

Audit of Population Administration Information System Risk (Case Study: City of Cimahi Population Service)

Iqbal Wijaya¹, Muhammad Rozahi Istambul²

Information System Department, Engineering Faculty
Widyatama University, Bandung, Indonesia

¹ iqbal.wijaya@widyatama.ac.id, ² rozahi.istambul@widyatama.ac.id

ARTICLE INFO

Article history:

Received December 27, 2019

Revised on January 6, 2020

Accepted February 15, 2020

Keywords:

Information Systems, Audit, Cobit 5, Risk,
Risk Analysis

ABSTRACT

Cimahi City Population Service is one of the government agencies implementing population administration and is part of the public service. By implementing a good information system at the City of Population Office of Cimahi, it will improve the quality of services at the agency. The Population Administration Information System (SIAK) that has been implemented at the City Population Service in Cimahi has problems when the database cannot be accessed, the SIAK application cannot be run properly. Use that exceeds memory capacity can also cause SIAK errors such as too many electronic certificate requests that can overload the server, and SIAK cannot run due to errors in the attached network cable. It will cause risks that can disrupt public administration services so it needs to be measured and evaluated to find out whether the information technology implemented is appropriate and able to facilitate business processes. For this reason, it is necessary to conduct an information technology audit. The DSS domain used in this information system audit such as DSS01 Managing Operations. The audit framework used is COBIT 5 DSS domain (Deliver, Service, and Support) which is suitable for evaluating the risks that exist in SIAK. The DSS domain is considered to be following the existing information technology conditions in the current Population Office of Cimahi City. With the current state of information technology in the Population Service and the need to deliver services, serve and support information technology services.

Copyright © 2020

Association for Scientific Computing Electronics and Engineering.

All rights reserved.

I. Introduction

Cimahi City Population Service is one of the government agencies implementing population administration and is part of the public service. By implementing a good information system at the City of Population Office of Cimahi, it will improve the quality of services at the agency. The Population Administration Information System (SIAK) that has been implemented at the City of Population Office of Cimahi has problems when the database cannot be accessed, so the SIAK application cannot be run properly. The use of which exceeds the memory capacity can also make SIAK hampered such as too many electronic certificate requests will overload the server, and SIAK cannot run due to an error in the attached network cable or the network cable is not good. Risks that arise can make public administration services disrupted so that it will cause risks and therefore it needs to be measured and evaluated to find out whether the implemented information technology is appropriate and able to facilitate its business processes. For this reason, it is necessary to conduct an information technology audit. The DSS domain used in this information system audit such as DSS01 Managing Operations [1]. The audit framework used is COBIT 5 DSS domain (Deliver, Service, and Support) which is suitable for evaluating the problems that exist in SIAK.

The DSS domain is considered to be following the existing information technology conditions in the current Population Office of Cimahi City. With the condition of information technology in the current

Population Service and the need to deliver services, serve, and support information technology services, the Domain DSS that is deemed appropriate with this[1].

II. Related Research

The research to be carried out will consist of several audit phases consisting of planning, data collection, data analysis, and results [1]. This research methodology will be explained in Figure 1 show.

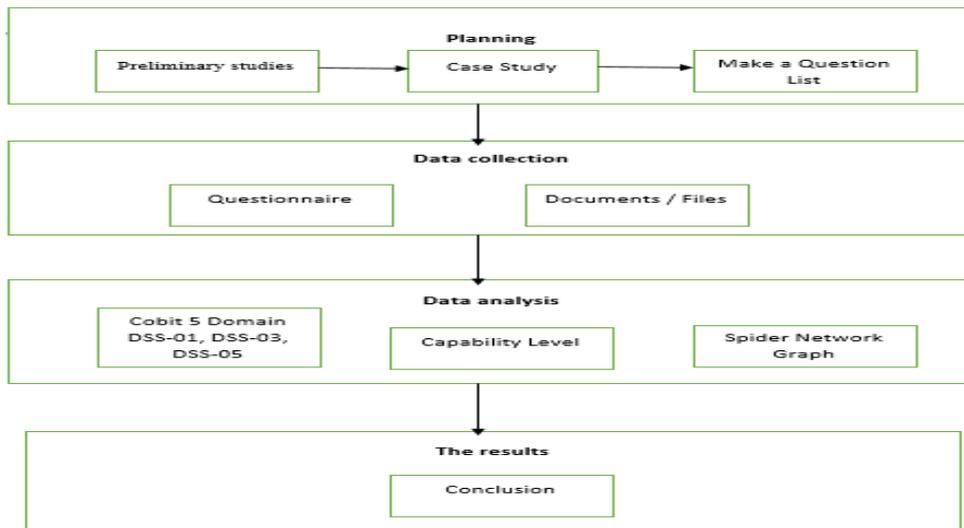


Fig 1 Research methods

Information technology audit is the process of gathering and evaluating evidence to determine whether the computer-based information system (CBIS) used has been able to protect organizational assets, be able to maintain data integrity, and can help achieve organizational goals effectively, and use human resources effectively efficient [2].

The information system is a system within an organization that meets the needs of daily transaction processing, supports operations, is managerial and strategic activities of an organization and provides certain external parties with the necessary reports [1]. Information System Audit is the process of evaluating and collecting evidence to determine whether the information system can protect existing assets and whether to maintain data integrity [3].

COBIT is a standard that is considered the most complete and comprehensive as an IT audit framework because it is developed on an ongoing basis by professional auditor non-governmental organizations spread across almost all countries. Where in each country built chapters that can manage these professionals. The target users of the COBIT framework are organizations/companies from various backgrounds and external assurance professionals. Managerially targeted users [4].

Data collection, at this stage of data collection stages, is carried out to obtain data and evidence to determine the results of audits on the company. The steps taken are the questionnaire is a data collection tool compiled by researchers in written form. Based on the data needs to be searched for in the DSS domain framework COBIT 5 [5].

Capability aims to assess whether results. After all, the results of the questionnaire are entered into the audit form, then the next step that will be taken is to recap the existing results and determine the level of each domain by rounding [1].

Risk is a hazard: risk is a threat or likelihood of an action or event that has an impact that is contrary to the objectives to be achieved. Risk is also an opportunity: risk is the opposite side of the opportunity to achieve goals [6].

Risk Management includes the stages of risk management planning, risk identification, risk analysis, risk management, and monitoring of risks [7]. Risk identification is the first step in implementing risk management and is an important stage in project implementation. With the identification of risks, it is known what risks occur during project implementation from the time the project starts working until the

project is handed over. Furthermore, it will be known how potential the risk is in influencing the achievement of project objectives [8].

SIAK (Population Administration Information System) is an information system that is compiled based on procedures and uses special standardization that aims to organize the population administration system to achieve orderly administration in the occupation field [9]. The management of SIAK aims to improve the quality of the services of Population Registration and Civil Registration, to provide data and information on a national and regional scale regarding the results of population registration and civil registration which are accurate, complete, up-to-date and easily accessible [10]

III. Discussion

A. Problem Analysis

In determining the conditions at which level the activities contained in the audit work form are located, an analysis is carried out in the form of finding the right level on the questionnaire results form. Determination of the level in each of these activities is done by selecting the mode value or the value that most appears in each activity [1]. The following are the existing conditions in the Department of Population and Civil Registry

- The Population Administration Information System (SIAK) that has been implemented at the City Population Service of Cimahi has problems when the database cannot be accessed, the SIAK application cannot be run properly so solving the problem using the domain DSS-01.01 Running Operational Procedures with questionnaire questions and checking documents/files that show SOPs/standards/policies
- SIAK that has been implemented at the City of Population Office of Cimahi has problems with the usage that exceeds the memory capacity, it can also hamper SIAK such as too many electronic certificate requests that will overload the server so that the problem is solved using the DSS-01.03 domain. Monitoring IT Infrastructure with questionnaire questions and checking documents/file that shows the SOP/standard/policy
- SIAK that has been implemented at the City of Population Office of Cimahi has experienced SIAK problems that cannot run due to errors in the attached network cable or network cable so that the problem is resolved using the domain DSS01-05 Managing Facilities with questionnaire questions and checking documents/files which shows SOP/standard/policy

B. Data Analysis

In this stage, an analysis is carried out based on the results of collecting evidence in the form of a questionnaire. The number of questionnaires submitted was 5 to the Data Services Manager, Head of Data Administration and Utilization Division, Head of Population Administration Information System Section, System and Network Management, and Data and Information Analysis. The information technology process identified by Cobit 5 can be measured in terms of its maturity. Capability Level provided by Cobit consists of 6, namely levels 0 to 5 [11]. Rating Criteria Level 0 Not done or failed. Level 1 Done but there is no management Level 2 Done, there are planning and monitoring then the work is well managed. Level 3 Performed, written activities in SOPs/policies / rules or have application standards, and there is an appropriate allocation of responsibilities and resources. Level 4 Done, written activities in SOP/policy/rules and produce optimal service/information then monitored and analyzed. Level 5 Done, there are innovations and strategies for developing activities, measured their effects on business goals and evaluated [1].

Table 1 Questionnaire DSS-01.01

DSS-01.01 Running Operational Procedures							
Activity	0	1	2	3	4	5	Level
Maintaining IT Service Operation Procedures				5			3

Activities that go according to schedule	5	4
Verify that processing data is received and processed in a complete, accurate and timely manner	1	4
Ensure security standards according to a data request, processing, storage, and output.	1	4

From the table, some values have already been selected by respondents such as Maintaining Procedures at level 3 because of the number of respondents who chose level 3 as many as 100% of respondents and based on existing conditions at the agency, level 3 which means that the procedures and activities that have been written in the SOP as well as the allocation of responsibilities and the right resources. Activities on the schedule are at level 4 because of the number of respondents who chose level 4 as many as 100% of respondents, level 4 which means it has been carried out, written activities in the SOP and producing optimal service/information are then monitored and analyzed. Verifying data at level 4 was chosen because the number of respondents who chose level 3 was 10% while level 4 was chosen by 90% of respondents. Level 4, which means that it has been carried out, written activities in the SOP and producing optimal services/information are then monitored and analyzed. The safety standard is at level 4 because the number of respondents who chose level 4 is 100% of respondents. After all, the written activities in the SOP have been carried out and the optimal service/information is then monitored and analyzed.

Table 2 Questionnaire DSS-01.03

DSS-01.03 Monitor IT Infrastructure							
Activity	0	1	2	3	4	5	Level
Identify the level of information recorded based on risk and performance				1	4		4
Maintain a list of infrastructure assets that need to be monitored based on service importance.				5			3
Identify violations and event conditions				5			3
Make an event log and maintain it within a certain period for further investigation				1	4		4

From the table, some values have already been chosen by respondents such as Identifying Information at level 4 because 10% of respondents chose level 3 while 90% of other respondents chose level 4 which resulted in level 4 because they appeared the most, level 4 which means already carried out, written activities in the SOP and producing services / optimal information is then monitored and analyzed. Maintaining the Asset List is at level 3 because of the number of respondents who chose level 3 as much as 100% of respondents, level 3 which means that the procedures and activities written in the SOP have been carried out and there is an appropriate allocation of responsibilities and resources. Identifying Violations is at level 3 because of the number of respondents who chose level 3 as many as 100% of respondents, level 3 which means that the procedures and activities that have been written in the SOP have been carried out and there is an allocation of responsibilities. Making an Event Log at level 4 was chosen because the number of respondents who chose level 3 was 10%

of respondents while level 4 was chosen by 90% of respondents. Level 4, which means that it has been carried out, written activities in the SOP and producing optimal services/information are then monitored and analyzed.

Table 3 Questionnaire DSS-01.05

DSS01-05 Manage Facilities							
Activity	0	1	2	3	4	5	Level
Create an IT facility management mechanism if the power source is cut off				4	1		3
Ensuring that the cable systems for IT facilities have good protection.					4	1	4
Align existing IT facilities with health and safety guidelines				1	4		4
Giving IT staff an understanding of the safety guidelines for utilizing IT facilities					5		4

From the table, some values have already been selected by respondents such as Making a Management Mechanism at level 3 was chosen because the number of respondents who chose level 3 was 10% while level 4 was chosen by 90% of respondents, level 3 which means that the procedures and activities written in the SOP have been carried out and there is an allocation of responsibilities and the right resources. Ensuring the Cable System is at level 4 because the number of respondents who chose level 4 is 100% of respondents, level 4 which means it has been run, written activities in the SOP and producing optimal service/information are then monitored and analyzed. Adjusting IT facilities at level 4 were chosen because the number of respondents who chose level 3 was 10% while level 4 was chosen by 90% of respondents. Level 4, which means that it has been carried out, written activities in the SOP and producing optimal services/information are then monitored and analyzed. Understanding of Staff is at level 4 because of the number of respondents who chose level 4 as many as 100% of respondents, due to the implementation of written activities in the SOP and produce optimal service/information then monitored and analyzed

IV. Analysis Results

Based on the results of the questionnaire calculation can be calculated the average level of Capability by using the formula (Total Level / Number of questions). For capability, calculations can be seen in the following table

Table 4 Capability Level Calculation Results

Domain	Description	Capability
DSS-01.01	Running Operational Procedures	3,75
DSS-01.03	Monitoring IT Infrastructure	3,5
DSS-01.05	Managed Facilities	3,75

The above table is the result of the references in tables 1 to 3, while the values obtained such as Running Operational Procedures have gotten very good results in the agency at capability level 3.75 and rounded up to 4 to facilitate finding the latest conditions based on the capability level criteria has been determined, but still has risks such as inaccessible databases causing disrupted running of applications, this risk arises due to lack of maintenance of information technology devices that are not following procedures [1]. Monitoring IT infrastructure has gotten pretty good results at the agency at the capability level 3.5 and rounded up to 3 to make it easier to find the latest conditions based on predetermined level capability criteria, but still has risks such as use over memory capacity can also make applications hampered such as too many electronic certificate requests that will burden the server so that the need for



Fig 2 Spider network graph

monitoring of the server and evaluated [1]. Managing facilities have gotten very good results at the agency at the capability level 3.75 and rounded up to 4 to make it easier to find the latest conditions based on the specified capability level criteria, but still has the risk that the application cannot run due to errors in network cables installed or unfavorable network cables that risk hindering the running of service activities so the need for management of IT facilities [1]

The picture above is a spider's network graph resulting from the analysis of the problem and the results of the questionnaire that has given rise to the DSS-01.01 domain. Running the Operational Procedure to get a value of 4 from the specified target is 5, creating a gap of 1, DSS-01.03 Monitoring IT Infrastructure getting a value of 3 of the specified target is 4, creating a gap of 1 value, and DSS-01.05 Managing Facilities obtaining a value of 4 of the specified target is 5, creating a gap of 1. From the results of the analysis to increase the capability level so that it can meet the target with an increase in the form of recommendations at the Department of Population and Civil Registration Such as Optimizing operational procedures at agencies so that activities carried out according to these procedures can be monitored and analyzed to reduce risks that can hamper public service activities at agencies, Manage procedures and activities well as improvements in monitoring infrastructure so that risks such as network cable errors cannot occur. Conduct an assessment of the existing infrastructure in the agency and documented evaluation carried out in the future so that services have improved, and Conduct an analysis of information technology devices that support the running of the SIAK system in the agency to prevent risks that may occur both from system errors and humans

V. Conclusion

Based on an audit conducted at the Cimahi City Population and Civil Registry Office, the conclusions of this study are:

- Risk analysis in SIAK on DSS-01.01 Running Operational Procedures gets very good results with capability level 4, but still has risks due to lack of maintenance of information technology devices that are not following procedures.
- Risk analysis in SIAK on DSS-DSS-01.03 Monitoring IT Infrastructure gets quite good results with capability level 3, But still has risks due to lack of monitoring of the server and evaluated on an ongoing basis.
- Risk analysis in SIAK on DSS-01.05 Managing Facilities gets very good results with capability level 4, but still has risks due to lack of monitoring of network cables.

References

- [1] R. K. Candra, *Audit Teknologi Informasi menggunakan Framework Cobit 5 Pada Domain DSS (Delivery, Service, and Support) (Studi Kasus: IGracias Telkom University)*, Bandung: Telkom University, 2015.
- [2] M. R. Istambul, *Pandangan Pengembangan Arsitektur Sistem Informasi Dan Audit Teknologi Informasi*, Bandung: Jurnal Informasi, Vol: 2, No: 1, Bulan : Februari 2010, SSN 2085-8795.
- [3] I. Rijayana, *Perancangan Dan Audit Sistem Informasi Pada Domain Planning & Organisation (Po) Dan Acquisition And Implementation (Ai) Dengan Menggunakan Frame Work Cobit Versi 4.1*, Bandung: ISSN- 2252-3936, Univeristas Widyatama, 2017.
- [4] I. Rijayana, *Audit It Governance Menggunakan Frame Work Cobit Pada Domain Acquisition And Implementation (Ai) Studi Kasus: Universitas Widyatama*, Bandung: KNSI2014-322, 2014.
- [5] R. D. Putra, *Audit Teknologi Informasi Dengan Menggunakan Framework Cobit 5 Domain Dss (Deliver, Service, And Support) Pada Pt.Inovasti Tjaraka Buana*, Bandung: Telkom University, 2016.
- [6] F. Idroes, *Manajemen Risiko Perbankan*, Jakarta: PT. Raja Grafindo, 2008.
- [7] N. Smith, *Managing Risk in Contruction Project*, New York: Blackwell Science, 2006.
- [8] H. Kerzner, *Project Management*, New York: John Wiley and Sons, 2005.
- [9] Wulandari, D., Puspasari, D., "Penerapan Siak (Sistem Informasi Administrasi Kependudukan) Dalam Pengelolaan Data Kependudukan Di Dinas Kependudukan Dan Catatan Sipil Kota Surabaya," Vol 4, No 1 (2016).
- [10] A. Ripa'i, *Sistem Informasi Administrasi Kependudukan Berbasis Teknologi Informasi Menuju Single Identity Number Di Dinas Kependudukan Dan Pencatatan Sipil Kabupaten Sumedang Provinsi Jawa Barat, Jatinangor: Jurnal Dukcapil : Institut Pemerintahan Dalam Negeri*, Vol. 6, No. 1/Juni 2018.
- [11] Ekowansyah, E., Chrisnanto, Y.H., dan Puspita, N.S, "Audit Sistem Informasi Akademik Menggunakan COBIT 5 di Universitas Jenderal Achmad Yani," 2017.