. Recapitulation the problems on the website has been carried out and discussed at the website management technical team meeting. The website management technical team has monitored the resolution of problems that occur, but monitoring is not done properly documentation. Website monitoring has been carried out on the costs incurred for website maintenance.

The MEA01 domain is at level 3 (established process). This shows that the process of monitoring, evaluating and evaluating performance and conformity has been carried out structurally and in accordance with standards. Website management control has been carried out by the Inspectorate of Pekalongan Regency and Republic of Indonesia Financial Supervisor Agency. The government has set a website management work plan. There is a policy arranged by Pekalongan Regency Government for managing the website. In addition, communication has been carried out to the government and community of Pekalongan Regency, but it is not done routinely.

5.3. Gap analysis
Gap analysis is carried out by looking at the difference in capability level of each domain obtained by the target capability level to be achieved. The target level of each domain is level 5. Gaps found in each domain can be seen in Table 5.
Table 5. Gap analysis.

| Domain                                           | Existing level | Target level | Gap |
|--------------------------------------------------|---------------|-------------|-----|
| APO01 (manage the IT management framework)       | 3             | 5           | 2   |
| DSS03 (manage problems)                          | 3             | 5           | 2   |
| MEA01 (monitor, evaluate, and assess performance and conformance) | 3             | 5           | 2   |

5.4. Recommendations

Recommendations are obtained based on the findings of the gap contained in the activities of each domain. Recommendations are given to improve the quality of the website to the level of targets to be achieved.

Recommendations for APO01 domain (manage the IT management framework) are that the Pekalongan Regency Communication and Information Office hold regular discussion with the government and community of Pekalongan Regency, make a Standard Operating Procedure (SOP) related to website management, coordinate with the Government of Pekalongan Regency regularly, and hold an assessment and controlling of the performance of the website management team.

Recommendations for DSS03 domain (manage problems) are that the Pekalongan Regency Communication and Information Office make documentation related to problems that occur as well as the solutions made in solving these problems to prevent the same incident, conduct an assessment of the solution to the problem so that it can be improved, and coordinating with the government regularly.

Recommendations for MEA01 domain (monitor, evaluate, and assess performance and conformance) are that the Pekalongan Regency Communication and Information Office communicate with the community and the Pekalongan Regency government about the website and conduct an efficiency and suitability assessment of the website against the government.

6. Conclusions

The audit was conducted using the COBIT 5 framework on the APO01 domain (manage the IT management framework), DSS03 domain (manage problems), and MEA01 domain (monitor, evaluate, and assess performance and conformance). From the calculation of the capability level domain APO01, DSS03, and MEA01 are at level 3 where the activities in the domain have been managed in a structured and standardized manner. In general, the governance of the official website of the Pekalongan Regency government is in the middle position which means it has a stable process standard.

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