Abstract. Problem identification is a way to determine what domains will be the focus discussed in a study. Some researchers have used methods to fit the goals of a company. This paper aims to identify problems based on COBIT 5. Methodology used: 1. Gather information from stakeholders to get issues to be evaluated, 2. Mapping company’s objectives to obtain IT related goals, 3. Mapping IT related goal to define the process, 4. Merging enterprise goal and IT related goal to obtain process with P (primary) or S (secondary) scale, 5. Determining primary and secondary domain to be evaluated based on stakeholders need. Based on the results of detailed evaluation in the results show that the main problems are: related to the awareness of the employees to information security, regulation/policy, and IT human resources, so that the results of the identification of the problem domain should be studied in detail is EDM03 (Ensure Risk Optimization), APO01 (Manage the IT Management Framework), MEA01 (Monitor, Evaluate and Assess Performance and Conformance), and MEA02 (Monitor, Evaluate, and Assess the System of internal Control). While 10 other processes have secondary priority processes.

Keywords: Problem identification, COBIT 5, Determine domain process, IT Related Goal, enterprise goal, Pinmas, stakeholders need

1. INTRODUCTION

Problem identification is needed in determining the direction of problems to be solved in a case study of both companies and institutions. This is in line with [1], [2] it is necessary to align the issues faced with the primary goal of the enterprise.

There are several methods used by researchers in determining the problem identification, [2] conducting research using the effective Q method to identify the depth and breadth of different problem perspectives, can provide insight into the importance of different perspectives and can be used reflectively to anticipate and manage potential conflict. While [3] uses the concept of trees with POS (Part of Speech) by performing sentence equations that are defined as the weighted combination of expression equations and semantic similarities. [4] conducted identification process for Indonesian coal company at South Kalimantan using discomfort job survey, manual handling checklist and sample decision matrix (DM).

[5] do research by using concept of problem identification in technical student who undergoes Cooperative Problem Based Learning (CPBL) by using quantitative and qualitative method.

Research is a scientific activity to solve a particular problem. Step generally in the study started from the background of the problem, problem identification, formulate the problem, research objectives, methods of research, discussion and results [6].

Prior to the research, first we need to identify the problem so that the research may answer it. The identification process can be done when we have already initial data since the identification process is analogous to explore issues that are still shrouded, as stated by [7].

COBIT 5 has some assessment process models such as initiation, planning the assessment, briefing, data collection, data validation, process-level attribute, reporting and result [8]. Initiation is the initial stage, of the seven activity assessment process that identifies the needs of organizations through data collection. The collected data will help to understand current condition and what the expected condition of the organization [9].

Problem identification can be formulated in several ways including the provision of questionnaires, interviews or observations. It is supported by [10]. To determine the themes/domains that will be discussed in a research, identification of issues need to be discussed. Problem identification is an attempt to find problems in a research object [11]. Control Objectives for Information and Related Technology (COBIT) has 5 domains with 37 processes [9] where each process has its own specific problem.
COBIT has some rules in determining the problem identification by using IT related goal to process [9]. This is in order to get which process that will be evaluated in a company based on stakeholders need.

In the process of determining domains will be studied, the researcher must be precise so that the evaluation process will be effective and efficient. Therefore it need special discussion on how to determine problem identification based on IT related goal to process in COBIT 5 framework.

Identification process is the first step in solving problems. It must be determined prior to determining domain process to be evaluated [12].

Based on this background, this paper intends to present techniques in determining identification process in the field of information technology using the COBIT 5 framework on units of Information and Public Relations (Pinmas) at the Ministry of Religious Affairs of the Republic of Indonesia.

It will present the process of identifying problems based on the need of stakeholders and determining priority domains to be evaluated by COBIT 5 framework.

2. LITERATURE REVIEW

Problem Identification

In a study, problem identification becomes one of the stages for obtaining information of the observed object. This is done by recognizing, and knowing existing problems on an object of research [12].

There are two procedures currently used in problem identification method namely data collection and processing of information [13].

In COBIT 5 problem identification methods becomes an important part in implementing the initiation stage to understand current conditions and to know the needs of the company to achieve change [8].

Problem identification method in this paper will focus on data collection and processing of information for the initiation phase of COBIT 5.

In COBIT 5, mapping enterprise goal is intended to obtain IT related goal. Then the IT related goal is used to determine process by merging it with the enterprise goal [9].

Determine domain process

Identifying problems in the business needs of IT systems required a tool. Critical success factors (CSF) is one of the tools used in planning of IT. It has three basic uses: 1) A database containing information about organizational factors that was gathered during CSF analysis, linking business and IT needs, 2) Correlation between the organizational factors is shown as a source of report, 3) A 'what-if' facility that allows analyst to change the priorities of organizational factors and to study the effects on the priorities of the business units and IT-related factors such as applications [14].

IT Governance

IT Governance (ITG) is identified as an organizational capability that is essential for strategic IT alignment. ITG is defined by [15] as a set of decision-makers by structures, processes and relational mechanisms.

In line with the ITG understanding, a study that discusses IT governance framework described that IT governance is the responsibility of the board of directors and executive management. The integral part consists of leadership and structures and processes within the organization [16].

The implementation of IT governance in 90s was aimed to provide new services. In addition, it was for increasing profitability of IT investment which then followed by public sector [17].

COBIT 5

COBIT 5 discuss the governance and management in using information technology to be in line with the objectives of a company. As a standard that integrates a number of standards and frameworks including ISO, TOGAF, PRINCE2/PMBOOK, CMMI and ITIL, COBIT 5 has five principles to be considered in implementing IT Governance [9].

The Framework was created based on over 15 years of experience of many companies and IT communities in the field of risk, security, insurance, and business [9]. COBIT Framework is also adopted by an organization to ensure efficient operations, decrease costs, and improve IT infrastructure control [16].

The existence of COBIT 5 is intended to help stakeholders in determining what they need, what the expected added value of information and technology with IT control, to realize the benefits, IT risk management, running business process based on procedure [9].

Domain

COBIT reference model process divides the process of governance and management IT company into two main areas of activity namely governance and management [18]. From those two areas, each of them has domain processes:
Governance: have one domain called EDM which contains five governance processes.
Management: has four domains that are in line with PBRM areas of responsibility including APO, DSS, BAI, and MEA.

Process
Process is one of seven categories of enablers for governance and management of IT enterprise. [8] define the process as a set of practices influenced by policies and procedures that take input from a number of sources (including other processes) in the company, manipulate the input and produce output (e.g., products, services).

![Figure 1 Process References Model](image)

Figure 1 is the domains that exist in COBIT 5 which consists of 5 domain processes such as: Align, Plan and Organise (APO); Build, Aquire and Implement (BAI); Deliver, Service and Support (DSS); Monitor, Evaluate and Asses (MEA) dan Evaluate, Direct and Monitor (EDM). Each of them is divided into 37 processes. These domain processes will be evaluated based on stakeholder needs according to the identification of problems in the unit of Information and Public Relations (Pinmas) at the Ministry of Religious Affairs of the Republic of Indonesia

IT Related Goal
Determination of IT related goal was conducted through pre-research by asking questions either by direct interview or observation, and question and answer. The goal is to know the main purpose of the company and what problems need to be evaluated in depth.

COBIT 5 has created a standard that can be used as a reference for companies to determine the goals and problems that have priority scale. In this case COBIT 5 combines them using the Balanced Scorecard concept.

Achievement of corporate goals and objectives requires a number of results relating to IT, related structured IT along the dimensions of IT balanced scorecard (IT BSC). COBIT 5 defines 17 objectives related to IT [8]. The details can be seen in table 1.

| IT BSC Dimension | Information and Related Technology Goal |
|------------------|----------------------------------------|
| Financial        | 01 Alignment of IT and business strategy |
|                  | 02 IT compliance and support for business compliance with external laws and regulation |
|                  | 03 Commitment of executive management for making IT related decisions |
|                  | 04 Managed IT-related business risk |
|                  | 05 Realised benefit from IT-enabled investments and services portofolio |
|                  | 06 Transparency of IT costs benefits and risk |
| Customer         | 07 Delivery of IT services in line with business requirements |
|                  | 08 Adequate use of applications, information and technology solutions |
| Internal         | 09 IT agility |
|                  | 10 Security of information, processing infrastructure and applications |
|                  | 11 Optimisation of IT assets, resources and capabilities |
|                  | 12 Enablement and support of business processes by integrating application and technology into business processes |
|                  | 13 Delivery of programmes delivering benefits, on time, on budget, and meeting requirement and quality standards |
|                  | 14 Availability of reliable and useful information for decision making |
|                  | 15 IT compliance with internal polices |
| Learning and Growth | 16 Competent and motivated business and IT personnel |
|                  | 17 Knowledge, expertise and initiatives for business innovation |

Table 1 describes the possible objectives to be chosen by the stakeholders in accordance with the objectives and problem identification. The initial step can be determined based on the existing problem; Whether related to financial, customer, internal or learning growth problems. Then each component can be viewed in detail for each component that is divided into 17 goals that can be used as a reference to raise the issue of what is more dominant and important to be evaluated in the near future? Is it all or just a part? It is determined by an agreement from the stakeholders.

COBIT 5 has provided a reference for mapping on each domain and provides direction as well to determine the scale with the terms P for Primary and S for Secondary.

This IT-related goal table is becoming the material to determine which process that will be
evaluated, how any IT-related objectives is supported by COBIT 5 process has been linked to the existing problems in a company. The mapping is expressed by using the following scale:

- 'P' stands for the Primary. When a problem has a very important relationship to be evaluated for the achievement of IT-related goals.
- 'S' stands for Secondary. When a problem has a strong relationship but less important to be evaluated, S is a secondary support scale for IT-related purposes.

After the mapping of the domain to be evaluated, stakeholder discussions are held to ensure that the domain is selected and important to evaluate.

3. RESEARCH METHOD

The methods used in identifying problems that exist in the company is based on the data and information that had been collected before.

a. Conducting interviews, observation and spreading questionnaires to collect data (both documents, files, etc.) as well as problems in a company associated with IT. Then process them for later study becomes the enterprise information

b. Conducting the process of enterprise mapping COBIT 5 goals to IT-related goals based on Pinmas information and Pinmas IT issues to get the company's goals that are supported by goals related to information technology

c. Determining domain process by mapping IT related goals to process based on IT problems in Pinmas to obtain process to be evaluated.

d. Merge enterprise goal and IT Related goal to get the process with scale P or S scale.

e. Determining domain that is more important to be evaluated based on stakeholders need

4. RESULT AND DISCUSSION

The case study in this research is conducted in units of Information and Public Relations (Pinmas) at the Ministry of Religious Affairs of the Republic of Indonesia. To carry out the evaluation of information technology governance in this administration unit, problem identification must be made in advance.

a. As a first step, the researchers conducted interviews to the ICT personnel in Pinmas section. The questions asked were associated with Pinmas profile, organizational structure, vision and mission, duties and functions, job descriptions, IT regulations, internal and external audits, and issues on IT/IS. Based on that interview, there are three main problems existing in Pinmas unit namely related to the awareness of employees to information security, regulation/policy, and IT human resources. Those data then is analyzed to be interpreted according to the existing domain in COBIT 5 framework (Figure 3) that is internal domain on enterprise goal, namely: Compliance with internal policies.

The next stage is determining IT-related objectives on IT related goal table 1 by interpreting the existing problems into the internal IT-related goal domain that is IT Compliance with internal policies. Figure 3 shows that there are four IT-related goals having P scale. In addition, there is one IT related goals that have S scale. Table 2 shows the mapping result of enterprise goal to IT-related goals.

Then based on the mapping results (Table 2), the item that is important to be evaluated is IT compliance with internal policies, due to IT problems in Pinmas included in the internal domain.

c. Next step is determining the process in table IT-related Goals to Process (Figure 4) by interpreting the existing problems based on domain process.

d. Finally we unite between Enterprise goal domain and IT Related goal.

The mapping result shows that there are four processes having P scale while 10 domain processes has S scale. The mapping results of IT-related goals to process is displayed in Table 3.
Figure 3 Mapping enterprise goals to IT-related goals

Table 2 List of IT-related goal

| Domain  | No. | IT-related goals                                                                 | Scale |
|---------|-----|----------------------------------------------------------------------------------|-------|
| Internal| 02  | Compliance and support for business compliance with external laws and regulations | P     |
|         | 04  | Managed IT-related business risk                                                  | S     |
|         | 10  | Security of information, processing infrastructure and applications               | P     |
|         | 15  | IT compliance with internal policies                                             | P     |

5. CONCLUSION

Domain process to be evaluated in implementing IT governance using COBIT 5 framework in Pinmas is the ones that having P scale, namely: EDM03 (Ensure Risk Optimization), APO01 (Manage the IT Management Framework), MEA01 (Monitor, Evaluate and Assess Performance and Conformance), and MEA02 (Monitor, Evaluate and Assess the System of Internal Control). However, for the process that has S scale under the provisions of the COBIT 5 is less important to be evaluated despite having had a connection to the existing problems. But it can be tailored to the needs of the company and the existing budget. It means that this paper may recommend to evaluate only the four processes, but the S scale can be evaluated if necessary when the process has a close relationship with the domain to be evaluated.

Figure 4 Mapping IT-Related Goal to Process

Table 3 List of Domain Process

| Domain                  | No.    | Process                                      | Scale |
|-------------------------|--------|----------------------------------------------|-------|
| Evaluate, Direct and Monitor | EDM01  | Ensure Governance Framework Setting and Maintenance | S     |
|                         | EDM03  | Ensure Risk Optimization                      | P     |
|                         | EDM05  | Ensure Stakeholder Transparency               | S     |
| Align, Plan and Organize | APO01  | Manage the IT Management Framework            | P     |
|                         | APO02  | Manage Strategy                               | S     |
|                         | APO07  | Manage Human Resources                        | S     |
|                         | APO08  | Manage Relationships                          | S     |
|                         | APO09  | Manage Service Agreements                     | S     |
|                         | APO10  | Manage Suppliers                              | S     |
|                         | APO11  | Manage Quality                                | S     |
| APO12 | Manage Risk | S |
|-------|-------------|---|
| MEA01 | Monitor, Evaluate and Assess Performance and Conformance | P |
| MEA02 | Monitor, Evaluate and Assess the System of Internal Control | P |
| MEA03 | Monitor, Evaluate and Assess Compliance With External Requirements | S |

For further research can be developed merging between 2 or more methods in determining the identification problem or by using other methods similar or adjusted to the conditions that exist in the company to be conducted evaluation process.

**References:**

[1] G. Smith, “Managerial problem identification,” *Omega, Volume 17, Issue 1*, pp. 27-36, 1989.

[2] G. Phi, D. Dredge dan M. Whitford, “Understanding conflicting perspectives in event planning and management using Q method,” *Tourism Management, Volume 40*, pp. 406-415, 2014.

[3] D.-. b. Hu dan J. Ding, “Study on Similar Engineering Decision Problem Identification Based On Combination of Improved Edit-Distance and Skeletal Dependency Tree with POS,” *Systems Engineering Procedia, Volume 1*, pp. 406-413, 2011.

[4] E. Nurmianto, U. Ciptomulyono, S. dan S. Kromodihardjo, “Manual Handling Problem Identification in Mining Industry: An Ergonomic Perspective,” *Procedia Manufacturing, Volume 4*, pp. 89-97, 2015.

[5] S. A. H. S. Hassan, K. M. Yusof, S. Mohammad, M. S. Abu dan Z. Tasir, “Methods to Study Enhancement of Problem Solving Skills in Engineering Students Through Cooperative Problem-Based Learning,” *Procedia - Social and Behavioral Sciences, Volume 56*, pp. 737-746, 2012.

[6] P. D. Sugiyono, Statistik Nonparametri Untuk Penelitian, ALFABETA, 2008.

[7] M.-S. Yun, “A Simple Solution to the Identification Problem in Detailed Wage Decompositions,” *IZA Discussion Paper No. 836*, p. 3, 2003.

[8] ISACA, Enabling Processes, USA: Rolling Meadows, 2012.

[9] ISACA, Implementation, USA: Rolling Meadows, 2012.

[10] A. Weeks, K. Lightly dan S. Ononge, Lesson 2 - Problem Identification, Cambridge University Press, 2014.

[11] M. A. M. A. L. S. Sansaturio, “The Asteroid Identification Problem,” *International Astronomical Union Colloquium / Volume 172 January 1999*, pp. 363-364, 2016.

[12] R. R. Palmon, “A Dialectic Perspective on Problem Identification and Construction,” *Industrial and Organizational Psychology / Volume 2 / Issue 3 / September 2009*, pp. 349-352, 2015.

[13] M. J. Ligarski, “Problem identification method in certified quality management systems,” *Quality & Quantity*, p. 315-321, 2012.

[14] D. J. Flynn dan E. A. Arce, “A CASE tool to support critical success factors analysis in IT planning and requirements determination,” *Information and Software Technology, Vol. 39, Issue 5, 1997*, pp. 311-321, 1997.

[15] A. O. Tonelli, P. H. d. S. Bermejo, P. A. d. Santos, L. Zuppo dan A. L. Zambalde, “IT governance in the public sector: a conceptual model,” *Information Systems Frontiers*, 2015.

[16] C. Aoun, S. Vatanasakdakul dan a. Y. Chen, “IT Governance Framework Adoption: Establishing Success Factors,” *Governance and Sustainability in IS*, p. 239–248, 2011.

[17] N. Al Qassimi dan L. Rusu, “IT Governance in a Public Organization in a Developing Country: A Case Study of a Governmental,” *Procedia Computer Science, Vol. 64*, pp. 450-456, 2015.

[18] ISACA, A Business Framework for the Governance and Management of Enterprise IT, USA: Rolling Meadows, 2012.