

A Literature Review: Implementation of Information Technology Governance in Indonesia

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Abstract— The current phase of technological development requires companies in Indonesia to take advantage of IT investments to support every business process in it. However, information technology governance is needed to avoid the mismatch of IT utilization with the company's business objectives. There are many frameworks needed to measure IT governance. In this study, the Cobit framework. This research is a Literature Review study to answer RQ1, which is related to the criteria for the literature study following the research, and RQ2 regarding the most frequently used domains. Of the 48 selected journals, 15 journals were found that matched the research criteria. The most frequently used domains in the 15 journals were the DSS (Deliver, Service, and Support) domain at number one and EDM (Evaluate, Direct, Monitor) at number two. DSS domain will recommend focusing on information technology service upgrades and organizational support. In contrast, the EDM domain will evaluate the available system.

Keywords— Literature review, IT governance, COBIT

I. INTRODUCTION

The current phase of technological development impacts the birth of the millennial generation, who are full of many innovations. This generation will continue to create cutting-edge inventions by utilizing technological resources. These millennials will also influence the system's progress in the company or organization that is running today. Therefore, it can be seen that many companies have invested in information technology to support their business processes, including companies in Indonesia.

Companies in Indonesia continue to move forward to face the demands of change, namely, being in the era of rapidly developing technology. The company's main need for every business process is an information technology system. Every company that carries out owned programs will require good governance or management to achieve desired goals [1]. However, information technology governance is needed to avoid mismatches in IT with the company's business goals. Information technology governance is a policy or procedure in an organization related to the use of IT to run according to organizational goals [2]. The responsibility of IT governance does not depend on the IT department alone, but the entire department or system management of the company is responsible for this governance.

A measurement must periodically be made against the IT governance that applies in an organization or company. This aims to find out whether the governance implemented is in line with the goals of the organization or not, as well as suggestions for improvements for future governance. These measurements might be made with any number of frameworks, but for this study, we will only focus on the Cobit framework. Cobit (Control Objective for Information and Related Technology) is a framework in the form of guidance on the control of IT governance in detail for all parties involved in the company [3].

Cobit was popularized by ISACA (Information System Audit and Control Association). This framework will provide an overview of how to overcome problems around IT governance and manage the advantages of IT resources in the company [4]. One of the benefits of implementing the Cobit framework for IT governance systems is to prevent mismatches in IT governance management. The reason we chose the framework is that this framework is practical to implement, and each domain can represent the company's problems that will be measured so that the company can run better in the future. This research also can improve the quality of companies in the field of technology, which produces systems that can support business process automation so that the decision-making process is effective and efficient [12].

This research is an LR (Literature Review) research to review and provide a summary related to IT governance in companies in Indonesia that use Cobit as their framework. The literature review contains theories or descriptions from previous research to be used as the basis for the ongoing research. In this study, several journals will be collected and selected later. The journal selection results will be analyzed and reviewed related to the domains used in the Cobit framework for IT governance systems.

II. RESEARCH METHODOLOGY

Figure 1 is a diagram of the research method and its explanation:

- Identify research questions where the answers to these questions can help researchers solve research problems. This question is based on the selected topic.
RQ1. What are the criteria for a literature study journal that follows the research?
RQ2. Of all the journal case studies, what is the most frequently used domain?

- Collecting literature study journals from various sources. The literature study journals collected must follow the research topic, namely "Implementasi COBIT 5". The results of the collection of journals obtained 48 relevant journals.
- Filtering irrelevant papers based on abstracts will select the literature study that will be used based on the abstract. This literature review will not use papers irrelevant to the research topic.
- From the results of paper filtering based on abstracts, there will be another selection based on Full-text Reading. The result from this phase is the final result of the literature study that will be used and analyzed.
- Analyze and compare the literature studies that have been determined.

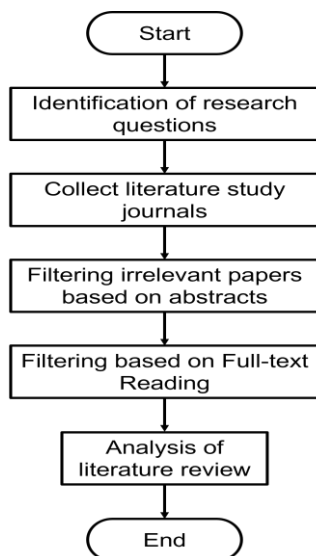


Figure 1. Methodology Flowchart

III. RESULT AND DISCUSSION

A. Collection and Selection of Literature Studies

The initial stages have been carried out in the collection of journals for this study. The number of journals collected is 48 journals. An information technology governance assessment framework using COBIT 5 with the range of publication years 2017 to 2022. The case studies of the application of COBIT 5 are companies or agencies in Indonesia. Of the three categories of journals used for the research of the 48 selected journals, 15 are included in the category of research journals. The selected research category are further summarized and examined, as shown in Table I.

TABLE I
SELECTED JOURNAL RESULTS

Papers	Strengths & Weakness
[15]	Strengths <ul style="list-style-type: none"> - The analysis model used is correct - The language used is so clear that it is easy for the reader to understand - The author is very detailed in explaining the methodology and analytical techniques used in this study

Papers	Strengths & Weakness
	<ul style="list-style-type: none"> - Results and findings described in detail and very easy to understand Weakness <ul style="list-style-type: none"> - The conclusions are very detailed but lack explanation regarding the initial problem on which the research-based - Linguistically, some acronyms don't come with their abbreviations, so that's quite confusing to the reader
[16]	Strengths <ul style="list-style-type: none"> - The analysis model used is correct - The research in this paper has stages that are structured and explained in detail at each stage - Research instruments in each domain are presented to increase the reader's understanding of the research carried out - The author is very detailed in explaining the results of the research and analysis carried out Weakness <ul style="list-style-type: none"> - In terms of writing, there are still some punctuation errors - The author lacks detail in providing recommendations as an output of the study
[18]	Strengths <ul style="list-style-type: none"> - The analysis model used is correct - The language used is very clear and easy to understand - The author is very detailed in describing each element in the study - Conclusions and suggestions are explained briefly but have been very answers from the entire content of the paper Weakness <ul style="list-style-type: none"> - Although each component is explained in great detail, it seems too dense and somewhat pedantic
[19]	Strengths <ul style="list-style-type: none"> - The author describes the stages of the research in detail and systematically, coupled with the presence of flowcharts that add to the reader's understanding - In terms of language, the language used is very easy for the reader to understand, and the writing is correct Weakness <ul style="list-style-type: none"> - Less detailed and thorough analysis - The domain chosen is appropriate, but it is not explained regarding the COBIT 5 process what will be studied in the domain - Incomplete and less thorough conclusions
[17]	Strengths <ul style="list-style-type: none"> - The analysis model used is correct - The language used is very clear and easy to understand - The author explains each element in the study briefly but clearly - Conclusions and suggestions are explained briefly but have been very answers from the entire content of the paper Weakness <ul style="list-style-type: none"> - Less detailed and thorough analysis
[20]	Strengths <ul style="list-style-type: none"> - The language used is easy to understand - By including the research questionnaire instrument, it will increase the reader's understanding of the research carried out - The results and analysis are presented in detail great detail - Conclusions and suggestions are explained briefly but have been very answers from the entire content of the paper Weakness <ul style="list-style-type: none"> - The analysis model used is not quite right - In terms of linguistics, there are still some errors, especially in writing foreign languages - Although each component is explained in great detail, it seems too dense and somewhat lengthy, for example, in writing a literature review
[13]	Strengths <ul style="list-style-type: none"> - Each domain to be studied is presented in great detail, coupled with the presence of a question instrument in each domain that adds to the reader's understanding - The language used is easy to understand Weakness <ul style="list-style-type: none"> - The analysis model used is not quite right - The author lacks detail in presenting the results and analysis of the research

Papers	Strengths & Weakness	Papers	Strengths & Weakness
	- In terms of linguistics, some sentences are less effective		- Researchers use good illustrations so that the reader can make easy to understand
[14]	<p>Strengths</p> <ul style="list-style-type: none"> - The title of this paper is relevant to the discussion - This research focuses on the DSS domain so that it is more focused - The results and discussion in this paper provide recommendations for all sub-domain processes - Researchers provide suggestions on research results for future research <p>Weakness</p> <ul style="list-style-type: none"> - There are not many related reference journals in the bibliography - The image illustration from the Process Reference Model needs to be improved so that it can be read 		<ul style="list-style-type: none"> - Researchers describe COBIT's domain clearly with theory - Researchers provide recommendations on research results for future research <p>Weakness</p> <ul style="list-style-type: none"> - The title of this paper is not relevant enough to the discussion. Research needs to add the name of the domain that is used - There are not many related reference journals in the bibliography
[5]	<p>Strengths</p> <ul style="list-style-type: none"> - There are pretty much-related reference journals in the bibliography - The results and discussion in this paper provide recommendations for all sub-domain processes - In this paper is supported by an analysis table for the entire COBIT domain <p>Weakness</p> <ul style="list-style-type: none"> - This paper focuses only on two domains in COBIT 5, namely APO12 and EDM03 - Researchers are not provided suggestions on research results for future research 	[9]	<p>Strengths</p> <ul style="list-style-type: none"> - This paper has been written completely and coherently - The results and discussion in this paper provide recommendations for all sub-domain processes - In this paper is supported by an analysis table for the entire COBIT domain - Researchers provide suggestions and recommendations on research results for future research <p>Weakness</p> <ul style="list-style-type: none"> - There are not many related reference journals in the bibliography - This paper focuses only on two domains in COBIT 5, namely APO13 and DSS05 - There are still many writing errors, such as improper capital letters.
[11]	<p>Strengths</p> <ul style="list-style-type: none"> - This paper focuses only on one domain in COBIT 5, namely MEA, but they use 8 sub-domains - Researchers add the results of the calculation of capability level clearly - Researchers use RACI Chart to describe the functional structure of the case study <p>Weakness</p> <ul style="list-style-type: none"> - There are not many related reference journals in the bibliography - Researchers are not provided suggestions and recommendations on research results for future research 		
[10]	<p>Strengths</p> <ul style="list-style-type: none"> - Researchers use good illustrations so that the reader can make easy to understand - Researchers describes three of five COBIT's domain clearly with theory <p>Weakness</p> <ul style="list-style-type: none"> - This paper does not explain the implementation of COBIT using case studies, but in general - Researchers are not provided suggestions and recommendations on research results for future research 		
[6]	<p>Strengths</p> <ul style="list-style-type: none"> - Researchers describes three of five COBIT domain clearly with theory - Researchers use RACI Chart to describe the functional structure of the case study also analyze gap analysis - Researchers provide recommendations on research results for future research <p>Weakness</p> <ul style="list-style-type: none"> - The abstract does not mention the domain's COBIT that will be used in the research - Researchers are not provided suggestions on research results for future research - There are not many related reference journals in the bibliography 		
[7]	<p>Strengths</p> <ul style="list-style-type: none"> - The title of this paper is relevant to the discussion - This paper focuses only on one domain in COBIT 5, namely DSS, but they use 6 sub-domains - Researchers use RACI Chart to describe the functional structure of the case study also analyze gap analysis - Researchers provide recommendations on research results for future research <p>Weakness</p> <ul style="list-style-type: none"> - There are not many related reference journals in the bibliography, and there aren't suggestion research for future research 		
[8]	<p>Strengths</p> <ul style="list-style-type: none"> - This paper not only focuses on domain DSS in COBIT 5, but also BAI, MEAG, EDM, and APO with their sub-domains 		

Table I contains information about 15 of the 48 journals selected for this study and the author's name, title, year, and type of journal publication. Overall, the selected journals provide information on theory, analysis, evaluation, results and discussions, and recommendations for evaluating the implementation of information technology governance using the COBIT 5 framework. The evaluation section contains recommendations related to the strategy for developing information technology governance for both companies and certain agencies from each researcher. Not only that, but researchers also select the year of publication, which is not more than 5 years. The results and discussions in each journal are concrete and actual. Then the management of the company or related agencies can apply the assessment results to assist the organization in increasing the value achieved by using information technology.

B. Analysis Data Table

Data analysis is based on Table II. Of the 15 selected journals, each identified the name of the company or agency that implemented COBIT 5 and the domains used.

TABLE II
DATA ANALYSIS

Papers	Institution	COBIT 5 Domains
[15]	PT. BPR Naga	BAI 4, APO 7, DSS 5, MEA 1
[16]	Tanggamus District Public Works Office	EDM03, EDM05, APO06, APO12, DSS02
[18]	Lampung Marine Aquaculture Center	EDM03, APO13, APO12, BAI06, DSS01, DSS02, DSS03, DSS05, MEA01, MEA02
[19]	AMIK Master Lampung	DSS01, DSS02, DSS03, DSS04, DSS05, DSS06, MEA01, MEA02, MEA03
[17]	Baturraden Subdistrict Office	EDM 01, EDM02, EDM03, EDM05
[20]	Tanjung Bintang Subdistrict Office	DSS01

IV. CONCLUSION

The study's results have selected a collection of journals from 48 to 15 case study journals that have met the criteria needed by the research. The selected literature study journal is a journal that discusses the implementation of COBIT 5 in completing 15 case studies in Indonesia. The selected journals were published no more than 5 years back, from 2017 to 2022. Identification of analytical data in literature study journals resulted in the domains most often recommended in completing case studies in Indonesia, namely DSS domains, DSS1 and DSS6.

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[7] Devi Pitaloka Pratama, Beta Noranita, "Evaluasi Tata Kelola Sistem Pelayanan Online Data Kependudukan Menggunakan COBIT 5 Domain Deliver, Service, dan Support (Studi Kasus: Dinas Kependudukan dan Pencatatan Sipil Kabupaten Batang)", *JMASIF: Jurnal Masyarakat Informatika*, Vol. 11, No. 1, Agustus 2021: 44-57

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Papers	Institution	COBIT 5 Domains
[13]	Adventist University of Indonesia	EDM01, EDM 2, EDM03, EDM04, EDM05
[14]	Eka Tjipta Foundation Jakarta	DSS01, DSS02, DSS03, DSS04, DSS05, DSS06
[5]	PT. Petrokimia Gresik	EDM03, APO12
[11]	Riau Province Informatics and Statistics Communication Service	MEA02
[10]	Bengkulu University	DSS, MEA, BAI
[6]	UPT Puskom University of Diponegoro	EDM01, EDM02, EDM03, EDM04, EDM05, APO12, APO07, DSS05, BAI09, DSS01
[7]	Population and Civil Registration Service of Batang Regency	DSS01, DSS02, DSS 03, DSS04, DSS05, DSS06
[8]	PT Krakatau Tirta Industri	DSS04
[9]	Communication and Informatics Office of Malang	APO13, DSS05

Based on Table II, it can be observed that the 15 selected journals follow the criteria for the study of this research literature. This answers the research question RQ1 about the criteria for a literature study journal. Researchers search for journals with the keywords COBIT 5 implementation in collecting and selecting literature studies. The types of journals that have been collected are included in research articles journals. Based on the third column, the institutional column has complied with the criteria for studying the research literature. Researchers collect all journals that discuss the implementation of COBIT 5 in Indonesia. The goal is that the results and discussions that exist can help the management of an organization in Indonesia to control and manage existing information technology resources.

Furthermore, research is reviewed in the year of publication, and each journal is in the range of 2018 to 2021. Researchers consider the year of publication to be no more than five years because of rapidly developing information technology. It also shows that this research is relevant for organizations that want to optimize the use of information technology because of the accurate research data.

Then move on to the RQ2 research question about the COBIT 5 domain most often used from all research literature studies. The most frequently used COBIT 5 domain analysis data are DSS1 and DSS6; the second most frequently used domain is EDM03. The DSS domain relates to enterprise information technology management, focusing on data delivery, services, and information technology support. Domain DSS01 discusses managing operations or managing operations. The DSS06 domain discusses managing business process control or managing business process control. The EDM domain discusses the objectives of stakeholder management, risk optimization, and resources, including practices and activities carried out to evaluate strategic options. In the EDM03 domain, the topic of risk optimization. Risk optimization in this context refers to ensuring that the information technology risks faced by the organization and any linked agencies do not exceed the tolerance limit.

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