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Evaluation Of Information Technology Risk Management in Crm Services Using The 2019 Cobit Framework (Case Study: Jakarta Smart City)

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ABSTRACT
Jakarta Smart City (JSC) is a management unit under the Communications Office of the DKI Jakarta Provincial Government of Communication, Information, and Statistics. Tasked with optimizing the use of technology in order to maximize public services in Jakarta. One of the services managed by Jakarta Smart City is Rapid Community Response (CRM). CRM is an application that is integrated into the JSC system to improve the efficiency and effectiveness of public complaints services for SKPD, UKPD, and BUMD so that they can coordinate and complete citizen reports more easily. This research was conducted because JSC has never conducted an information technology (IT) risk management evaluation to determine the level of risk management capability that has been achieved. This research is expected to improve the agency's ability to manage each risk. The governance analysis was carried out using the COBIT 2019 framework to measure the level of risk management capability. The research method used is qualitative.
Keywords: Jakarta Smart City, Cobit 2019, Risk.

I. INTRODUCTION

Jakarta Smart City (JSC) is one of the BLUDs (regional public service agencies) under the DKI Jakarta Provincial Government's Office of Communication, Information, and Statistics. Founded at the end of 2015, Jakarta Smart City, or JSC, was initiated to optimize the use of technology to maximize public services in Jakarta.
Technology is developed, procedures are transformed into digital, access is wide open, Pemprov DKI Jakarta blends in with the people, and everything is done so that Jakarta can be better and more friendly and make citizens happy.
In its implementation, JSC has never conducted an information technology (IT) risk management evaluation to determine the level of risk management capability that has been achieved. With this, it is expected to increase the agency's ability to manage every risk.
This stub dy uses the COBIT 2019 framework, or any framework that can be used as a recommendation for corporate IT governance, namely COBIT 2019. COBIT 2019, or Control Objective for Information and Related Technology, is an international standard framework that can produce an assessment of IT governance and assess the level of capability owned by the IT organization. COBIT 2019 has a reference process model consisting of five domains. EDM (evaluate, direct, and monitor), APO (align, plan, and organize), BAI (build, acquire, and implement), DSS (deliver, service, and support), and MEA (monitor, evaluate, and assess) consist of a collection of 40 IT governance and management processes. [1]

Jakarta Smart City is a management unit that is located

under and is responsible for the Head of the DKI Jakarta Province Communication, Informatics, and Statistics Office. JSC has the task of organizing ecosystem development for the implementation of provinces and smart cities in the DKI Jakarta Provincial Government area. [2]

COBIT is an IT management framework developed by ISACA to help organizations develop, organize, and implement strategies around IT governance. COBIT 2019 is an evolution of the previous version. In 2018, ISACA announced and updated the COBIT version to COBIT 2019. This updated version of COBIT is designed to keep evolving. COBIT 2019 was introduced to build a governance strategy that is more flexible, collaborative, and able to cope with new, changing technologies. [3]

COBIT 2019 also improves various fields from the previous COBIT version, namely flexibility and openness, while adding new focus areas such as currency and relevance, supporting reference and alignment of 13 concepts from previous sources: perspective application is descriptive and prescriptive; implementation of governance is

adjusted to its components; performance management of IT, the structure of the management model is more conceptual. [5]

COBIT 2019 has five (five) process capability models to measure the process capability level of information technology governance, which consist of the EDM, APO,

BAI, DSS, and MEA domains and consist of a collection of 40 IT governance and management processes.

In the 2019 COBIT framework, the assessment process no longer uses the COBIT 5 PAM-based process capability assessment model but applies a capability model with capability levels that supports a CMMI-based process capability scheme. Processes within each of the governance and management objectives can operate at various proficiency levels, ranging from 0 to 5. Capability level is a measure of how well a process is implemented and performed. The following figure describes the model, the levels of increasing ability, and the general characteristics of each level (ISACA, 2019).

The COBIT core model provides capability levels for all process activities, enabling a clear definition of the processes and activities required to achieve different capability levels. So that the assessment of process and capability activities will be adjusted based on the levels contained in the COBIT 2019 framework: governance and management objectives, in accordance with each process objective. That way, if the capability-level activities carried out reach the full capability level, it can continue to execute the activity assessment to the next level to find out what level of capability the company is at. The following is a rating of process activities to determine capability. [4]

II. RESEARCH METHODS

The methodology used in this study uses qualitative and quantitative methodologies:

Qualitative methodology is a research procedure that produces data that is abstract in nature because it is in the form of words and subjective because it is based on the opinion or conclusions of the qualitative data in this study are observational data and interview data.

Quantitative methodology is a research procedure that produces data in the form of numbers, namely numbers whose value can change according to the influencing This data is usually processed by mathematical or statistical calculations. Quantitative data serves to test the truth of research based on existing concepts. Quantitative data in this study is in the form of questionnaire results, which are distributed among the respondents.

(a) Data source

The research data comes from observations, literature studies and interviews at the Jakarta Smart City Management Unit (JSC), located at the DKI Jakarta City Hall Building, Jl. Merdeka Square Cell. No. 8–9. A literature study is carried out by analyzing policies issued by the governor regarding services and case study locations to be examined. The interview was conducted by the author with Mr. Rahan Yama Gusta, Head of System Development Executive Unit and Team Products Development

and Analysis Manager.

Data collection technique

Research data collection was carried out using qualitative methods. In terms of data collection, Gill et al. (2008) suggest that there are several types of data collection methods in qualitative research, namely observation, visual analysis, literature study, and interviews (individual or group). [7] The author collects data by means of observation, literature study, and interviews. Observation is the process of obtaining first-hand data by observing people and the location of the research. Literature study is a technique that is carried out by studying data related to research problems. Interviewing is a technique in field studies that is carried out by asking questions and having them answered by the resource person.

Research Flowchart

A flow chart is used as a reference in the research stage. divided into several stages (phase) refers to the phase of the cycle implementation. COBIT 2019 Implementation Guide The following stages describe the steps from the beginning to the end of the research process, so that it takes place systematically:
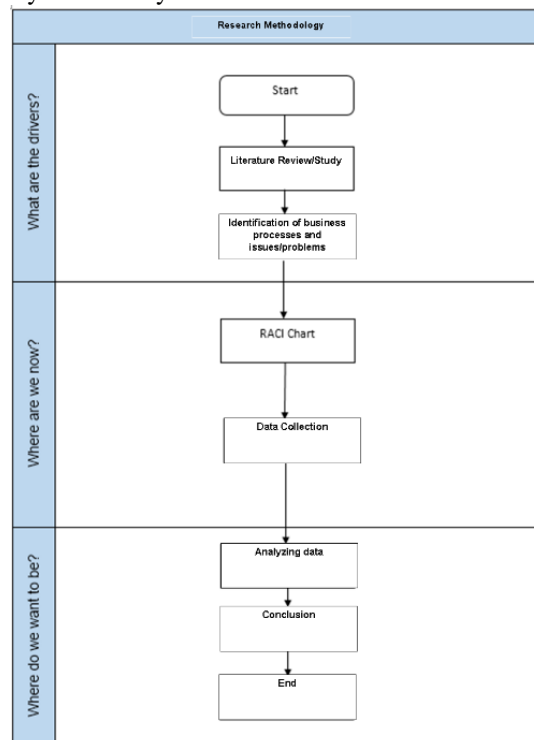

Fig. 1 Research Flowchart

What are the drivers?
Research begins with demystifying problems and recognizing problems through observation, literature study, and interviews. After demystifying the problem, the

formulation of the problem and the research were determined. The formulation of this problem considers the limitations of the research as well as the research objectives.

Where are we now?

This stage is carried out to determine conditions for risk management in Jakarta Smart City. Starting with understanding the condition of the risk management process that exists at JSC for managing risk and then conducting an assessment of the risk management implemented by JSC. After carrying out the assessment, you will find out the current condition of JSC risk management and determine the targets to be aimed at.

Where do we want to be?

The stage of determining the targets to be addressed in this research The target to be addressed is based on findings from the process of mapping and processing capability data, analyzing emerging gaps, and identifying potential improvements that can be made to the ongoing process. Then, after that, design recommendations will be given to JSC, which we hope can later be implemented.

No			
3	Chief Technology Officer	Head of nformation Technology nfrastructure mplementation Unit	1

The table shows the stakeholders which are the standards from COBIT 2019 which are aligned with the JSC organizational structure.

Findings, Gaps, and Recommendations

After knowing the results of the current capability level and the maximum value in the EDM03 (Ensuring Risk Optimization) and APO12 (Risk Management) domains for the expected increase targets, it is necessary to carry out further analysis of the business processes of CRM services in Jakarta Smart City. Various findings from the capability-level data processing and the gaps dented through this analysis will be used as a basis for denting potential improvements to the ongoing process. Furthermore, recommendations are designed with the aim of providing solutions that can be implemented by Jakarta Smart City to increase the effectiveness and efficiency of the available CRM services. It is hoped that the recommendations provided will help Jakarta Smart City achieve these goals. [7]

III. RESULTS AND DISCUSSION

Based on the roles and responsibilities in the organizational structure, functional parts related to the business process management system that represent the respondents can be mapped. Based on the results of the RACI chart mapping, it was determined that respondents had a direct role in carrying out an activity, with the following explanation:

Table 1 Role RACI EDM.03

No	Role (Raci)	Position at JSC	Amount
1	Chief information Officer	System Development mplementation Unit (Through IT Development Division)	1
2	Chief information Security Officer	Data Center & Network Manager	1

Table 2 Role RACI APO.12

No	Role (Raci)	Position at JSC	Amount
1	Chief nformation Officer	System Development mplementation Unit (Through T Development Division)	1
2	Chief nformation Security Officer	Data Center & Network Manager	1

1. **Process Name: EDM03.01 (Evaluate risk management)**

   Findings:

   Risk evaluation in Jakarta Smart City has reached a level of capability at level 3, with an average value of 2.97. Even so, there are still activities that are not optimal because they are currently in the process of achieving goals related to determining the level of risk tolerance for risk choices in Jakarta Smart City. As a result, there are still acceptable temporary deviations in the selection of risks that occur.

   gaps:

   a. There is no specific risk tolerance level for risk choices in CRM services in Jakarta Smart City.

   b. Risks to corporate values related to the use of information technology and CRM services in Jakarta Smart City have not been comprehensively identified, so they can have a negative impact on service operations and the government's

   c. The absence of regular evaluation of the impact of current risks and the future use of information technology in the company may result in risks being taken that are not in line with the risk appetite of the company's values and lead to ineffective risk management.

   Recommendation:

   a. Determine the level of risk tolerance for specific risk choices in Jakarta Smart City by involving the risk management and information technology teams.

b. Identify and manage risks to company values related to the use of information technology in a comprehensive manner through CRM services in Jakarta Smart City.

c. Conduct regular evaluations of the impact of current risks and future use of technology in the company, involving the risk management team and information technology, to ensure that the company's risk appetite is appropriate and that risks to corporate values related to the use of information technology have been identified and managed well.

2. **Process Name: EDM03.02 (Provide Risk Management Direction)**

So far, no gaps or deficiencies have been identified. These findings state that Jakarta Smart City has reached a level of capability in providing risk management direction with a score of 3.00. In addition, several activities related to developing the risk strategy integration process, developing a risk communication plan, developing a rapid response mechanism to changes in risk, reporting risk to management level, analyzing various reports provided by certain parties, and focusing on key objectives and metrics for governance have been well implemented and developed.

3. **Process Name: EDM03.03 (Monitor risk management)**

So far, no gaps or deficiencies have been identified in the findings presented. These findings state that Jakarta Smart City has reached a level of capability in monitoring risk management with a score of 3.00. In addition, several related activities include reporting any risks to the board or executive committee, monitoring the risk profile that is below the company's tolerance threshold, monitoring the main objectives and risk governance metrics, and carrying out risk reviews from stakeholders on the company's progress. and well developed.

4. **Process Name: APO12.01 (Collecting data)**

Findings:

Data collection in Jakarta Smart City has reached a level of capability at level 3, with an average value of 2.82. Even so, there are still activities that are not optimal, such as methods of collecting, classifying, and analyzing company data, then recording JSC internal and external operating environment data, developing processes for adopting or determining a risk taxonomy, operating historical surveys, and data analysis. risks, and the operation of classes of events highlighted according to the general contributing factors has not been implemented properly.

gaps:

a. There is no planning, monitoring, and adjustment of data collection, classification, and analysis methods related to information technology risks.

b. There is no planning, monitoring, or adjustment of relevant data recording about the company's internal and external operating environments.

c. There is no process for developing or adopting a consistent risk taxonomy of risk scenarios and the impact of each category.

d. There is no operational process with certain limitations to conduct historical surveys and information technology risk data analysis.

e. There's no operating process with certain limitations for similar classes of events, especially in the rules for data collection, and the factors highlighted have not contributed according to the general factors of various events.

Recommendation:

a. Identify the type of data needed to carry out a risk analysis, such as data regarding system vulnerabilities, activity logs, or user data. Then, carry out consistent data collection and classification methods, such as using the same template or data format. After that, the data can be analyzed using predefined methods, such as quantitative or qualitative methods, and monitored and adjusted periodically by Jakarta Smart City.

b. Determine the type of relevant data, such as data regarding operational policies and procedures, market conditions, or JSC financial data. Furthermore, the data needs to be recorded systematically, for example, using a centralized database system. Monitoring and adjustments are carried out by periodically evaluating the recorded data and making the necessary changes.

c. Identify relevant risk categories, for example, operational risk, financial risk, or reputation risk at JSC. Then, it is necessary to define criteria and risk scenarios according to each risk category. This taxonomy process needs to be carried out consistently and with periodic evaluations to adapt to the development of the existing situation and conditions.

d. Provides limitations on historical data regarding information technology risk events that have occurred at JSC, such as malware attacks or data leaks. Then, the data is analyzed and processed using certain methods, such as statistical analysis, to understand the characteristics of the information technology risks that have occurred. This operational process needs to be carried out regularly to update the data and risk analysis.

e. Provide limitations regarding the types of events or events that exist in the JSC, then establish the same data collection rules, deny and give weight to the relevant factors, and carry out operational

processes on a regular basis to ensure the highlighted data and factors remain relevant.

5. **Process Name: APO12.02 (Analyze Risk)**
   Findings:
   Risk evaluation in Jakarta Smart City has reached a level of capability at level 3, with an average value of 2.97. Even so, there are still activities that are not optimal because there is still no implementation of process development to compare the risks of information technology losses that are happening with acceptable risk appetite and risk tolerance. deny unacceptable risks or increased risks.
   gaps:
   1. There's no process development implementation to compare information technology loss exposure with risk appetite and risk tolerance that's acceptable to Jakarta Smart City.
   2. Lack of deniability of unacceptable or escalating risks
   Recommendation:
   1. Developing a process to compare loss exposure related to information technology with acceptable risk appetite and risk tolerance so that JSC can find out whether the risk has been optimal or still needs to be followed up by JSC
   2. Increasing the identification of risks that are unacceptable or increasing so that they can be anticipated with appropriate actions by JSC This can be done by conducting periodic risk evaluations and taking into account changes in the environment and information technology that occur.

6. **Process Name: APO12.03 Maintain risk profile**
   Findings:
   Maintaining a risk profile in Jakarta Smart City has reached a level of capability at level 3, with an average value of 2.95. Even so, there are still activities that are not optimal because currently there are no planning, monitoring, and adjustments to inventory business processes and document information technology service management processes and information technology infrastructure resources, as well as the process of identifying support personnel, applications, infrastructure, facilities, important manual records, vendors, suppliers, and outsourcing. Besides, planning, monitoring, and adjustments to aggregate current risk scenarios based on categories, business lines, and functional areas are also not available.
   gaps:
   a. There's no complete and up-to-date inventory of related resources, capabilities, and control activities related to risk management..

b. There is no adequate planning and monitoring for inventorying business processes and documenting information Technology service management processes and information technology infrastructure resources.
c. There's no integration between the T risk management system and the overall enterprise risk management system.

Recommendation:
1. Create and implement policies and procedures to inventory business processes and document information technology service management processes and information technology infrastructure resources, including defining support personnel, applications, infrastructure, facilities, important manual records, vendors, suppliers, and outsourcing. Planning, monitoring, and regular adjustments are also necessary to keep inventories up to date.
2. Develop a T risk management system that is integrated with the Jakarta Smart City risk management system as a whole and carry out planning, monitoring, and adjustments on a regular basis to aggregate risk scenarios based on categories, business lines, and functional areas.
3. Implement a T risk management system that is integrated with JSC's risk management system as a whole by involving all relevant departments in the risk management process and conducting training to increase awareness of information technology risk management throughout the JSC organizational structure.

7. **Process Name: APO12.04 Articulating Risk**
   Findings:
   Articulating risk in Jakarta Smart City has reached a level of capability at level 3, with an average value of 2.96. Even so, there are still activities that are not optimal because there is currently no operational process to review the results of objective third-party assessments by reviewing external audits and quality assurance, which will be included in the risk profile, as well as reviewing identified gaps and loss exposure related to information technology. to determine the need for additional risk analysis..
   gaps:
   a. There is no scheduled process to evaluate the results of independent third-party assessments repeatedly. This can result in a lack of understanding of the risks associated with the T services and infrastructure used in Jakarta Smart City.
   b. A thorough analysis of T-related loss exposure and gaps has not yet been conducted to determine the need for additional risk analysis. As a result, there

may be a lack of preparedness when facing future risks and ignorance of the risks that must be handled.

Recommendation:

a. Create a regularly scheduled evaluation process to evaluate the results of independent third-party assessments so that they can be applied consistently and provide a better understanding of the risks associated with the T services and infrastructure used in Jakarta Smart City.

b. Undertake a thorough analysis of T-related gaps and loss exposures to determine the need for additional risk analysis so as to gain a better understanding of the risks that may arise in the future and be prepared to deal with them.

c. Establish operational processes to review external audits and quality assurance that will be included in the risk profile so as to provide a more complete view of the risks associated with the services and infrastructure used in Jakarta Smart City.

8. **Process Name: APO12.05 Define a portfolio of risk management actions**

Findings:

Determining a portfolio of risk management measures in Jakarta Smart City has reached a level of capability at level 3, with an average value of 2.92. Even so, there are still activities that are not optimal because there is still no process to determine a series of project proposals that are balanced and designed to reduce the risks of projects according to the company's strategic opportunities. Currently, there is no balance between costs, benefits, effects on risk profiles, and the latest regulations considered in the development of project proposals.

Gaps:

a. There's no development of a structured and measurable process for establishing a series of project proposals designed to reduce risks according to the company's strategic opportunities, especially in terms of costs, benefits, effect on risk profile, and the latest regulations.

b. Lack of awareness of the importance of process development for establishing a portfolio of risk management actions

c. Lack of involvement of company executive management in the development of processes for establishing a portfolio of risk management measures

Recommendation:

a. Developing a structured and measurable process in establish a series of project proposals designed to reduce risks according to the company's strategic opportunities and taking into account costs, benefits, effects on risk profiles, and the latest regulations.

b. Increasing awareness of the importance of process development for establishing a portfolio of risk management actions through training and outreach to all company employees.

c. Involve the company's executive management to process the development. establish a portfolio of risk management actions in order to reach a common agreement on the company's objectives and strategies for managing T-related risks.

9. **Process Name: APO12.06 Respond to risk**

Findings:

So far, no gaps or deficiencies have been n the findings presented. These findings state that Jakarta Smart City has reached a level of capability in responding to risks with a value of 3.00. In addition, several activities such as developing plans from documentation with specific steps, developing responses to minimize impacts, developing incident categorizations with risk tolerance limits, developing checks for adverse events and good opportunities in the future, and developing other additional risk responses and improvements have been carried out and implemented properly.

IV. CONCLUSION

After analyzing the level of risk management capability of CRM services in Jakarta Smart City with the APO12 and EDM03 domains, it can be concluded that:

1. In the EDM03 (Ensure Risk Optimization) domain, the current capability gets an average capability value of 2.99, which means it is at level 3 with the established rating criteria. This has an impact on the EDM03 (Ensure Risk Optimization) domain, which needs to reach the expected level at Level 4 with the rating criteria Predictable Process up to the maximum level that can be achieved, namely at Level 5 with the rating criteria Optimization Process. With the current capability value obtained in the EDM03 (Ensure Risk Optimization) domain from the Jakarta Smart City CRM service, it can be inferred that there are still many processes that are limited to the implementation and development of each activity that has been carried out. The Jakarta Smart City CRM service expects to reach the expected level at Level 4 with the Predictable Process rating criteria, which means that the process can operate within certain limits so that each activity can be measured properly according to the results that have been targeted. Between the range of capability level 3 and the range of capability level 4, there's a gap value of 1.01. This means that the Jakarta Smart City CRM service must meet the process capability requirements at level 3, which have not been met. Activities that need to be carried out are

improvements in information technology governance for Jakarta Smart City CRM services, namely determining more specific risk tolerances, more comprehensive risk dentification, and regular risk evaluation of the impact of current and future risks. which means the process Activities that need to be carried out are improvements in information technology governance for Jakarta Smart City CRM services, namely determining more specific risk tolerances, more comprehensive risk dentification, and regular risk evaluation of the impact of current and future risks. Between the range of capability level 3 and the range of capability level 4, there is a gap value of 1.01. This means that the Jakarta Smart City CRM service must meet the process capability requirements at level 3, which have not been met. Activities that need to be carried out are improvements in information technology governance for Jakarta Smart City CRM services, namely developing more specific risk tolerances, more comprehensive impact risk dentification, and regular risk evaluation of the impact of current and future risks. Between the range of capability level 3 and the range of capability level 4, there's a gap value of 1.01. This means that the Jakarta Smart City CRM service must meet the process capability requirements at level 3 which have not been met. Activities that need to be carried out are improvements in information technology governance for Jakarta Smart City CRM services, namely determining more specific risk tolerances, more comprehensive risk dentification, and regulatory risk evaluation of the impact of current and future risks.

2. In the APO12 (Manage Risk) domain, current capability, it gets an average capability score of 2.94, at level 3 the established the rating. This impact on the APO12 (Manage Risk) domain, it is necessary to reach the expected level at Level 4 with the rating criteria Predictable Process up to the maximum level that can be achieved, namely at Level 5 with the rating criteria optimize process. With the current capability value obtained in the APO12 (Manage Risk) domain from the Jakarta Smart City CRM service, it can be inferred that there are still many processes that are limited to the implementation and development of each activity that has been carried out. The Jakarta Smart City CRM service hopes to reach the expected level at Level 4 with the rating criteria "predictable process, which means the process can operate with certain limitations so that each activity can be measured properly according to the results that have been targeted. Between the range of capability level 3 and the range of capability level 4, there's a gap value of 1.06. This means that the Jakarta Smart City CRM service must meet the process capability requirements at level 3, which have not been met. Activities that need to be carried out to improve the governance of information technology CRM Jakarta Smart City

services include conducting risk analysis according to the type of data and relevant risk categories. New boundaries also need to be provided after historical data, such as risk events, types of events, or events that occurred at JSC. Besides that, it is necessary to make a comparison between exposure to losses from risk appetite and predetermined risk tolerance so that the process of dentify unacceptable or increasing risks can be dentify to reduce risk, policies and procedures are needed to inventory business processes and develop and implement a risk management system. Routinely scheduled evaluations, analysis of losses from new risk additions, and external audit reviews according to risk profiles also need to be carried out. In addition, it is necessary to design projects to reduce risk according to strategy and awareness in the risk management action portfolio. Executives should also be involved in the risk management portfolio. Policies and procedures are needed to ensure business processes, and develop and implement a risk management system. Regularly scheduled evaluations, analysis of losses from new risk additions, and external audit reviews according to risk profiles also need to be carried out. In addition, it is necessary to design projects to reduce risk according to strategy and awareness in the risk management action portfolio. Executives should also be involved in the risk management portfolio. Policies and procedures are needed to inventory business processes and develop and implement a risk management system. Regularly scheduled evaluations, analysis of losses from new risk additions, and external audit reviews according to risk profiles also need to be carried out. In addition, it is necessary to design projects to reduce risk according to strategy and awareness in the risk management action portfolio. Executives should also be involved in the risk management portfolio. It is necessary to design projects to reduce risk according to strategy and awareness in the risk management action portfolio. Executives should also be involved in the risk management portfolio. Its necessary to design projects to reduce risk according to strategy and awareness in the risk management action portfolio. Executives should also be involved in the risk management portfolio.

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