Identifying IT governance condition (case study: KPRI-UNDIP)

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Abstract. Koperasi Pegawai Republik Indonesia Universitas Diponegoro (KPRI Undip) consists of various service units. One of them is Unit Simpan dan Pembiayaan that provides savings and loan services from and only to members. Currently KPRI UNDIP already uses computer-based accounting systems and information system that can help administrative and operational processes become effective and more efficient. This research aim is to identifying IT Governance condition using COBIT 5 framework. From the mapping process the scope of IT governance audit are EDM01, EDM02, EDM05, APO10, BAI06, DSS01, DSS02, DSS03, DSS04, DSS06, and MEA0, which selected to identify IT governance KPRI UNDIP condition. The result is that in domain EDM01, EDM02, EDM05, APO10, BAI06, DSS01, DSS02, DSS03, DSS04, DSS06, and MEA01 at level 0. As for the domain DSS01 and DSS02, and DSS06 are at level 1.

1. Introduction

The Employee Cooperative of the Republic of Indonesia Diponegoro University (Koperasi Pegawai Republik Indonesia Universitas Diponegoro /KPRI Undip) has a vision to become a modern, participatory, professional, and accountable information technology-based business entity in 2022. In order to improve the welfare of members and based on KPRI UNDIP vision and mission, the organisations estimated that all processes in the KPRI UNDIP which still done manually will move to be used an information system. Currently, KPRI UNDIP is computer-based accounting systems and Cooperative Information Systems (Sistem Informasi Koperasi /SIMASPRI). The SIMASPRI used to help the administrative and operational processes of various business units in KPRI UNDIP’s savings and financing unit. KPRI UNDIP’s savings and financing unit work focus on the services of basic savings, mandatory savings, and voluntary savings and to provide financing facilities (lending) from and for KPRI UNDIP’s members. In the KPRI UNDIP’s savings and financing unit, SIMASPRI is a system that used for recording and processing data on deposits, lending and credit repayments, so that it is expected to facilitate decision making regarding member savings and lending. Meanwhile, a computer-based accounting system is used to process financial data flowing in savings and financing units. It is expected Information Technology (IT) services provided in KPRI UNDIP will be useful and work well if the management of IT is done well. Based on the results of the interview with the head manager of KPRI UNDIP, there are various obstacles that often occur during the operation of the information technology system at KPRI
UNDPIT namely in terms of Human Resources (HR) or Human Error factors that are often found, because in the work process there are errors that result in incompatible data input). The other obstacles besides the Human Resources (HR) factor or Human Error is infrastructure failure such as electrical power failure or internet connection that is unstable. From some of the problems that have been explained, an evaluation for IT governance is needed to measure the level of IT governance in KPRI UNDPIT.

The evaluation is to seek whether the implemented IT in KPRI UNDPIT is appropriate and supports the goals of the organisations based on the level of IT governance capability applied. To conduct an IT governance audit or an evaluation, a framework is needed as a standard for managing technology management. Therefore, this study uses Control Objectives for Information and Related Technology (COBIT) 5 as a standard for auditing information technology governance. COBIT 5 is a comprehensive and holistic framework that can help organizations to manage or solve problems in governance and management of information technology according to different organizational needs [1].

2. IT governance audit

According to [2], audit is the process of collecting and evaluating evidence to see whether the system protects assets, maintains data integrity, and runs effectively and efficiently in accordance with organizational goals. Meanwhile, according to [3], "Audit is the accumulation and evaluation of evidence about information to detail and report on the degree of correspondence between the information and established criteria ".

An audit should be done by a competent, independent person. Therefore an audit is a process of monitoring and collecting evidence to evaluate whether a system or company with a process that runs in accordance with the objectives of the system or company [4].

2.1. Information Technology (IT) Governance

According to the IT Governance Institute (2007), Information Technology Governance is a process in which organizations align IT actions with the vision and mission that the organization wants to achieve. This is achieved by taking the right decision (who decides what) and implementing an accountability framework (who is responsible for what) so that each decision taken can develop the use of IT in the organization [5]. It also support with [6], IT Governance is an effort to guarantee IT management to support and even align with the business strategy of an enterprise carried out by the board of directors, executive management, and also by IT management [7].

Based on the explanation above, it can be interpreted that the management of information technology is part of an organization that includes processes and information technology that ensures that the IT contains and supports the organization's strategy and objectives.

2.2. Control Objectives for Information and Related Technology 5 (COBIT 5)

COBIT 5 is a comprehensive framework that can help companies achieve their goals for corporate IT management and management. COBIT 5 allows IT to be managed and regulated in a more comprehensive way for the entire scope of the company, covering the entire scope of business and the scope of the functional area of IT, taking into account the needs of internal and external stakeholders related to IT [8].

COBIT has 5 basic principles, including: meeting stakeholder needs, encompassing end-to-end governance and work processes, applying an integrated framework, overall approach to governance and management capabilities, and separation between governance and management.
2.3. COBIT 5 Capability Process Model

The COBIT 5 process capability model provides the levels in measuring COBIT 5 process capability, which is shown in Figure 2.

As shown in Figure 2, the measurement of process capability is organized into 6 levels or levels that can be achieved by each process, among others [8]:

1. Level 0 (Incomplete Process), at this level the process is not implemented or fails to reach the process goal. At this level, there is little or no evidence of any systematic achievement of process objectives.
2. Level 1 (Performed Process), at this level the process has been implemented and achieved the objectives of the process.
3. Level 2 (Managed Process), at this level the process has been implemented and managed (planned, monitored and adjusted) appropriately for the work product, controlled and maintained.
4. Level 3 (Established Process), at this level the process is determined, documented, and communicated. Implemented using a predetermined process to achieve the results of the process.
5. **Level 4 (Predictable Process)**, at this level the predetermined process now operates within the prescribed limits to achieve the results of the process.

6. **Level 5 (Optimizing Process)**, at this level the process that was previously predicted, is continuously being improved to meet current business goals and relevant future goals.

Achieving a level is a fundamental step to reaching a higher level. Rating of each level can be classified into 4 categories using a rating scale owned by ISO / IEC 15504, as follows [9]:

1. **N** (Not achieved): there is little or no evidence of the achievement of the attributes found in assessing the process (0% - 15% achievement)
2. **P** (Partially achieved): there is some evidence of achievement found. Aspect achievement aspects are unpredictable (> 15% - 50% achievement).
3. **L** (Largely achieved): there is evidence of a systematic approach, significant achievements, and undefined attributes in the assessment process. Some weaknesses still exist in the assessment process (> 50% - 85% achievement).
4. **F** (Fully achieved): there is evidence of a complete and systematic approach, full achievement, and defining attributes in the assessment process. There were no significant weaknesses in the assessment process (> 85% -100% achievement).

### 2.4. Self-Assessment

Self-Assessment is provided as a "stand-alone" guide that companies can use to assess their IT process capabilities. This approach is based on the COBIT Processess Assessment Model (PAM) used in the COBIT 5 assessment program, but does not require proof requirements to support the assessment. Thus, with Self-Assessment, sufficient information from PAM and a complete assessment template has been provided to simplify the process, eliminating the need to reference two other publications in the COBIT assessment program [10].

The first step in assessing each process is determining whether a process is actually carried out and is achieving results. On the self-assessment worksheet there is a table for each process. Indicators on level 1 capabilities are specific to each process and assess whether the following attributes have been achieved; the implemented process achieves its objectives. For level 1, values can be assigned to each specific process outcome or outcome, but the final decision on level 1 assessment requires an overall value on the PA process level attributes 1.1. For level 2 and above, the evaluation criteria are generic, that is, the criteria are the same for each process according to the COBIT 5 Process Capability Model [10].

In each case, the assessment must be filled in whether the criteria have been met, and the decision must be translated into a rating scale. To be said to reach a certain level, the process must have a value of "Largely Achieved" or "Fully Achieved" and to move to the next level, the capability of that level must have a value of "Fully Achieved" [10].

### 3. Research Method

This research was carried out through several stages, namely the initial stage consisting of problem identification and preliminary studies. Then the second stage is the stage of data collection consisting of data collection by interviewing, observing, and studying documents, mapping and selecting COBIT 5 domains, and mapping RACI diagrams. The last stage is the data analysis stage where at this stage the capability level is assessed by self-assessment, then a gap analysis is carried out to provide a recommendation.

Mapping and choosing COBIT 5 domains is done in several stages, including mapping enterprise goals, mapping IT-related goals, mapping enterprise goals to IT-related goals, and finally mapping to COBIT domain process 5. After that, mapping can only be done. RACI diagrams & data analysis stage.
3.1 Mapping Enterprise Goals(EG)
Mapping of Enterprise Goals (EG) is conducted to map COBIT 5 Enterprise Goals with KPRI UNDIP work plan related to Save and Financing Units so that the Enterprise Goals Units Save and Financing KPRI UNDIP selected which is considered in accordance with COBIT 5 standards. Table 1 shows selected KPRI UNDIP enterprise goals that are considered fit COBIT 5 standards.

| BSC Dimension | Kode | Enterprise Goal KPRI UNDIP |
|---------------|------|-----------------------------|
| Finance       | EG3  | Manage business risks       |
|               | EG4  | Compliance with internal laws and regulations |
|               | EG5  | Financial transparency     |
| Internal      | EG11 | Optimization of business process functions |
|               | EG12 | Optimization of business process costs |
|               | EG13 | Business change program managed |
|               | EG14 | Operational and staff productivity |
|               | EG15 | Compliance with internal policies |
| Learning and Growth | EG16 | Motivated and capable individuals |

3.2 Mapping IT-Related Goals
The IT-Related Goals Mapping is carried out to map the COBIT 5 IT-Related Goals with the KPRI Save and Financing Unit work plan related to the information technology used, so that IT targets in KPRI UNDIP and the COBIT 5 IT-Related Goals. Table 2 shows the selected KPRI UNDIP IT-Related Goals considered to be in accordance with COBIT 5 standards.

| BSC Dimension | Kode | IT Goal Unit Simpan dan Pembiayaan KPRI Undip |
|---------------|------|---------------------------------------------|
| Finance       | ITrG1 | Alignment of IT and business strategies     |
|               | ITrG3 | Executive management commitment to make IT Decisions. |
|               | ITrG4 | Manage business risks related to IT         |
| Internal      | ITrG7 | Delivery of IT services is in line with business needs |
|               | ITrG8 | Appropriate use of applications, information and technology solutions |
| Learning and Growth | ITrG11 | Optimization of IT assets, resources and capabilities. |

3.3 Mapping enterprise goals to IT-Related Goals
The mapping of KPRI Enterprise Goals to IT-Related KPRI Goals can provide a picture of the relationship between the two in supporting the achievement of alignment of IT governance with the goals of KPRI. To fill this mapping matrix, a P value is used which means primary for each enterprise goals that have an important and strong relationship with each IT-Related Goals, while the S value means secondary is given when there is still a strong but less important relationship [8].

The mapping of enterprise goals to IT-Related Goals can be seen in Figure 3.
Figure 3. Mapping Enterprise Goals to IT-Related Goals

Grading values on the mapping is in accordance with Appendix C: Detailed Mapping IT-Related Goals — ISACA IT-Related Processes 2012 and suggestion the KPRI UNDIP’s Manager that choose which IT processes are appropriate with the existing condition of KPRI UNDIP savings and financing unit. Thus, COBIT 5 IT processes were selected that were considered to support the goals of KPRI and it according to the needs and conditions of the KPRI savings and financing units, the evaluation used domain EDM01, EDM02, EDM05, APO10, BAI06, DSS01, DSS02, DSS03, DSS04, DSS06, and MEA01

3.4 Capability level assessment by self-assessment

The Self-Assessment is used to assess the capability level of information technology governance in the store unit and KPRI saving and financing. By self-assessment, the level of capability and conditions at the KPRI savings and financing unit will be known. The assessment on the self-assessment worksheet must be filled in whether the criteria have been met, and the decision must be translated into a rating scale. To be said to reach a certain level, the process must have a value of "Largely Achieved" or "Fully Achieved" and to move to the next level, the capability of that level must have a value of "Fully Achieved".

4. Discussions and results

4.1. Capability level summary

After conducting a self-assessment to determine the capability level according to the process used, a recapitulation of capability levels based on self-assessment is generated for each process that can be seen in Table (3).

Table 3. Capability level summary

| Proses                | Level | Result                          |
|-----------------------|-------|---------------------------------|
| EDM01 Ensure Governance Framework Setting and Maintenance | 0     | Partially Achieved (score: 33, 33%) |
| EDM02 Ensure Benefits Delivery                          | 0     | Partially Achieved (score : 16.67% ) |
| EDM05 Ensure Stakeholder Transparency Manage Suppliers   | 0     | Not Achieved (score: 0% ) Level 1 |
| APO10 Manage Changes                                    | 0     | Partially Achieved (score: 40%) |
| BAI06 Manage Changes                                    | 0     | Not Achieved (score : 0% ) Level 1 |
| DSS01 Manage Operations                                 | 1     | Largely Achieved (Score 67.5%) Level 1 |
| DSS02 Manage Service Requests and Incidents             | 1     | Largely Achieved (Score: 66.7%) |
| DSS03 Manage Problems                                   | 0     | Not Achieved (Score : 0% ) Level 1 |
4.2. Existing Condition
The existing condition is the condition or evidence found related to the information technology governance of the KPRI UNDIP financing unit from the self-assessment conducted. The following are the existing conditions of IT governance for KPRI UNDIP saving and financing unit:

1. Strategic decision making for IT is in accordance with KPRI UNDIP's internal environment and external regulations, but there is no IT governance system or documents regarding the design of IT governance that have been agreed and implemented, and there is no defining the number of roles, responsibilities, and authority determined and assigned to IT management needed.

2. Cooperatives do not have any portfolio related to IT, so it is difficult to evaluate, manage, and monitor the optimal value of IT in business and value management has not been done in KPRI UNDIP for IT used.

3. IT-related reporting is only done when there are problems or obstacles and KPRI UNDIP does not yet have documents regarding IT-related reporting so it cannot be determined whether the reporting is complete, timely, and accurate. In addition, no agreement was found on the needs and requirements of IT reporting by members related to the use of IT in business, so it is not certain that communication with members regarding IT used is effective.

4. In the construction and improvement of SIMASPRI, KPRI UNDIP cooperates with an information system service provider for cooperatives. Until now, the service provider has acted according to the agreement, but in the course of this collaboration no contract has been made and there has not been an evaluation and assessment related to the IT service provider used.

5. KPRI UNDIP cooperates with information systems partners to be responsible for IT operations including day-to-day IT installation, repair and maintenance so that IT service delivery is guaranteed according to business needs and agreed schedules. But there are no standard operating procedures or SOPs related to IT operations that are created or used.

6. The incidents that have occurred in the savings and financing unit so far have been human error or data loss, and the settlement agreement that has been carried out is by requiring staff to back up data 3 x 1 week. Agreements for resolving incidents are usually discussed at the Management Meeting, or if urgent they will be discussed with the Chairperson of the Cooperative and the settlement is carried out in accordance with the agreement.

7. No record or inventory has ever been made of all service requests and incidents that have occurred. In addition, KPRI UNDIP also did not document the resolution of incidents, remedies, and evaluations related to the resolution of incidents that occur for future knowledge.

8. Problems related to IT in KPRI UNDIP is the lack of human resources who have the ability or skills in the IT field, so there are many obstacles in the application and improvement of IT in the internal cooperative. However, there has been no response to this problem.

9. KPRI UNDIP has identified the possibility of threats that can cause the loss of continuity of the business activities of savings and financing units, then carried out regular back-ups and then back-up data is stored on an external hard disk as a step that can minimize the possibility of data loss problems and as a process of prevention or resilience, but there is no continuity plan for information technology that has been implemented, so KPRI Undip has not been able to describe and guarantee business continuity after a disaster.
10. KPRI UNDIP does not have good information control activities for all existing business processes because there is no clear responsibility for any information needed or generated. In addition, there is still some information from the business processes of savings and financing units that are recorded in books and for handling errors or incidents also still carried out by partners or third parties so that controlling information to maintain its integrity is difficult to do properly and effectively.

11. KPRI UNDIP has not made targets or metrics that have been agreed or mutually agreed upon for monitoring, evaluating, and evaluating performance and conformity between existing IT processes and organizational plans and objectives, so there is no monitoring, evaluation, and evaluation of performance and appropriateness of IT processes that are done.

4.3. Strategy for KPRI IT Governance

4.3.1. For Ensure Governance Framework Setting and Maintenance, prepare an effective IT governance work plan according to needs and in harmony with the internal and external environment of the savings and financing units agreed and approved at the Members’ Meeting so that it becomes a rule or IT governance system that is applied in the organization, then evaluates, directs, and monitors regulating and maintaining the applied governance system.

4.3.2. As for Ensure Benefits Delivery, make a record of activities for investments, services, and assets supported by IT so that it is easy to monitor or manage the benefits or values (value) of IT used, so that the optimization of the value of IT can be done. Then, evaluate, direct, and monitor the optimization of existing IT values.

4.3.3. Ensure Stakeholder Transparency, by identifying the IT governance requirements that are applied, so that they can be discussed at the Members’ Meeting, so that IT reporting requirements will be agreed upon and agreed to by all KPRI UNDIP stakeholders. Then, evaluate, direct, and monitor the IT reporting process for the sake of maintaining the accuracy and completeness of the data, so that transparency can be accounted for by members.

4.3.4. Manage Suppliers, identifying the IT provider or partner condition then evaluate the IT service provider and select it based on the KPRI requirements. Make a contract that is agreed with the IT service provider and manage the risks that might occur. Monitor their performance and adherence to agreements or contracts that have been mutually agreed upon.

4.3.5. Manage Changes, evaluate, inventory, and determine the priority scale of the various types of changes to be made. In addition, managing the existing emergency changes, the intention is important changes that may occur amidst the implementation of other changes. Monitor and report on the status or condition of the changes made until the changes are complete and document the changes made and state that the changes have been completed. Documents relating to changes made are very important because they are the basis or baseline that explains the state of the last or most updated system.

4.3.6. Manage Problems, identify and investigate IT-related problems that can disrupt IT operations. Convey and communicate the cause or root of the problem of implementing IT in the KPRI UNDIP at the Management Meeting or even Member Meeting if needed. Then discuss and agree on the settlement that must be done. Immediately do the resolution of the problem then report and document the problem and resolve the problem.

4.3.7. Manage Continuity, make a continuity plan, which is a plan and steps that can be taken to maintain the continuity of IT services after a problem or disaster occurs. Then, test and evaluate the existing continuity plan.
4.3.8. **Manage Business Process Controls**, ensure that there is control over all information processing in each of the business processes in the savings and financing unit and then allocate roles, responsibilities, access rights, and authority levels for all transactions that occur. Make sure there is good error handling and make sure only those who have the rights can access the data.

4.3.9. **Monitor, Evaluate and Assess Performance and Conformance**, there is agreement between the manager and the user for the method to be used in monitoring IT management. And set targets of the performance of IT management carried out and its compliance with agreed plans. Perform an analysis of IT management performance and compliance and report the results to the Management Meeting every month, and conduct an evaluation related to the results of IT management performance to ensure that IT management runs well and effectively.

5. **Conclusion**
Based on the results of IT governance audits conducted on the KPRI UNDIP saving and financing units it can be concluded from the process used, such as the processes of ensuring Governance Framework Setting and Maintenance; ensure Benefits Delivery; ensure Stakeholder Transparency; manage Suppliers; manage Changes; manage Problems, manage Continuity; manage Business Process Controls and monitor, Evaluate and Assess Performance and Conformance have not implemented. However, there are 2 (two) processes that have been implemented in the organization and achieve the objectives of the process, Manage Operations and Manage Service Requests and Incidents.

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