Analysis of E-Ticketing Service Information System Application using COBIT 5 Framework

Philipus Novenando Mamang Weking[1*], I Gusti Ngurah Wira Partha[2], and Ida Bagus Alit Swamardika[3]

[1,2]Department of Electrical and Computer Engineering, Post Graduate Program, Udayana University
[3]Department of Electrical and Computer Engineering, Udayana University
*Email: gandamayudarius55@gmail.com

Abstract --- The need for goods is a major commodity for individuals, groups and agencies. Goods services are one of the main factors in managing user needs regarding goods repairs for a longer use. PT. Z Bali is a part company of PT. W Bali Group is specialized in goods service. Service delivery of goods has been assisted by an information system in the form of an application called E-Ticketing Service. The importance of using applications in services needs to be reviewed for evaluating the use of the E-Ticketing Service application information system. in this study, the standard use for performance evaluation process that is COBIT 5 framework where the chosen domain is the DSS domain (Delivery, Service, and Support). COBIT 5 can help in determining the needed requirement in the audit process. Based on the evaluation of the use of the E-Ticketing Service application, the capabilities obtained are Level 2 Managed. To improve the value of capabilities can be done by giving advice in the form of recommendations to increase the usability of E-Ticketing Service application services.

***Keywords*— Audit, Goods, Service, E-Ticketing, COBIT 5**

I. INTRODUCTION

The need for goods is increasing along with technological developments. This increase is accompanied by increased maintenance of goods. Maintenance of goods is realized by the existence of goods services in each company to help users in maintaining the needs of goods to match the wishes of users in terms of reducing the risk of purchasing new goods. In the process of goods service, sometimes services process are hampered due to usage of conventional or manual processes so that the time needed is very much resulting in a hindrance in the service process. To overcome this, along with the advancement of information system technology, the need for information systems that can help process services. The information system is loaded in the form of an application. PT. Z Bali, one of the subsidiaries in PT. W Bali Group which handles goods services has made an information system application that helps goods services. The application is called E-Ticketing Service. The use of the E-Ticketing Service application at PT. Z Bali has helped in the service process so that the process can be carried out and does not waste much time in the process. Over time, the PT. Z Bali feels that an evaluation is needed regarding the use of the E-Ticketing application. One reason for the evaluation is because there are still employees who use manual methods to service goods.

Based on this, the evaluation is carried out by conducting an audit using COBIT 5 as a framework through mapping the company's objectives into several business objectives, IT goals and determining the domain used, namely the DSS domain [1]. Hopefully, this research is to be able to increase the use of the E-Ticketing Service application to the fullest.

II. LITERATURE STUDY

A. Related Works

In this study, several related studies were used as references. in the audit research on the E-KTP where the study discusses the information system audit of E-KTP services conducted in the office using COBIT 5 and Domain DSS as a measure of evaluation where the results of the analysis of the research are improving E-KTP process services [4].

The audit process on Performance measurements in the application was conducted to assess the application in the sales process, purchasing process, and inventory process so that the performance of the application increased from the previous one [5].

Service in the information system in its standard requires evaluation of data security during the use of the information system. This is intended to measure how effective the security role is in information systems [7]. This is also implemented in networking systems management which need to be evaluated in order to increase and maximizing IT resource to control the risk that might be happened in unexpectable situations [10]

(p-issn: 2579-5988, e-issn: 2579-597X)

B. *Audit of Information System*

Information system audit is a way to prove and conduct evaluations to determine whether an information system has been able to protect important parts of the organization including assets, data integrity and other things [2]. IT governance in a company is expected to increase over time. As such, service in information systems is the key to the company's progress [6]. Information technology is implemented to simplify work so that work is quickly resolved. The implementation of IT often runs a time when a comprehensive evaluation is needed to improve the progress of a company in accordance with it's goals, vision and mission [8] [9].

C. *COBIT 5*

COBIT 5 is a framework used in the audit process to help companies achieve their goals. From the results of the process, information will be obtained by the company to determine IT investment in the future. Information must fulfill seven information criteria; namely efficient, effective, intact, confidential, reliable, and obedient to the policies made. In the process of using, COBIT 5 has 5 principles as in Figure 1 [3].

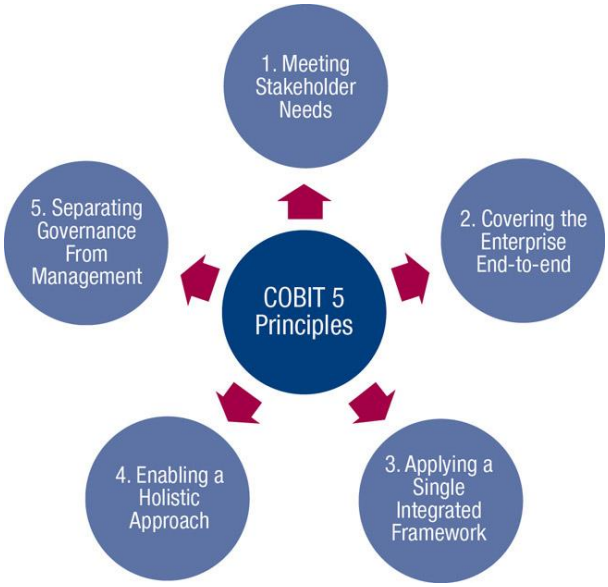

Fig 1. COBIT 5 Principles (ISACA, 2012)

COBIT 5 in determining the value of capability levels for the audit process, there are several levels to measure the capability process based on the results of the data collection carried out in the audit. These levels show how much the company achieves in IT governance to achieve the company's vision and mission. Capability levels are shown in Table I [3].

TABLE I
CAPABILITY LEVEL

Level	Description
Level 0-Incomplete	The process in not reached
Level 1-Performed	The process already achieved proposes
Level 2-Managed	This process improved with some achievements planning, monitoring, etc
Level 3-Establised	The process is implemented following a defined process that allows the achievement of the process outcomes.
Level 4-Predictable	The process is greatly improved so the company can predict what will be do in next step
Level 5-Optimizing	This process reached an optimal process include all achievements from previous level

The first step taken in this research is Literature Study. This stage contains a collection of several journals related to research that are used as references.

B. *Collecting Data*

The next stage is the method of data collection which is divided into 3 parts, namely Interview, Observation and Questionnaire. Interviews are used to get data directly through the sources needed in the study. In this study, the interview was addressed to the head service at PT. Z Bali because it is directly related to the research objectives. Based on the results of the interview, the company's goals from the service section of PT. Z Bali is "Optimizing information technology services in the field of goods service and the availability of adequate and responsible HR technicians through the implementation of the latest information system to get solutions quickly and effectively." The company's objectives are then identified and mapped into business objectives according to COBIT 5 guidelines which result is shown in Table II.

TABLE II
MAPPING OF ENTERPRISE GOALS

Enterprise Goals	Mapping Results
Financial	3. Managed Business Risk (Safeguarding of assets)
Customer	7. Business Service continuality and availability
Internal	14. Operational and Staff Productivity
Learning and Growth	16. Skilled and Motivated People

Business Objectives are then mapped to the IT objectives so as to get results such as Figure 2

NO	Tujuan Bisnis	Tujuan TI
3	Managed Business Risk	4, 10, 16
7	Business Service continuality and availability	4,10,14
14	Operational and Staff Productivity	8, 16
16	Skilled and Motivated People	16

Fig.2 IT Goals

C. *Choose Domain to Use*

The research was continued by determining the domain based on the IT objectives obtained. The purpose of IT is then mapping the domains in COBIT 5.

NO	TUJUAN TI	Domain
4	Managed IT-Related Business Risk	EDM03, APO10, APO12, APO13, BAI01, BAI06, DSS01, DSS02, DSS03, DSS04, DSS05, DSS06, MEA01, MEA02, MEA03
8	Adequate use of applications, information, and technology solutions	APO04, BAI05, BAI07,
10	Security of information, processing infrastructure and applications	EDM03, APO12, APO13, BAI06, DSS05
14	Availability of reliable and useful information of decision making	APO09, APO13, BAI04, BAI10, DSS03, DSS04
16	Competent and motivated business and IT personnel	EDM04, APO01, APO07

Fig.3 Domain Mapping

synchronizes with the company's objectives. In this study, we used the DSS domain to carry out the audit process. The DSS domain consists of 6 parts from DSS01 to DSS06.

After determining the domain, we then made a questionnaire based on the questions in the DSS domain. In filling out the questionnaire, we selected 4 respondents in the service section produced in Table III.

TABLE III
LIST OF QUESTIONNAIRE RESPONDENTS

NO	Name	Position
1	Agus	Head Service
2	Wijaya	Service Administrator
3	Supri	Senior Service Technician
4	Galih	Junior Service Technician

D. *Capability Level Results*

The capability level calculation results are obtained based on calculation data from the questionnaire results that have been distributed to respondents from the DSS domain questions.

NO	Domain DSS	Existing Capability	Expectable Capability
1	DSS 01 Manage Operation	3	4
2	DSS 02 Manage Service Requests and Incidents	3	4
3	DSS 03 Manage Problems	2	4
4	DSS 04 Manage Continuity	2	4
5	DSS 05 Manage Security Services	3	4
6	DSS 06 Manage Business Process Controls	3	4
	Nilai Kapabilitas :	2,7	4

Fig. 4 Capability Results

After successfully obtaining capability values from the questionnaire results, the next step is to make a GAP analysis. GAP analysis is used to see how much distance between existing capabilities and expectable capabilities.

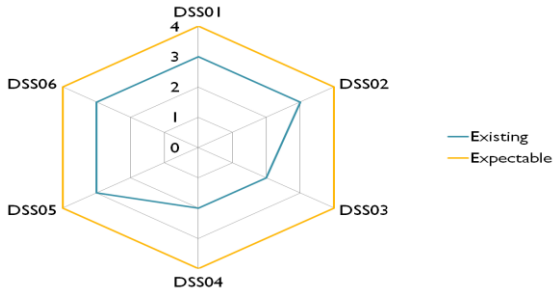

Fig.5 Gap Analysis

The results shown in Figure 5 indicate that the capability value obtained is 2.7 of the expected capability value is 4 so that the GAP value of the capability is 1.3.

E. *Recommendations*

Based on the results of capability calculations in the DSS domain, recommendations can be given based on an analysis of each part of the DSS domain with the company's objectives and problems encountered.

1. DSS01 Manage Operations : In this part of the domain, based on the results of the analysis, the need for detailed management of the use of E-Ticketing Service in making service reports is due to the absence of detailed reports from each service using the E-Ticketing Service application.
2. DSS02 Manage Service Requests and Incidents : The results of the analysis on this domain are to make a systematic report on the demand for service services as a comparison with service reports in the application to avoid errors in report writing.
3. DSS03 Manage Problems : The analysis results for this domain recommend reviewing the handling of service issues in the application and updating SOP standards in improving efficiency.
4. DSS04 Manage Continuity : Reviewing the

sustainability of business processes in service services to determine the level of effectiveness and review continuity use of E-Ticketing Service applications.

5. DSS05 Manage Security Services : The results of the analysis for this domain are referred to as recommendations for limiting the use of access rights where the E-Ticketing Service can only be accessed by the service that aims to ensure data service security.
6. DSS06 Manage Business Process Controls : In this domain, recommendations are given in the form of business process control from service applications by documenting the application and conducting training for the use of applications in certain time regarding goods service transactions.

IV. Conclusion

From the results of the analysis of this study, there are several conclusions that can be taken:

1. The results of the research analysis show that the capability process of the E-Ticketing Service application is at Level 2 (Managed) with a value of 2.7 which means the process of using the E-Ticketing Service application at PT. Z Bali has been carried out according to planned standards and monitoring data.
2. The process of using the E-Ticketing Service application is running according to the procedure. The need to increase the value of capability, especially in the DSS03 and DSS04 domains in handling service problems and the continued use of the application from recommendations given in order to help increase the value of capabilities so it will become better than before.

References

[1] Z.E. Anarki, B. Rahmad, S.T.,M.T. and M. T. Kurniawan, S.T.,M.T, "Audit Keberlangsungan Layanan Pada Perusahaan Jasa Pengiriman Berbasis Cobit 5 dan National Institute of Standards and Technology (NIST)", e-Proceeding of Engineering : Vol.2, No.2, 2017, p.5515-5521.

[2] Weber, Ron. *Information System Control and Audit*, The University Queensland, Prentice Hall, 2003.

[3] ISACA. *COBIT 5: A Business Framework for Governance and Management Enterprise*. 2012.

[4] Tridoyo, and A.F. Wijaya, "Analysis of Information Technology Governance e-KTP using COBIT 5 Framework", Satya Wacana Christian University, 2017.

[5] R. Wijaya, and J.F.Andry, "*Performance measurement of JP soft application using COBIT 5 framework*" Jurnal Ilmiah Teknologi Sistem Informasi UNIPDU, 2017, p.83-93.

[6] Wella, "Audit Sistem Informasi Menggunakan COBIT 5.0 Domain DSS pada PT. Erajaya Swasembada, TBK", ULTIMA InfoSys Vol. VII No. 1, 2016.

[7] R.K.Candra, I. Atastina, and Y. Firdaus, "Audit Teknologi Informasi menggunakan Framework COBIT 5 Pada Domain DSS (Delivery, Service, and Support) (Studi Kasus : iGracias Telom University)", e-Proceeding of Engineering : Vol. 2 No. 1 April, 2015, p.1129

[8] K. Budiarta, A. P. S. Iskandar, and M. Sudarma, "Audit Information System Development using COBIT 5 Framework", International Journal of Engineering and Emerging Technology (IJEET) Vol. 1 No. 1 July-December, 2016.

[9] S.I. Murpratiwi, A.W. Gustina, and I. C. Dewi, "Evaluation of using Information Technology in STD Bali with ISO 20000 and COBIT 5 Framework", International Journal of Engineering and Emerging Technology (IJEET) Vol. 1 No. 1 July-December, 2016.

[10] I.K. Nisrina, I.J.M. Edward, and W. Shalannanda "IT Governance Framework Planning Based on COBIT 5", IEEE, 2016.