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Evaluation of IT Governance in Indonesia's One-Door Investment and Integrated Services Institution using COBIT 5

Wahyu Indra Satria[1], Farwis Ilmi[2], Nuning Indah Pratiwi[3]
wahyuindrasatria@ibik.ac.id[1], 202210079@student.ibik.ac.id[2], nuningindahpratiwi@undiknas.ac.id[3]
[1,2] Institut Bisnis dan Informatika Kesatuan, West Java
[3] Universitas Pendidikan Nasional, Bali

ABSTRACT

This research aims to evaluate the information technology governance at Indonesia's One-Door Investment and Integrated Services Institution using the COBIT 5 framework. COBIT 5 is a comprehensive framework that provides a model for managing and governing information technology within an organization, to ensure the achievement of strategic and operational objectives. The research was conducted through several stages, including identifying relevant information technology processes, data collection through questionnaires and interviews, and analysis of the evaluation results using capability levels provided by COBIT 5 framework. The study results indicate that most information technology processes at Indonesia's One-Door Investment and Integrated Services Institution are at capability levels that require improvement, particularly in information technology risk management, performance management, and internal controls. Several recommendations are provided to enhance information technology governance at Indonesia's One-Door Investment and Integrated Services Institution, such as strengthening information technology policies and procedures, increasing human resource capacity through continuous training, and implementing regular monitoring and evaluation systems. By adopting these recommendations, it is expected that information technology governance at Indonesia's One-Door Investment and Integrated Services Institution can be optimized to support the achievement of organizational goals better and improve public services for the citizens.

Keywords: Information Technology; COBIT; Governance, Strategic Operational, Public Services

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Correspondence Author:

Wahyu Indra Satria
Faculty of Informatics and Tourism
Institut Bisnis dan Informatika Kesatuan
Jl. Rangga Gading No.01, Gudang, Kecamatan Bogor Tengah, Kota Bogor, Jawa Barat 16123.
Email: wahyuindrasatria@ibik.ac.id

1. INTRODUCTION

The need for information technology has triggered rapid growth in the information technology aspect. Many institutions and agencies compete to adopt information systems and technology. This is because information technology provides positive benefits, namely providing fast and easy access to information to the public wherever and whenever they need it. Almost all institutions and agencies use Information Technology (IT) as a supporter of public service operations with information distribution through digital platforms in this era. Behind the use of information technology (IT), sometimes the use of IT is less than ideal. An example is that complex systems are not always involved in comparable support in achieving organizational goals, visions, missions, and planning. Therefore, IT governance plays an important role in managing all information technology aspects in an institution [1], [2].

Effective information technology governance can be measured from the institution situation through evaluation with the aim of measuring the ability and success of IT implementation. IT governance must have

full support from stakeholders, provide a comprehensive view in the development and implementation of systems that have the best quality, improve the level of efficiency, effectiveness, productivity and maintain confidentiality, complexity, and availability. Local governments need IT implementation to increase effectiveness and transparency. Related to the hope of achieving goals, then with the existence of good IT governance. Good IT Governance is the adjustment of IT implementation with the expectations of the institution's business processes [3]. However, in the implementation of this governance, there may be several problems, especially in terms of lack of attention from the leadership.

The impacts include financial losses, reputational damage, projects that exceed budget or time limits, decreased effectiveness due to inappropriate information system quality, and low integration, high levels of user complaints, and low levels of concern for confidentiality, availability of information, and comprehensive IT governance regulations and procedures [4]. Supported by previous research conducted by Surya, et al [5] stating how important information technology is also a priority in the public sector, this sector serves the community to provide optimal and targeted service strategies. With good IT governance standards, it can provide transparency and decision-making as well as structured authority and responsibility. Certainty in the general policy for implementing information technology governance or audits is also supported and implied in the Indonesia's Regulation of The Minister of Communication and Informatics Number: PER/MEN/KOMINFO/16/2022.

In an increasingly advanced era, technology has become an inseparable aspect of human daily life. Information technology (IT) is quite crucial for institution in achieving benefits, minimizing costs and maximizing time [6]. The use of IT also has a significant impact on various aspects, such as public services. Public services as a benchmark for the success of the implementation of government performance and as the main driver because they are included in the elements of good governance [7]. Indonesia's One-Door Investment and Integrated Services Institution in Bogor regional areas, is one of the offices that provides public services such as managing permits for community business management and investment.

By utilizing information technology, Indonesia's One-Door Investment and Integrated Services Institution can manage investment data, prepare and implement regional policies in the field of investment and one-stop integrated services, monitor and evaluate in the field of investment. This also can carry out other tasks assigned by Regent in accordance with their duties and functions. Another example as well as good inventory management through preventive maintenance, allowing integration between various work units and allowing all work units to collaborate and coordinate, so that they can implement IT that is visible to operations, finances, and performance at Indonesia's One-Door Investment and Integrated Services Institution in Bogor regional regency areas.

In this study, authors will implement IT governance using COBIT 5 (Control Objectives for Information and Related Technology) framework. COBIT 5 is a governance method that covers planning, implementation, operational, and monitoring issues in all IT processes that support business processes in agencies, institutions, and institutions. COBIT 5 is an effective framework that can help manage institutions by managing benefit values and optimizing risks [8]. Previous research conducted by Setia, et al [9] showed the results of an evaluation using COBIT 5 on Bogor Regency Communication and Information Institution and data at level 2 which had a capability value of 2.38. While the target result is 3.00 and it can be concluded that there is a gap of 0.62. This similar with Tangka, et al [26] and Darmawan, et al [27] use COBIT 5 to audit IT governance in academic institution, and with Harefa, et al [28] use COBIT 5 in automotive company. COBIT 5 Framework has shortcomings such as implementation complexity, focus on control and measurement and lack of security procedures. Novelty of this research are evaluate and assesments of new institution that have differentbusiness process and many more. Implementation of COBIT 5 aims to evaluate and provide assessments of information technology governance in Indonesia's One-Door Investment and Integrated Services Institution in Bogor regional regency areas. Results of evaluation and assesments are for achieve vision and mission that have been set by the institution accordance with rules stated in COBIT 5.

2. RESEARCH METHOD

In this research study, the author utilized a method designed to make things simpler regarding the preparation of research process and conducting evaluations aimed at the implementation of IT processes among others.

2.1. Literature Study

This study was conducted by reviewing variations of similar literature that are interrelated referring to the concepts of governance, information technology, and evaluation using COBIT 5. Eliminating papers that were less related to the research object and methods used.

2.2. Problems Identification

At this stage, the author identifies the problems that occur in the agency or institution. This stage is defined as the main stage, because the initial flow of this research is guided by the presentation of the problem formulation, this can be defined as the direction and focus area in conducting research.

2.3. Data Collection

In this section, data recording is carried out using direct field observation methods, interviews with related parties, and distributing questionnaires regarding IT governance of the research objects that have been determined at Indonesia's One-Door Investment and Integrated Services Institution in Bogor regency.

2.4. Analysis, Evaluation, and Determining Recommendations

At this stage, the authors follows procedure of COBIT 5 framework to carry out an analysis process consisting of 3 (three) stages including; capability level analysis, gap analysis, and final stage of providing recommendations to research object at Indonesia's One-Door Investment and Integrated Services Institution in Bogor regional regency areas.

2.4.1. Analysis and Evaluation

Analysis are consists of three stages (at point 2.4.), then authors doing evaluation. Evaluation is process of assessing consequences of a project, target, or series of flows according to previously established criteria and provisions [10]. Evaluation can also be interpreted as the ability in realm of thinking process to consider values, situations, and programs. For example, an individual is given several preferences, then the individual can choose best option according to available criteria [11]. Quoting from article akseleran.id [12] that the implementation before conducting an evaluation must ensure these steps are carried out including:

1). Determine evaluation topic and ensure that you know what will be evaluated.
2). Design all activities that can achieve program success.
3). Determine evaluation method to be applied.
4). Carry out evaluations such as data processing, data analysis.
5). Determining the level of success of a program plan.
6). Preparation of recommendations for sustainable programs based on evaluation results.

The purpose of evaluation in general varies greatly, depending on the context, target and objectives of the evaluation. Evaluation can be carried out for various purposes, including the following: [12], [13].

1). Performance Improvement → Reviewing the extent to which a program or project has achieved its goals and outcomes through evaluation process implemented.
2). Effectiveness Measurement → Evaluating the extent to which a policy or strategy is effective in achieving a particular goal.
3). Impact Assessment → Assessing the positive or negative impact of an activity and intervention on individuals, groups, or communities.
4). Prioritization → Assists in decision making about resource allocation by comparing the outcomes and benefits of various criteria options.
5). Supporting Accountability → Providing evidence needed for accountability to stakeholders, funding, or regulatory authorities.
6). Improving Planning and Design → Assisting in planning and designing future programs by reviewing previous evaluation results.

2.4.2. Information Technolgoy (IT) Goverannce Evaluation

In carrying out its operational activities, institutions require not only good management but also obligations to social environment. Among forms of implementing governance principles are implementation of social and environmental commitments. Abstraction of institutions governance is decentralization between agents with principles that form the basis of institutions theory. Institutions theory is basis of a contractual relationship where one or more people are main actors and individuals to manage institutions business. In line with existence of decentralization, it sparks problems that cause differentiation ambitions of main actors with individual managers of business. Many managers act only in their own interests and reports submitted to owner are not relevant to real state of institution. Implementation of optimal and committed institutions governance can also limit agents (management) in carrying out profit management. Good governance here refers to application of principles to managing

agency policies, concepts regarding this include advanced efficiency, accountability, transparency, responsiveness, minimizing risk [14], [15].

IT governance is a top management responsibility and board of directors that consisting of leaders, structures, and organizational implementation. They ensures organization's IT supports and enhances reach of agency's strategy and objectives. IT governance represents a framework to make decisions and accountability that motivates IT utilization behavior. In era industrial revolution, experienced variations happens in development, one of which was governance performance. Because the key to the revolution is significant rapid changes from institutions and individuals due to the emergence of innovations in terms of development, exchange and distribution of values in the community [16], [17].

2.4.3. Evaluation with COBIT 5

COBIT 5 (Control Objectives for Information and Related Technology version 5.0) is a guide to information technology management rules or practices. COBIT 5 can be explained as a comprehensive framework that encourages institutions to achieve their goals in the IT governance and management sector. COBIT 5 encourages institutions to optimize essence obtained from information technology by maintaining stability between gaining benefits, reducing risks, and then using resources efficiently. COBIT 5 is a framework that has been refined from previous version, namely COBIT 4.1. These changes include addition of 5 principles and 7 enablers. This latest version shows significant differences where COBIT 4.1 focuses more on information governance, COBIT 5 emphasizes the use of information governance as a framework in area or context of management and business. IT management implemented in institution is intended to achieve goals itself [18], [19].

COBIT is a standard rule regarding managing IT used by institutions. COBIT was developed by linking to business metrics without leaving emphasis on area of IT management. COBIT 5 is applied in various aspects, including IT maintenance, IT control, audit roles, monitoring units, and ensuring integrity and validity of data or information as organization central. Measurement methods are used to control processes regulated in COBIT framework. This allows organizations to optimize IT governance and understand current internal IT situation [20], [21].

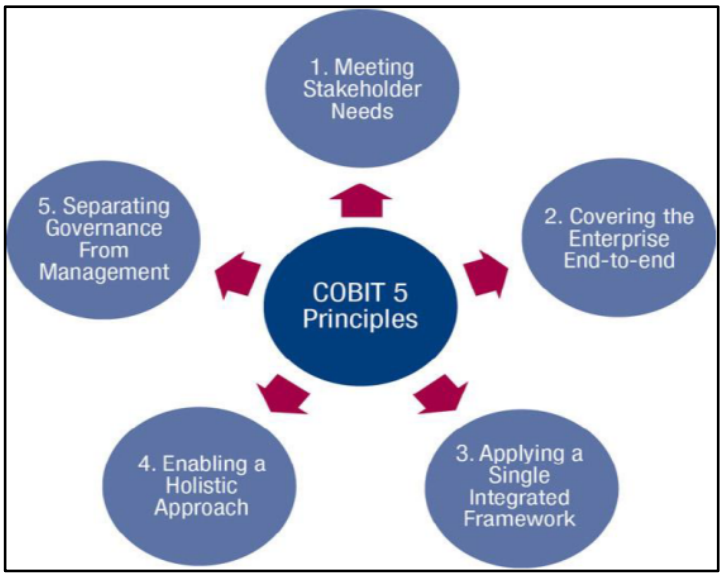


Figure 2.1. COBIT 5 Principles

The description of the 5 (five) COBIT 5 (Control Objectives for Information and Related Technology version 5.0) principles is as follows: [22], [23], [24], [25]

1). COBIT 5 helps organizations identify and understand the needs of their stakeholders. It aims to create value for stakeholders in a balanced way, namely by taking into account benefits, risk management, and resource use.

2). IT management in an organization must encompass all processes and elements within organization. COBIT 5 facilitates integration of IT management into all layers and functions of organization. This ensures organization's IT governance is harmoniously woven.

3). COBIT 5 can works in an integrated manner with higher IT-related frameworks. This makes COBIT 5 act as a comprehensive IT governance and management rule or guideline for institutions.

4). A holistic approach to IT management takes into account the interacting components. COBIT 5 supports this approach to ensure effective IT management.
5). COBIT 5 helps in understanding the differences between governance and management in IT implementation. This can be seen in the activities, organizational structure, and objectives that differentiate between the two. COBIT 5 helps organizations to clarify and differentiate roles and tasks between IT management and governance.

3. RESULTS AND DISCUSSION

The following are results and discussion of IT governance evaluation from Indonesia's One-Door Investment and Integrated Services Institution in Bogor regional regency areas.

3.1. General Description of Research Object

The following is a discussion regarding general description of Indonesia's One-Door Investment and Integrated Services Institution in Bogor regional regency areas such as:

- Institution's Vision: Realizing best investment climate and one-stop integrated service in Indonesia.
- Institution's Mission: Increasing potential, promotion and investment cooperation., Developing quality of investment information systems and licensing services., Increasing the professionalism of licensing services., Increasing quality of apparatus, infrastructure and administrative order.
- In order to realize excellent public service, motto of institution namely "My Determination is The Best Service and Devotion".
- Organizational structure:

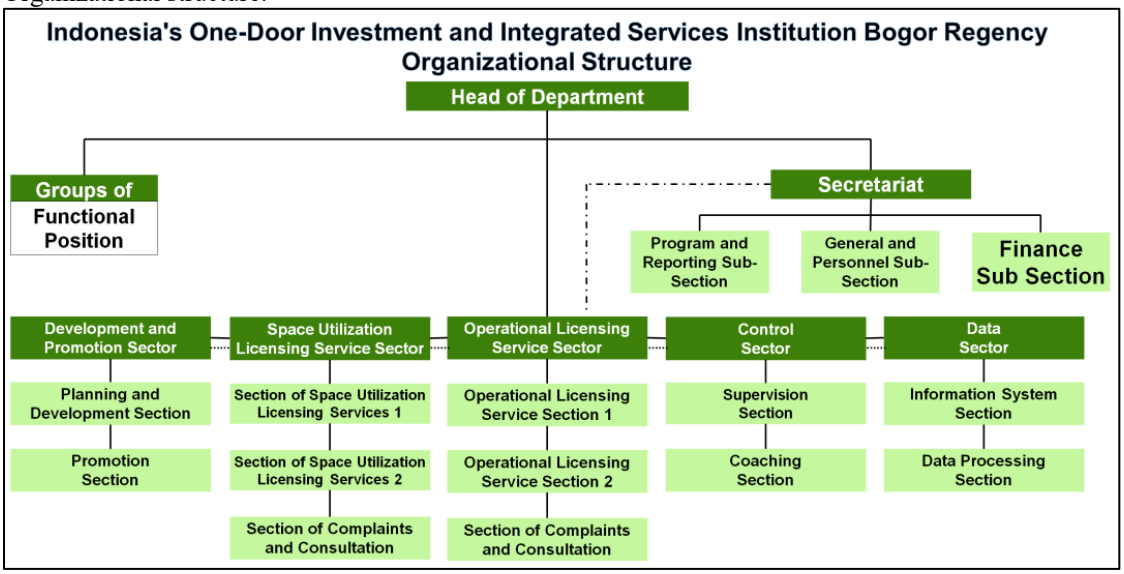


Figure 3.1. Organizational Structure

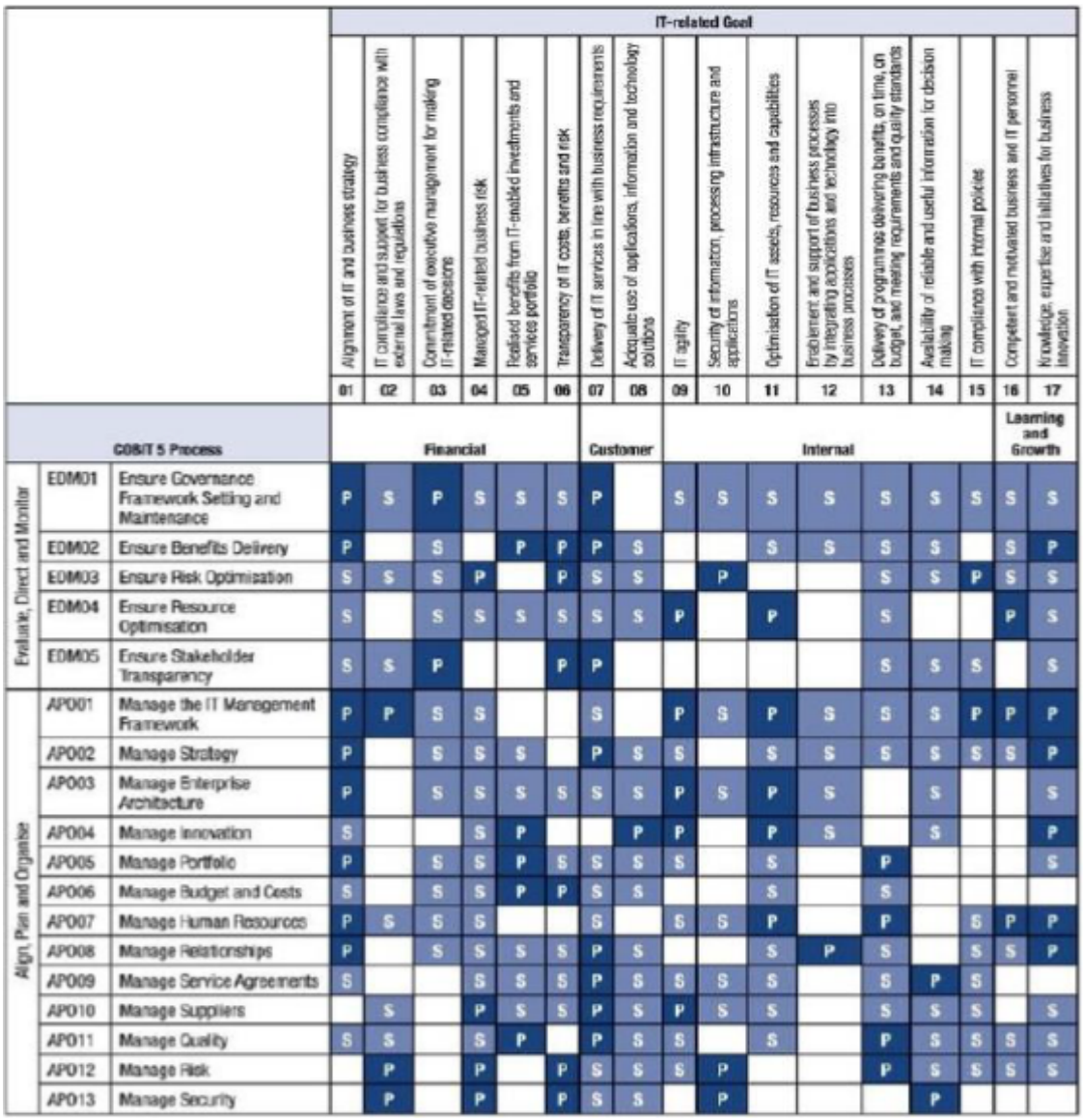
3.2. Mapping Process

The first or initial activity carried out is to carry out mapping of institution vision and mission with related objectives that are continuous in the COBIT 5 rules. Several images as references for carrying out the mapping carried out.

Figure 17—Mapping COBIT 5 Enterprise Goals to IT-related Goals

		Enterprise Goal																
		Stakeholder value of business investments	Portfolio of competitive products and services	Managed business risk (safeguarding of assets)	Compliance with external laws and regulations	Financial transparency	Customer-oriented service culture	Business service continuity and availability	Agile responses to a changing business environment	Information-based strategic decision making	Optimisation of service delivery costs	Optimisation of business process functionality	Optimisation of business process costs	Managed business change programmes	Operational and staff productivity	Compliance with internal policies	Skilled and motivated people	Product and business innovation culture
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
	IT-related Goal	**Financial**					**Customer**					**Internal**					**Learning and Growth**	
Financial	01 Alignment of IT and business strategy	P	P	S			P	S	P	P	S	P	S	P			S	S
	02 IT compliance and support for business compliance with external laws and regulations			S	P											P		
	03 Commitment of executive management for making IT-related decisions	P	S	S					S	S		S		P			S	S
	04 Managed IT-related business risk			P	S			P	S		P			S		S	S	
	05 Realised benefits from IT-enabled investments and services portfolio	P	P				S		S		S	S	P		S			S
	06 Transparency of IT costs, benefits and risk	S		S		P				S	P		P					
Customer	07 Delivery of IT services in line with business requirements	P	P	S	S		P	S	P	S		P	S	S			S	S
	08 Adequate use of applications, information and technology solutions	S	S	S			S	S		S	S	P	S		P		S	S
	09 IT agility	S	P	S			S		P			P		S	S		S	P
	10 Security of information, processing infrastructure and applications			P	P			P								P		
	11 Optimisation of IT assets, resources and capabilities	P	S						S		P	S	P	S	S			S
Internal	12 Enablement and support of business processes by integrating applications and technology into business processes	S	P	S			S		S		S	P	S	S	S			S
	13 Delivery of programmes delivering benefits, on time, on budget, and meeting requirements and quality standards	P	S	S			S				S		S	P				
	14 Availability of reliable and useful information for decision making	S	S	S	S			P		P		S						
	15 IT compliance with internal policies			S	S											P		
Learning and Growth	16 Competent and motivated business and IT personnel	S	S	P			S		S						P		P	S
	17 Knowledge, expertise and initiatives for business innovation	S	P				S		P	S		S		S			S	P

Figure 3.2. Enterprise Goals Mapping



			IT-related Goal																
			Alignment of IT and business strategy	IT compliance and support for business compliance with external laws and regulations	Commitment of executive management for making IT-related decisions	Managed IT-related business risk	Realised benefits from IT-enabled investments and services portfolio	Transparency of IT costs, benefits and risk	Delivery of IT services in line with business requirements	Adequate use of applications, information and technology solutions	IT agility	Security of information, processing infrastructure and applications	Optimisation of IT assets, resources and capabilities	Enablement and support of business processes by integrating applications and technology into business processes	Delivery of programmes delivering benefits, on time, on budget, and meeting requirements and quality standards	Availability of reliable and useful information for decision making	IT compliance with internal policies	Competent and motivated business and IT personnel	Knowledge, expertise and initiatives for business innovation
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
	COBIT 5 Process		Financial						Customer		Internal							Learning and Growth	
Evaluate, Direct and Monitor	EDM01	Ensure Governance Framework Setting and Maintenance	P	S	P	S	S	S	P		S	S	S	S	S	S	S	S	S
	EDM02	Ensure Benefits Delivery	P		S		P	P	P	S			S	S	S	S		S	P
	EDM03	Ensure Risk Optimisation	S	S	S	P		P	S	S		P			S	S	P	S	S
	EDM04	Ensure Resource Optimisation	S		S	S	S	S	S	S	P		P		S			P	S
	EDM05	Ensure Stakeholder Transparency	S	S	P			P	P						S	S	S		S
Align, Plan and Organise	APO01	Manage the IT Management Framework	P	P	S	S			S		P	S	P	S	S	S	P	P	P
	APO02	Manage Strategy	P		S	S	S		P	S	S		S	S	S	S	S	S	P
	APO03	Manage Enterprise Architecture	P		S	S	S	S	S	S	P	S	P	S		S			S
	APO04	Manage Innovation	S			S	P			P	P		P	S		S			P
	APO05	Manage Portfolio	P		S	S	P	S	S	S	S		S		P				S
	APO06	Manage Budget and Costs	S		S	S	P	P	S	S			S		S				
	APO07	Manage Human Resources	P	S	S	S			S		S	S	P		P		S	P	P
	APO08	Manage Relationships	P		S	S	S	S	P	S			S	P	S		S	S	P
	APO09	Manage Service Agreements	S			S	S	S	P	S	S	S	S		S	P	S		
	APO10	Manage Suppliers		S		P	S	S	P	S	P	S	S		S	S	S		S
	APO11	Manage Quality	S	S		S	P		P	S	S		S		P	S	S	S	S
	APO12	Manage Risk		P		P		P	S	S	S	P			P	S	S	S	S
	APO13	Manage Security		P		P		P	S	S		P				P			

Figure 3.3. Mapping IT Objectives with Domains

From several images above, it is useful or also has functional benefit as an indicator for determining implementation of domain mapping activities or event by identifying each objective and critical point of the organization, agency, company or institution.

3.3. Identify Business Objectives

Identification of critical points with business objectives in accordance with references of institution vision and mission by referring to COBIT 5 documentation. Explanation of this matter is intended as in presentation in Table 3.1. Identification of Business Objectives.

Table 3.1. Identification of Business Objectives.

No.	Critical Point	No.	Business Objectives	BCS Dimension
1	Compliance with licensing requirements at institutions	11	Business process functions optimization	INTERNAL
2	Service output from established provisions	11	Business process functions optimization	INTERNAL
3	Application operation is hampered by network or connection problems	11	Business process functions optimization	INTERNAL
4	Service is hampered because required documents do not meet applicant's criteria	11	Business process functions optimization	INTERNAL
5	Facilities and infrastructure	13	Manage changing business programs	INTERNAL
6	Online service or email response from institution	14	Productive personnel and operations	INTERNAL

7	Customer Service guidance for individuals in dealing with customer complaints	14	Productive personnel and operations	INTERNAL
8	Operation of IT resources requires technical guidance	16	Skilled and motivated personnel	LEARNING AND GROWTH

Table 3.1. explains mapping of critical points to business objectives according to COBIT 5 rules. Adjustment between critical points and discussion of business objectives aimed at further identification (continuous). Several enterprise goals are related to the BSC (Balance Score Card) dimension where there are 3 goals included in the internal dimension and 1 goal in learning and growth in BSC dimension in the table.

3.4. Identify Information Technology Objectives

This IT objective is implemented after completing the mapping of business objectives with previous components. Just like the previous identification table, the numbers and descriptions also refer to existing mapping image.

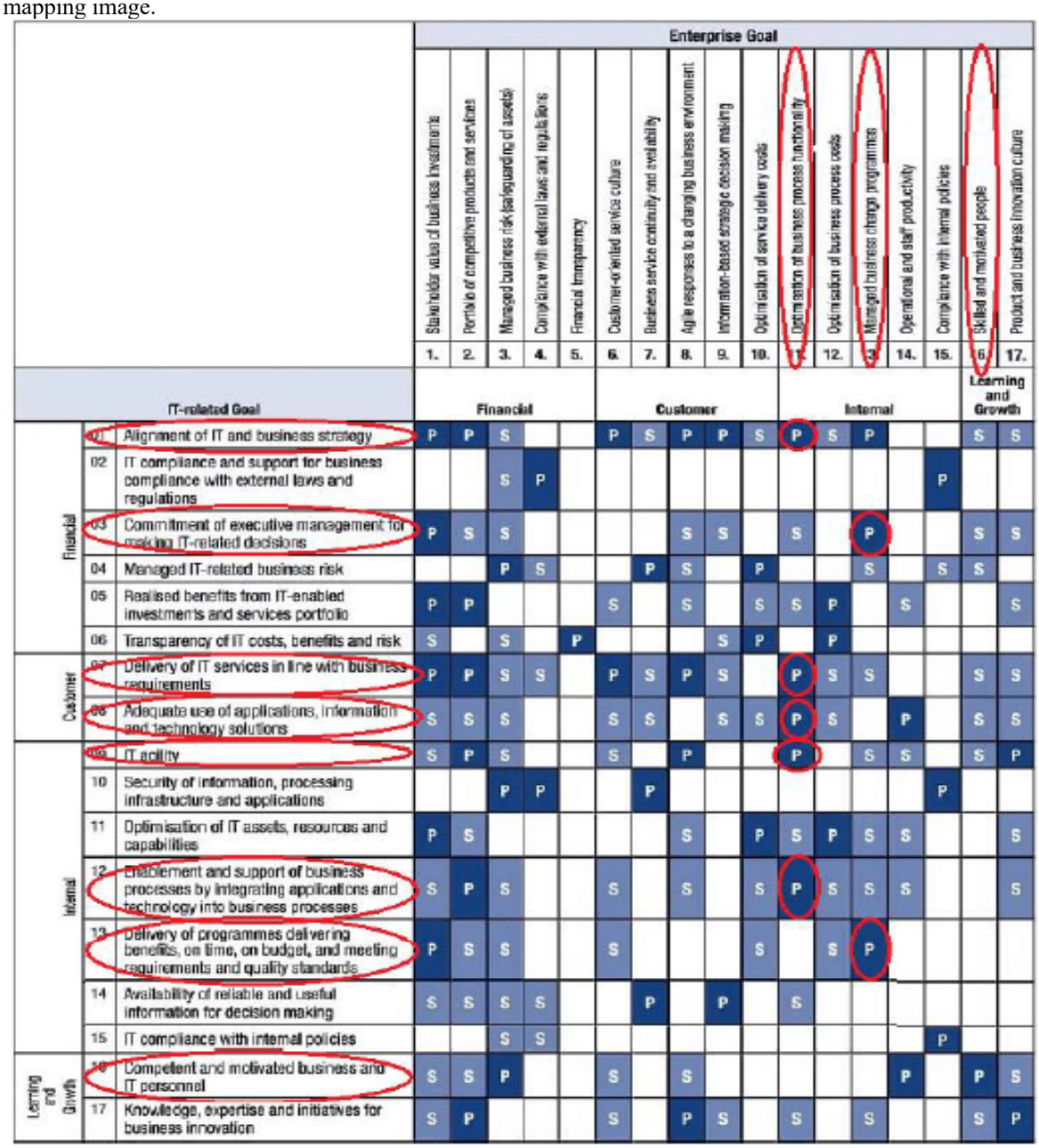


Figure 3.4. Mapping Business Goals to IT-Related Goals

Figure 3.4. explains how to map Business Objectives with IT-Related Objectives. Where letter P stands for Primary and S (Secondary) and are aligned with each other with the BSC (Balance Score Card) dimensions – IT-Related Goals – Business Objectives (Enterprise Goals). IT that has been found from results

of previous mapping, this activity refers to the references in the COBIT 5 Enabling Process book in Step 3, Enterprise Goals Cascade to IT Related Goals.

3.5. Calculating Capability Value

Before the implementation of IT capability measurement, based on framework used, capability is measured by determining attributes on a scale of 0 to 5 as follows.

Table 3.2. Identification of Business Objectives

Levels	Information	Definition
0	*Incomplete*	Process does not achieve goals or there is no definition of the process
1	*Performed*	The process of achieving its goals
2	*Managed*	The process is carried out with good management, including, monitoring, adjustment and planning.
3	*Established*	The process of creating documentation and implementing it properly
4	*Predictable*	Monitored and measured processes to ensure predicted future results
5	*Optimizing*	Monitored and measured processes to ensure predicted future results

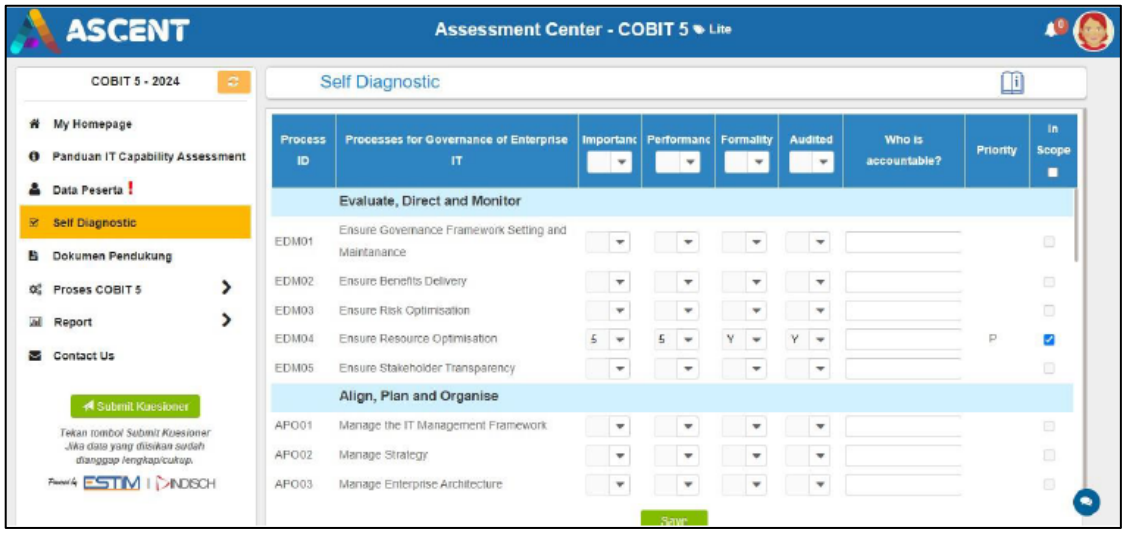


Figure 3.5. Self Diagnostic (ASCENT)

In the following figure 3.5, self-diagnostic display is shown, which author did all based on results of interviews and observations on the research object. An assessment is made of which domains will be priority for measurement later. Once determined, continue with the measurement per domain.

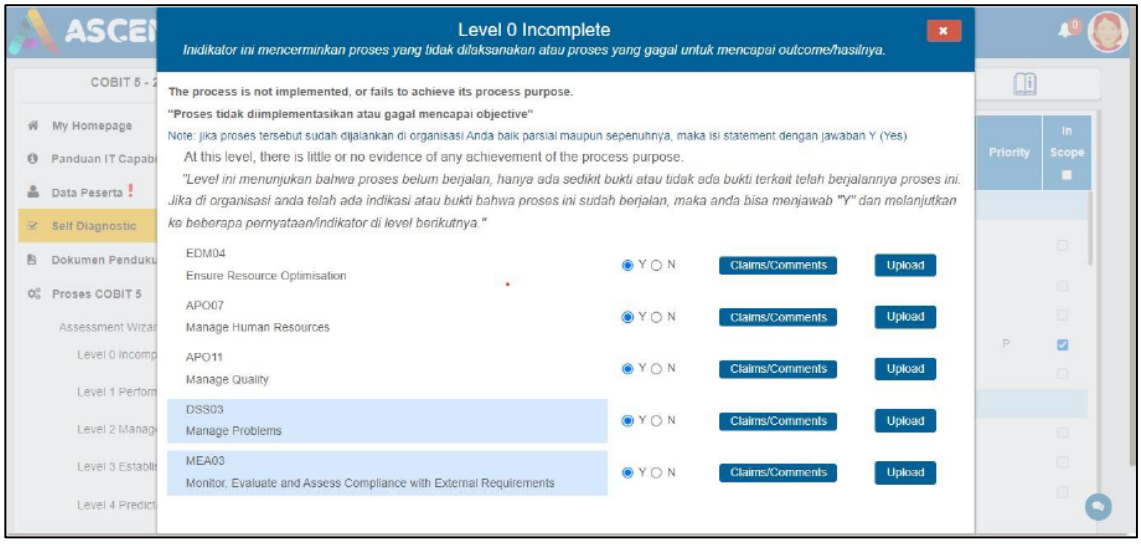


Figure 3.6. Assessment Wizard (ASCENT)

In Figure 3.6, the display above shows filling of each previously selected domain with a Y/N scale. All domains are given questions at each process level. This circumstances which will ultimately determine capability value of a domain.

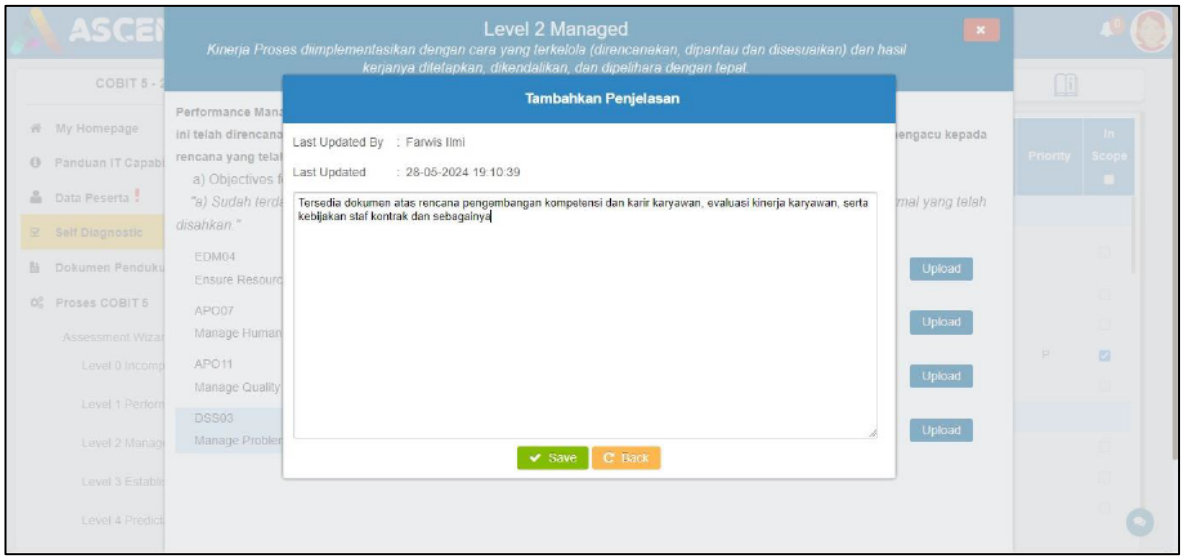


Figure 3.7. Additional Explanation (ASCENT)

In Figure 3.7. is a feature to add explanations for each domain that we have filled in. This is useful to be able to continue process level according to criteria that author has interviewed previously. If no explanation is given, it cannot proceed to the next stage or it can be said that its only reaches that process level. A process is said to have reached a level if the rating scale is in The Largely Achieved or Fully Achieved category.

3.6. Calculating Capability Value

From the results of maturity level measurements carried out, gap results were obtained which showed the interval or distance between the values obtained and the expected values, with the following table display the gap analysis:

Tabel 3.3 Gap Analysis

DOMAIN	DESCRIPTION	CURRENT MATURITY	EXPECTED MATURITY	GAP
EDM04	ENSURING RESOURCE OPTIMIZATION	3,12	3	0,12
APO07	IT HUMAN RESOURCE MANAGEMENT	2,29	3	-0,71
APO11	QUALITY MANAGEMENT	2,39	3	-0,61
DPSS03	PROBLEM MANAGEMENT	2,79	3	-0,21
MEA03	MONITORING, EVALUATING AND ASSESSING COMPLIANCE WITH EXTERNAL REQUIREMENTS	2,91	3	-0,09

From Figure 3.8, the gap analysis graph presented shows several values obtained from maturity level. Values of each domain (area) with expected value of 3.00, which has been targeted by research object and functions as a reference for the findings in the green graph. Red graph shows value of the gap or distance from value found with expected value (expected maturity).

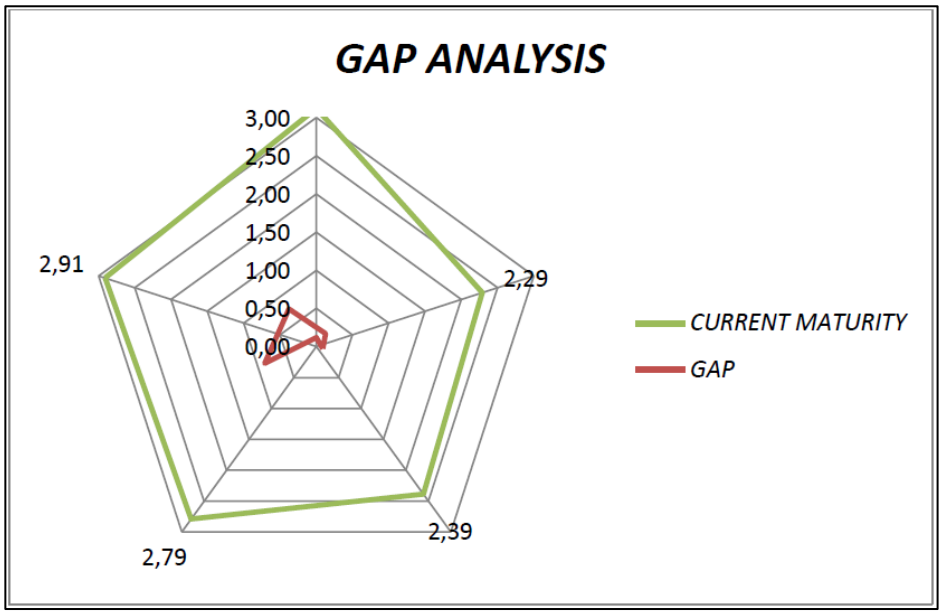


Figure 3.8. Gap Analysis Chart

4. CONCLUSION

From results of research conducted using data collection methods, namely observation of research objects, interviews with related parties, and distribution of questionnaires, the following conclusions and recommendation can be drawn such as the institution has reached capability level 4 – Predicted on EDM.04, APO.07 and APO11. Where the 3 (three) domains in several process attributes still do not meet criteria such as still showing possibility of deviations in several areas that still have minimal reports or documentation and improvements from areas that are reviewed further even though implementation of process has been running well. While for the other 2 (two) domains, namely DSS.03 and MEA.03, they still reach Level 3 (three) – Established which can be defined as the output of this process needs to be further ensured through more extra monitoring and measurement and the mechanism for controlling the process of the practices applied is still said to be suboptimal so that it is necessary to focus on continuous improvement to achieve greater consistency and effectiveness.

Institutions need to review IT process resource allocation and use and identify areas where resources are not being utilized optimally. After which Institutions will focus on improving efficiency and effectiveness in IT resource management. Need to conduct further evaluation of staff competencies and skills to align with IT needs then needs to Identify weaknesses in staff ability to prepare internal training and development plans to improve staff performance. Review existing quality control processes for information technology (IT) services and identify weaknesses in quality management process and implement better quality management practices than current implementation. Optimize the use of incident reporting systems for users to report IT issues quickly and efficiently such as being able to detect problems in real time. Increase awareness for IT team regarding when and how problems should be escalated to a specific management level or expert team. Increase the strength of monitoring and evaluation process against external requirements, and ensure that its implementation is regular and systematic, in order to reduce compliance risks and prevent potential sanctions arising from compliance violations. The output of all process needs to be further ensured through more extra monitoring and measurement and the mechanism for controlling the process of the implemented practices is still said to be suboptimal so that it is necessary to focus on continuous improvement to achieve greater consistency and effectiveness.

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