

Audit of Governance Information Technology Services Using ITIL v3 Focuses on Service Operation Domain in Institution X

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Abstract-Information technology is currently growing very rapidly. Almost all agencies take advantage of the role of information technology. In the X agencies engaged in the social field of information technology as a goal that must be achieved. In order to create good government, an agency must be supported by good IT governance in order that information technology and business objectives are aligned and have added value for the agency. This study aims to measure the governance of IT services. This research is done because the agency X is now using IT services. The existence of good policies and procedures on the insight X can create a good service as well. This study uses the ITIL v3 framework that focuses on Service Operation domain. The ITIL framework is an IT services management guide. Measurement of maturity level using COBIT. The level of maturity in this governance audit is at level 3. Recommendations are given to achieve the expected targets within the ITIL framework.

Keyword- Audit, ITIL V3, COBIT, IT Services

I. INTRODUCTION

Information technology is now experiencing rapid growth. This is evidenced by the number of agencies and companies that utilize the role of information technology. Almost all government agencies that invest in information technology to achieve the goals to be achieved. Utilization of information technology in government agencies must also be considered so as to achieve the desired goal with the maximum. Attention can be how the management of risk and effectiveness and efficiency of resources.

Information technology governance is part of corporate governance where stakeholders have responsibility for aligning the organization's business objectives with IT objectives, IT controls so as to achieve company objectives and controlling and mechanisms for maintaining IT assets (De Haes & Van Grembergen, 2004). The Ministry of Communications and Information Technology has established IT governance in MoCI Regulation No. 41 of 2007 on General Guidelines of National Information Technology Governance to realize good and responsible governance. Therefore,

starting from central and regional agencies should have governance as a benchmark of IT management and services.

Agency X makes information technology a goal to be achieved. In agency X, information technology is developing very rapidly under the planning field. Field planning as a field that invests and manages IT services in agency X. In agency X, the management of IT services has not been implemented and well documented. Institution X also does not have IT governance so it is not known whether IT investment has added value or not. Information technology management is not maximal because there is no fixed standard. Currently, the use of information technology services in agency X is not maximized. This is because the existing fields in agency X require a governance for IT services to be structured and systematic. Good IT governance will be a reference in providing good and quality IT services. The use of IT services can serve as service providers that are aligned with the organization's goals. The existence of IT governance in an agency is certainly expected to ensure that IT services can help achieve agency goals.

The governance designed in this study is based on IT Service Management (ITSM). ITSM is a process to align IT service delivery with business needs. In this study using the framework of ITIL or Information Technology Infrastructure Technology Library. ITIL is a framework with a set of best practice IT governance services. The ITIL framework is used because agency X is a social institution that provides services. The ITIL framework aims to improve the effectiveness and efficiency of IT services, improve the quality of IT services.

Selection of the ITIL framework is based on previous research related to IT service management. IT governance research in agency X using the ITIL framework focuses on Service Provider domains. Domain Service Operation is a domain that contains guides to serve the operations of IT service management.

The formulation of the problem of this research is how the management capabilities of IT services in agency X and how the governance of IT service management in agency X using the framework guidelines ITIL v3 which focuses on the domain Service Operation.

II. LITERATURE REVIEW

1) IT Audit

Information Technology Audit (IT) is one form of operational audit that aims to improve IT governance. The audit is performed by an internal audit by applying the audit technical knowledge, to evaluating the information system units, managing the information resources, developing the application system and then implementing the system and evaluating it. Implementation of a good information technology audit as follows:

- a. Determine the scope and purpose of the audit;
- b. Evidence collection;
- c. Implementation of fit test;
- d. Determination of maturity level.

IT audit needs to be done in order to improve the effectiveness and efficiency within the company. Each company conducts IT audits with reasons to avoid losses due to data loss, data leakage risk, computer misuse, loss due to miscalculation of the calculation and high value of hardware and software investment.

2) ITIL V3

Information Technology Infrastructure Library (ITIL) is a standard issued by the United Kingdom as a framework that is referred to by best practice process and operational management procedures. ITIL is grouped into 2 parts namely Service Support Management and Service Delivery. The objective of this ITIL framework is to increase operational efficiency of IT and customer service quality as it focuses only on customer service and does not at all include the process of aligning corporate strategy with the developed IT strategy.

ITIL version 3 consists of five sections that emphasize the lifecycle management of services provided by information technology including Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Improvement.

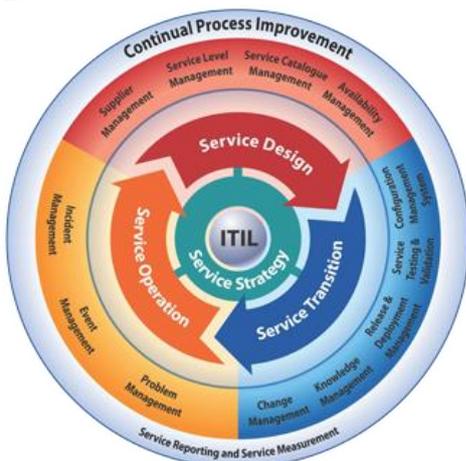


Figure 1. Service Lifecycle ITIL V3

Service Strategy provides guidance to the implementation of ITSM to view ITSM not only as an organization's ability to deliver, manage and operate IT services but also as an

organizational strategic asset. Service Strategy consists of Service Portfolio Management, Financial Management and Demand Management processes.

Service Design aims to provide IT services with benefits to businesses, IT services must be designed in accordance with customer business objectives. Service Design consists of Service Catalog Management, Service Level Management, Supplier Management, Capacity Management, Availability Management, IT Service Continuity Management and Information Security Management.

Service Transition provides guidance to organizations in order to develop IT service design results into operational environments. Service Transition consists of Transition Planning and Support, Change Management, Service Asset and Configuration Management, Release and Deployment Management, Service Validation, Evaluation and Knowledge Management.

Service Operation covers all day-to-day operations of managing IT services. Service Operation consists of Event Management, Incident Management, Problem Management, Request Fulfillment and Access Management.

Continual Service Improvement (CSI) provides an important guide in developing and maintaining the quality of IT services from design, transition and operational processes. CSI combines various methods and principles of quality management one of which is Plan-Do-Check-Act (PDCA) or so-called Deming Quality Cycle.

3) Maturity Model

An analysis of the condition of maturity is measured using the COBIT framework. Measurement of maturity is done using COBIT because the ITIL framework does not have a guide to measure the level of maturity. In Table 1 there is a definition of COBIT maturity level.

Table 1. COBIT Maturity Level

Level	Definition
Level 0 Incomplete process	Organizations at this stage do not implement IT processes that should or have not achieved the objectives of the IT process.
Level 1 Performed process	The organization at this stage has successfully carried out IT processes and IT process objectives have been achieved.
Level 2 Managed process	Organizations at this stage in carrying out the IT process and achieving its objectives are implemented in a well managed manner. So there is more assessment because the implementation and achievement is done with good management. Management here means its implementation through the process of planning, evaluation and

	adjustment for the better.
Level 3 Established process	The organization at this stage has IT processes that are standardized within the overall organization. This means that there is a standard IT process that applies throughout the organization.
Level 4 Predictable process	Organizations at this stage have been running IT processes within definite boundaries, such as time limits. These limits result from measurements that have been made during the implementation of the IT process before.
Level 5 Optimizing process	At this stage the organization has made innovations and made continuous improvements to improve its capabilities.

III. RESEARCH METHODOLOGY

The research methodology discusses the stages of audit implementation. There are several stages done in the IT service audit. The stages are done so that the audit process goes according to plan. In Figure 2 there are stages of audit implementation.

The first stage is the planning stage. At the planning stage done the formulation of problems, objectives and limitations of the problem. In addition, a literature study was also conducted.

The second stage is the domain selection stage. At this stage organizational goals are aligned with business goals, IT objectives and IT processes. After that mapping between COBIT and ITIL.

The third stage is data collection. In this research data collection is done with 2 (two) ways that is interview and survey by using questioner.

In the fourth stage is processing and analysis. At this stage the calculation of the level of maturity, expected targets and gap analysis (gap).

In the fifth stage is a recommendation. Recommendations are given aims in order to achieve the desired target.

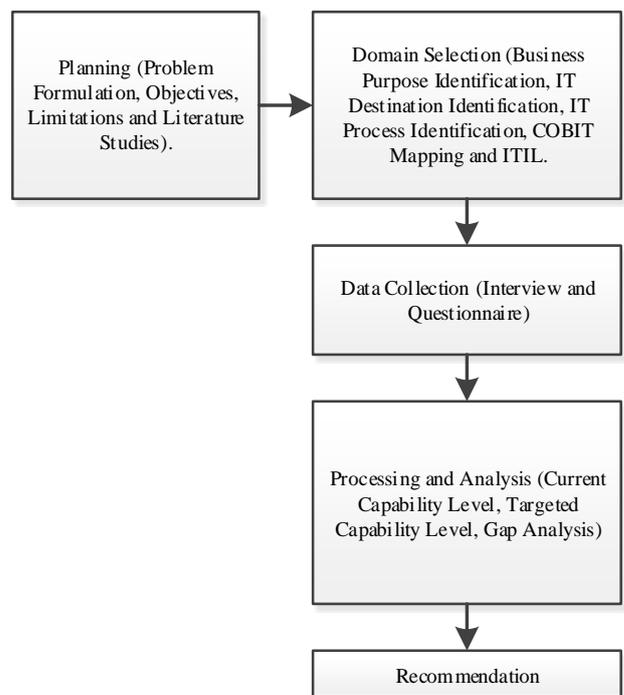


Figure 2. Stages of Audit Implementation

IV. ANALYSIS AND RESULT

1) Respondents

Respondents who fill the questionnaire in this study as many as 32 people. Respondents selected were respondents who had links with IT services in agency X. In Table 2 there were number of respondents.

Table 2. Number of Respondents

No	Title	Total
1	Head of Agency	1
2	Secretary of the Agency	1
3	Head of Division	5
4	Section Chief	15
5	Staff	10
Total		32

2) Audit Design

To create a good IT plan required a COBIT mapping of the ITIL framework in the Service Operation domain. Here is an audit plan on the domain Service Operation.

Table 3. Domains and Sub Domains

Domain/Sub	Code
Service Operation	1
Event Management Process	1.1
Incident Management	1.2
Request Management	1.3

Access Management	1.4
Problem Management	1.5
Application Management	1.6
IT Management	1.7

In Table 3 it is explained that the Service domain has seven sub domains that will be used as reference in the implementation of the audit. Seven sub domains ie Event Management Process, Incident Management, Request Management, Access Management, Problem Management, Application Management and IT Management.

3) Calculation of Current Maturity Level

The results of the questionnaire filling can be seen in Table 4 which contains the current maturity level.

Table 4. Current Maturity Level

No	Domain/Sub	Value
1.1	Event Management Process	3.10
1.2	Incident Management	2.99
1.3	Request Management	3.25
1.4	Access Management	3.36
1.5	Problem Management	3.28
1.6	Application Management	3.15
1.7	IT Management	3.22
	Average	3.19

In Table 4 it is explained that each sub domain in the Service Service domain is at maturity level 3 (Established Process). At this level, agency X already has a standardized IT service within the scope of the whole agency, which means that there is already an appropriate IT service on agency X.

4) Gap Analysis

Having known the current level of maturity, determining the target level of maturity so as to cause a gap as shown in Table 5.

Table 5. Gap Rate

No	Domain/Sub	Maturity Level		
		Current	Target	Gap
1.1	Event Management Process	3.10	5	1.90
1.2	Incident Management	2.99	5	2.01
1.3	Request Management	3.25	5	1.75
1.4	Access Management	3.36	5	1.64
1.5	Problem Management	3.28	5	1.72

1.6	Application Management	3.15	5	1.85
1.7	IT Management	3.22	5	1.78
	Rata-Rata	3.19		

In Table 5 it is seen that there is a gap in each sub domain Service Operation. The existence of the gap so that the necessary recommendations for improvement to achieve the expected target. In Figure 3 there is an illustration of current and expected maturity levels.



Figure 3. Illustration Current Maturity Level and Target

In Figure 4 we can see the graph of the current level of maturity and expected maturity level.

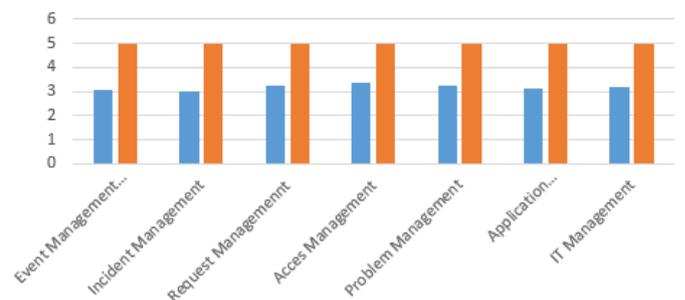


Figure 4. Graph of Current and Targeted Maturity Rate

5) Recommendations

The recommendations are given to achieve the expected target as follows:

1. There is support and active role both from central and regional related to IT service.
2. The existence of IT staff who have the skills to handle certain problems related to IT services.
3. The existence of clear guidelines and procedures in the implementation of IT services.
4. The existence of archives or records related to how IT services in agency X.

V. CONCLUSION

The value obtained from the IT governance management audit on the X Institution focusing on the Service domain is 3.19 located at level 3 (Established Process). The

organization at this stage has IT processes that are standardized within the overall organization. This means that there is a standard IT process that applies throughout the organization.

REFERENCES

- [1] ISACA, IS Standards, Guidelines and Procedure for Auditing and Control Professionals., United State of America:ISACA, 2009.
- [2] ISACA, COBIT 5 : A Business Framework For The Governance and Management of Enterprise IT USA: ISACA: 20112.
- [3] TSO, ITIL Service Operation., Norwich: TSO (The Stationery Office), 2011.
- [4] IT Governance Institute Team, “COBIT Mapping; Mapping ITIL V3 with COBIT 4.1 ”, United States of America : IT Governance Institute, 2008.
- [5] Office of Government Commerce (OGC), “ ITIL version 3 Service Operation”, The Stationery Office - TSO, London, 2007.
- [6] HM Jogiyanto and Wily Abdilah, “Sistem Tata Kelola Teknologi Informasi”, Yogyakarta : Andi. 2011.
- [7] Sarno Riyanarto, “Audit Sistem dan Teknologi Informasi”, Surabaya : ITS Press. 2009.
- [8] Ari Putra Wijaya, Putu Widiadnyana, Ida Bagus Alit Swamardika, “Audit of Information Technology using ITIL V.3 Domain Service Operation on Communications and Information Technology Agency”, International Journal of Engineering and Emerging Technology, vol 1 no 1, 2016.
- [9] Komang Budiarta, Adi Panca Saputra Iskandar, Made Sudarma, “Audit Information System Development using COBIT 5 Framework (case Study: STMIK STIKOM Bali) ”, International Journal of Engineering and Emerging Technology, vol 1 no 1, 2016.
- [10] Peraturan Daerah, accessed on 15 November 2017.
- [11] De Haes, S., & Van Grembergen, W. (2004). IT Governance and its Mechanisms.
- [12] Luki Aisha Kusuma Wardani, Murahartawaty, Luthfi Ramadani, “Perancangan Tata Kelola Layanan Teknologi Informasi Menggunakan ITIL versi 3 Domain *Service Transition* Dan *Service Operation* Di Pemerintah Kota Bandung”, Journal of Information Systems Engineering and Business Intelligence, Vol. 2 No 2, 2016.
- [13] Diana Trivena Yulianti, Dian Anggraini, “ Analisis Pengelolaan TI PT. X Dengan Menggunakan ITIL v3, Service Operation”, Jurnal Sistem Informasi Vol 5 No 2, 2010.
- [14] Idria Maita, Sapri Akmal, “Analisis Tata Kelola Teknologi Informasi dengan *Best Practice* ITIL v3 *Service Operation*”, Jurnal Rekayasa dan Manajemen Sistem Informasi, Vol 2 No 1, 2016.
- [15] Abdelaali Himi, Samir Bahsani, Alami Semma, “ The IT Service Management according to the ITIL framework applied to the enterprise value chain”, International Journal of Computer Science Issues, Vol 8 Issue 3 No 2, 2011.
- [16] Ahmad Faiz Zavier, Haryanto Tanuwijaya, Budi Hermawan, “Audit Pengelolaan Layanan Teknologi Informasi Berdasarkan ITIL pada IT Marketing & Trading (M&T) PT. Pertamina (Persero) Marketing Operation Region V Surabaya”, Jurnal Sistem Informasi Vol 3 No 2, 2014.
- [17] Idena, J, dan Eikebrokk, T.T., 2013, Implementing IT Service Management: A systematic literature review, International Journal of Information Management 33, 512–523.
- [18] Didin Herlinudinkhaji, April Firman Daru, “Audit Layanan Teknologi Informasi Berbasis Information Technology Infrastructure Library (ITIL), Jurnal Informatika UPGRIS Vol 1 No 2, 2015.
- [19] Silitonga, Tumpal Paradonga dan Achmad Halil Nor Ali. 2010. Sistem Manajemen Insiden pada Program Manajemen Service desk dan Dukungan TI berdasarkan Framework ITIL v3. Institut Teknologi Sepuluh Nopember : Surabaya.
- [20] AR Anggun Cahyaningtyas, Yani Rahardja, Agustinus Fritz W, “Audit Sistem Informasi dengan ITIL Version 2 Sub Domain Service Desk, Incident Management dan Problem Management di Bidang Keuangan Dishubkombudpar Kota Salatiga, Jurnal Teknologi Informasi-Aiti Vol 9 No 2, 2012.