

Inventory Transaction Information System Audit Using Cobit 5

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Abstract

Information system audits have an important role in an organization, namely they can help identify security risks that may be faced by the company's information system and ensure that the company complies with applicable information security standards and regulations. The problem faced is that there is no framework for knowing the extent to which the system is working properly. In conducting an information system audit, instruments are needed in the form of frameworks, principles or standards that have been determined by competent organizations in their field. COBIT 5 is a framework in the form of a collection of best practices related to IT governance that can be applied in information audit activities. Implementing an information system audit using COBIT 5 is carried out by collecting control documents and aligning them with COBIT 5 basic practices, then conducting an assessment on each selected domain based on existing control documents. In this study, the domains chosen were DSS and MEA with subdomains consisting of DSS1, DSS2, DSS3, DSS4, DSS5, DSS6, MEA1, MEA2. The research results show that the inventory transaction information system is at level 1 (performed process), meaning that the process in each selected domain has been implemented and is in accordance with its objectives. These results can be a reference for improving the governance of inventory transaction applications in particular and IT governance in general so that they are in line with the company's business objectives.

I. INTRODUCTION

Over the years, technology has changed the world and people's daily lives. With the presence of technology, it provides convenience in every aspect of human life. PT Chemco Harapan Nusantara is a manufacturing company in the automotive sector that has been using the ERP information system application, namely JD Edwards Enterprise One, since 2012. Throughout its journey, the JD Edwards Enterprise One ERP used has undergone several version updates to support growing business activities. One of the updates made is to the inventory module, namely the presence of an application for inputting data using the bar code scan method from what was previously done by typing manually called KIOSK. However, there are still obstacles faced, namely the frequent occurrence of abnormal transactions in the form of out-of-sync data. This causes the PIC in the field to be forced to record transactions manually, of course this is a problem because transactions are not recorded in the system. Consequently, conducting an information system audit is essential. activities on the KIOSK application to measure the current level of reliability or capability level. Information system auditing involves gathering and assessing data to see if the computer system which is an asset for the company is protected, data integrity is maintained, and in accordance with organizational goals to achieve effectiveness and efficiency in the use of resources [1] One type of data security support is a data framework review which aims to reduce or avoid data security hazards. Data security is an important part of hierarchical administration, IT implementation will be disrupted if data security experiences problems related to confidentiality, integrity and availability. [2]

Audits of information systems conducted with the COBIT framework. A set of best practices called COBIT assists users, management, and auditors in bridging the gap between IT approaches, control requirements, and business concerns. [3]. In this research, COBIT 5 is used as a tool for conducting information system audits, the reason is because COBIT 5 is the latest version before COBIT 2019 which is widely used as a tool for conducting information system audits. COBIT 5 is defined as a comprehensive framework to assist in creating the best IT value by maintaining balance and expected resources, benefits and goals. In a process system, strategic aspect information is used in explaining requirements. [4] In audit research on the inventory transaction information system at PT Chemco Harapan Nusantara scope discussed focuses on 2 and 8 domains Subdomains. The domain

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chosen is the DSS domain (Deliver, Service, Support) with sub domains DSS1, DSS2, DSS3, DSS4, DSS5, DSS6, and domains MEA (Monitor, Evaluate, Asses) with subdomains MEA01, MEA02.

II. RELATED WORKS/LITERATURE REVIEW

An audit is a methodical, impartial analysis of one or more organizational components aimed at assessing the effectiveness of the organization in relation to specified benchmarks. Companies have many reasons for conducting an audit process, such as proving the effectiveness of controls used, verifying compliance with internal policies, processes and procedures, and measuring performance against quality criteria or service level agreements.[5]. Auditing is the process of gathering and assessing information evidence, as well as determining and reporting whether the information complies with set criteria.. Audits must be carried out by competent, independent and honest individuals [6]. Many audits with COBIT have been carried out and this can be seen from various studies [7][8][9][10][11]

To carry out an audit, evidence is systematically collected regarding claims regarding economic activities or events, evaluated objectively, the conformity of the claims with certain criteria is determined and the results are communicated to stakeholders [12] COBIT 5 is the newest era of ISACA regulations that takes a deeper look at IT and board administration. COBIT 5 is based on over 15 years of client experience by companies and clients from business, IT people groups, framework protection and security fields. (COBIT 5 provides comprehensive definitions of a number of governance and process management concepts [13]

There are two types of audits, namely internal audits and audits external. Internal auditors are working auditors for the organization as an internal employee for check notes and help solve internal processes, for example: operations, control internal, risk management and governance.[14]

COBIT 5 offers a thorough framework that can assist businesses in achieving their asset management and IT governance objectives [13] :

1. Meeting Stakeholder Needs

The needs of stakeholders or stakeholders are always a priority for the organization, a governance concept will only be successful if stakeholder needs are met. COBIT 5 can be adapted to stakeholder needs by managing all IT operations throughout the organization well.

2. Covering the enterprise end-to-end

Integrating IT management into corporate governance which covers all functions and processes in the company. COBIT 5 considers all entities in the company as mutually influencing parts.

3. Utilizing a unified, cohesive foundation

COBIT 5 is an intertwined frame that covers all brigades, workers, and departments within a company and combines organizational requirements and processes with IT operation and commercial governance. This integrated frame helps identify implicit pitfalls to the association and ameliorate processes to operate more efficiently.

4. Enabling a holistic approach

COBIT 5 isn't just for perpetration in the IT department of a company. COBIT 5 can also be used to ameliorate the overall effectiveness of an association. This frame provides an intertwined and holistic approach to perfecting functional processes to maximize effectiveness. Team members can concentrate on being more productive and producing more precious affair for guests when they use the COBIT 5 frame in their company

5. Keeping management and governance distinct

COBIT 5 provides a clear distinction between governance and operation. COBIT 5 defines governance as including conditioning to estimate the requirements, conditions and choices of stakeholders in determining agreed objects to be achieved. Meanwhile, operation includes the conditioning of planning, structure, running and covering conditioning that are aligned with the direction of the governance association to achieve company pretensions.

The IT processes identified by CobiT 5 can be measured at maturity levels. The level of functionality provided by CobiT consists of six levels starting from level 0 (incomplete) to level 5 (optimized). The six levels are: [15]

1. Level 0: Incomplete Process / Organizations in this phase have not implemented the IT processes they should or have not achieved the goals that their IT processes should achieve.
2. Level 1: Process Execution l the organization has successfully implemented the IT process in this phase and the objectives of the IT process have actually been achieved.
3. Level 2: : Controlled processes / In this phase, the organization implements IT processes and achieves its goals successfully under proper management. Management takes the form of a coordination process to further improve planning, evaluation and coordination.
4. Level 3: The processes formed by the organization in this phase have standardized IT processes in all areas of the organization. This means that you already have process standards that apply throughout the organization.

5. Level 4: Predictable processes / In this phase, the organization executes IT processes within certain limits, such as time limits. This limit value is obtained from measurements that have been carried out during the implementation of the IT process.
6. Level 5: Optimization Process / In this phase, the organization innovates and makes significant improvements.

The COBIT 5 framework focuses on two main areas, namely the governance area and the second the management area. In COBIT 5, the governance area only has 1 domain, namely : [16]

1. EDM (Evaluate, Direct, Monitoring) while the management area has 4 domains, namely
 - a. Align, Plan, Organize
 - b. Build, Acquire, apply
 - c. Deliver, Service, Support
 - d. Examiner, estimate, Assess

An information system audit using COBIT 5 was carried out by [17] who conducted research on the fingerprint machine attendance information system at PT. Metal Castindo Industritama MEA domain, with a total of 40 resource persons and the results obtained were that the maturity level of the fingerprint machine attendance information system was at level 4 . The use of COBIT 5 as a tool for conducting information system audits was also carried out by [18] in the attendance application at PT Inl International, with the focus domains being EDM01, APO11, BAI08, DSS02, and MEA01. The results of this research are that the EDM01 domain gets a level of 3.64, the APO11 domain gets a score of 0.95, then the BAI08 domain gets a score of 2.93, then DSS02 gets a score of 1.59, and finally MEA01 gets a score of 3.18. So this research will use COBIT 5 with DSS and MEA domains to measure the level of reliability or capability of the KIOSK application. The focus of the subdomains that will be audited is DSS1, DSS2, DSS3, DSS4, DSS5, DSS6, MEA1, and MEA2. This domain was chosen because the problems that occurred were related to operations and also internal control of the KIOSK application itself.

III. METHODS

In conducting research, of course there must be stages that are followed so that the research carried out is measurable and focused. The following are the research stages that will be carried out:

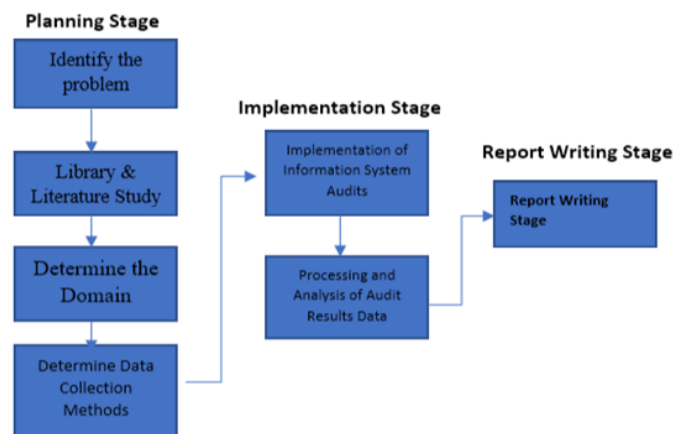


Fig. 1 Research Stages [19]

Planning Stage

At the planning stage, this research includes four activities, namely:

1. Identify the problem

In identifying the problem to be researched, several aspects must be taken into account, including: the existing problem can be researched, in conducting research it is not constrained by time, costs and resources, the required data can be obtained, then the solution can provide benefits to the object of research.

2. Library & Literature Study

In this stage the researcher conducted a literature study through relevant books and journals as a theoretical basis, as well as a review of previous research to serve as a reference for preparing the report. Literature study can also mean studying existing documents in the company that are related to the object of the information system audit.

3. Determine the Domain

To determine which domain will be audited, the researcher first looks back at the problem identification that has been carried out previously. In this case the focus of the problem is on the performance of the KIOSK inventory transaction application where abnormal transactions still frequently occur, so it is necessary to measure the level of reliability or capability of the application

4. Determine Data Collection Methods

In this research, primary data is used as the main data source. After determining what domain will be the audit target, a data collection form (assessment form) is then created to record documents or practices that are already running at PT Chemco Harapan Nusantara Cikarang regarding the use of the KOISK application which is in accordance with the base practice in the COBIT 5 domain. As support, The data collection process was also carried out using several data collection techniques, including: interviews and observation.

Implementation Stage

1. Implementation of Information System Audits

At this stage, researchers conducted an audit using an assessment form that had been created previously. The form contains the base practice in the selected COBIT domain, then the task of the auditee or audited party, in this case PT Chemco Harapan Nusantara, represented by the IT department, is to collect existing documents that are appropriate or can represent the base practice points in COBIT 5.

2. Processing and Analysis of Audit Results Data

After carrying out an information system audit process which produces a collection of documents as evidence that the base practice in COBIT 5 has been implemented at PT Chemco Harapan Nusantara Cikarang, then the documents that have been collected will be checked and validated and data processing will be carried out on these documents. Data processing is carried out by giving a score to each domain according to the amount of evidence or documents that have been collected. The more complete the documents or procedures collected, the higher the score for that domain.

Report Writing Stage

After all audit activities are completed, the results of the audit will be summarized in a report which will be submitted to the auditee. The purpose of submitting this report is so that the auditee knows the results of the information system audit that has been carried out, then knows the current condition of capability or reliability that has been achieved. After knowing the research stages, the next step is to map the company's business goals with the Enterprise Goals in COBIT 5. This is done by translating the relationship between vision and mission. and the values instilled by the company with Enterprise Goals COBIT 5. After obtaining the company's strategic points that are in accordance with Enterprise Goals COBIT 5 as below:

TABLE 1
 COBIT 5 ENTERPRISE GOALS MAPPING

NO	Enterprise Goals COBIT 5	Linkages
1	Value of company investments to stakeholders	Related
2	Portfolio of rival goods and services	Related
3	controlled business risk (asset protection)	Unrelated
4	adherence to external rules and regulations	Unrelated
5	Transparency in Finance	Unrelated
6	Customer-focused service culture	Related
7	Availability and continuity of business services	Related
8	Adaptable answers to a shifting corporate landscape	Related
9	Strategic decision-making grounded in information	Unrelated
10	Cost-saving measures for service delivery	Unrelated
11	Enhanced functionality of business processes	Unrelated
12	Cost-saving measures for corporate processes	Unrelated
13	oversaw business transformation initiatives	Unrelated
14	Staff and operational productivity	Related
15	adherence to internal guidelines	Unrelated
16	competent and driven individuals	Related
17	Innovation culture in products and businesses	Related

The Data from the table 1, it can be seen that the enterprise goals that are related are those that are colored green. Next, it is necessary to align these enterprise goals with IT-related goals, here is the mapping matrix. The IT-related goals points used are only those that have a meeting point between Enterprise Goals and IT-related goals which have the symbol 'P', then the results from mapping Enterprise Goals to IT-related goals. The following are the mapping results obtained

TABLE 2
RESULTS OF MAPPING IT-RELATED GOALS

No	Enterprise Goals	IT-related Goals
1	Value of company investments to stakeholders	1,3,5,7,11,13
2	Competitive products and services portfolio	1,5,7,9,12,17
6	client acquainted culture of service	1,7
7	Business service durability and vacuity	4,10,14
8	Nimble answers to a shifting business environment terrain	1,7,9,17
14	functional and employee output	8,16
16	professed and driven individuals	16
17	Innovation culture in business and products	9,17

The data from the table 2, Next, objectives linked to IT are mapped to the COBIT domain. This is done to find out what domains are related to the company's business goals as discussed in the previous chapter. The following are the results of the mapping:

TABLE 3
COBIT 5 DOMAIN MAPPING RESULTS

IT-related Goals	COBIT 5 Process
IT-rG 1	EDM1, EDM2, APO1, APO2, APO3, APO5, APO7, APO8, BAI1, BAI2.
IT-rG 3	EDM1, EDM5.
IT-rG 4	EDM3, APO10, APO12, APO13, BAI01, BAI06, DSS1, DSS2, DSS3, DSS4, DSS5, DSS6, MEA1, MEA2, MEA3.
IT-rG 5	EDM2, APO4, APO5, APO6, APO11, BAI01.
IT-rG 7	EDM1, EDM2, EDM5, APO2, APO8, APO9, APO10, APO11, BAI02, BAI3, BAI04, BAI6, DSS01, DSS2, DSS03, DSS3, DSS4, DSS6, MEA1.
IT-rG 8	APO4, BAI5, BAI7.
IT-rG 9	EDM4, APO1, APO3, APO4, APO10, BAI8.
IT-rG 10	EDM03, APO12, APO13, BAI6, DSS5.
IT-rG 11	EDM04, APO01, APO3, APO4, APO7, BAI04, BAI9, BAI10, DSS1, DSS3, MEA1.
IT-rG 12	APO08, BAI02, BAI07.
IT-rG 13	APO05, APO07, APO11, APO12, BAI01, BAI5.
IT-rG 14	APO9, APO13, BAI04, BAI10, DSS3, DSS4.
IT-rG 16	EDM4, APO1, APO7.
IT-rG 17	EDM2, APO1, APO2, APO4, APO7, APO8, BAI5, BAI8.

The data in table 3. Based on the problems discussed at the beginning of the chapter, the selected domains that will be audited are DSS and MEA only, including subdomains DSS01, DSS02, DSS03, DSS04, DSS05, DSS06, MEA01, MEA02. Next, participants were arranged to measure the capability level of the KIOSK application using the RACI Chart as below:

TABLE 4
RACI CHART MAPPING

No	RACI Chart COBIT 5	PT Chemco Harapan Nusantara
1	Head Executive Officer	IT Department Head
2	Head Officer of Finance	IT Department Head
3	Head Chief Operating Officer	IT Department Head
4	Executive in Business	Div JDE Control & Admin
5	Owner of Business Process	Div JDE Control & Admin
6	Project Management Office	Div JDE Control & Admin
7	Head of the Risk Department	Div Server & Network Control

8	Head of the Department of Information Security	Div Server & Network Control
9	Head of the information department	Div Server & Network Control
10	Leader Architect	Div Server & Network Control
11	Leader Development	Div Software & Helpdesk Control
12	Leader IT Operations	Div JDE Control & Admin
13	Leader IT Administration	Div JDE Control & Admin
14	Service Manager	Div Server & Network Control
15	Manager of information security	Div Server & Network Control
16	Business Continuity Manager	IT Department Head

The data in table 4 above RACI chart mapping. The next step is to provide guidance to participants as a form of coordination and delivery of information related to the ongoing process of the information system audit at PT Chemco Harapan Nusantara

TABLE 5
ACTIVITY DIRECTIONS

Activities	Implementing
Interview during assessment	Researchers and Participants
Collection of supporting evidence documents	Researchers and Participants
Recapitulation of assessment results	Researchers
Reporting	Researchers

TABLE 6
PROCESS ATTRIBUTE RATING MEA02

Subdomain	Base Practices	Work Product	Exist	Score	
MEA02 Monitor, Evaluate and Assess the System of Internal Control	MEA02-BP1 Inspect internal controls.	MEA02-WP2 Results of monitoring and evaluation of internal control	✓	50%	
		MEA02-WP3 Benchmarking and other assessment findings	-		
	MEA02-BP2 Examine the efficacy of business process controls.	MEA02-WP1 Evidence of control effectiveness	✓	100%	
	MEA02-BP3 Perform control self-assessments.		MEA02-WP4 Self-evaluation guidelines and plans	✓	100%
			MEA02-WP5 Outcomes of one's own evaluations	✓	
			MEA02-WP6 Review of self-assessment results	✓	
		MEA02-BP4 Recognize and disclose any inadequacies in control	-	-	0%
		MEA02-BP5 Confirm that assurance suppliers are impartial and competent	-	-	0%
		MEA02-BP6 Organize plan assurance projects.	-	-	0%
	MEA02-BP7 Area initiatives for assurance		MEA02-WP7 The scope of an assurance review	-	0 %
			MEA02-WP8 Plan of Engagement	-	
			MEA02-WP9 Procedures for assurance reviews	-	
MEA2-BP8 Execute assurance initiatives		MEA02-WP10 Enhanced scope	-	0%	
		MEA02-WP11 Ensure review outcomes	-		
		MEA02-WP12 Assurance review report	-		
Average Score				31.25%	

The data in table 6 is *Process Attribute Rating* MEA02 has average score 31.25%

After all domains have received scores, the values are displayed in table form as below:

TABEL 7
RESULT PROCESS ATTRIBUTE RATING

Domain	LEVEL					
	0	1	2	3	4	5
DSS1	100%	73.34%				
DSS2	100%	100%	75%			
DSS3	100%	100%	75%			
DSS4	100%	79.17%				
DSS5	100%	88.10%	100%	75%		
DSS6	100%	75%				
MEA01	100%	80%				
MEA02	100%	31.25%				

N (Not Achieved, 0-15%),
P (Partially Achieved, >15-50%),
L (Largely Achieved, >50-85%),
F (Fully Achieved, >85-100%)

Source (Researcher, 2023)

The data in table 7 shows the results of the attribute rating process. Each domain has different level calculation results. To be said to have reached a certain level, a process must reach a value of Largely (51-85%) or Fully (86-100%). Meanwhile, to be able to continue the assessment to the next level, a process must achieve a Fully score (86-100%) (ISACA, 2013a).

VI. RESULTS

The following are the results of the assessment recapitulation for each domain:

TABLE 8
ASSESSMENT RECAPITULATION RESULTS

Process Name	Expected Level	Process Capability Level					
		0	1	2	3	4	5
DSS1 Manage Operations	3		✓				
DSS2 Service Request and Incident Management	3			✓			
DSS3 Handle Issues	3			✓			
DSS4 Continuity Management	3		✓				
DSS5 Control the Security Services	3				✓		
DSS6 Control Business Processes	3		✓				
MEA1 Track and Assess Results and Adherence	3		✓				
MEA2 Keep an eye on, appraise, and test the internal control system	3	✓					

From the data in the table 8, the capability level for each domain has been obtained, then the average capability level for all domains will be calculated, which will be a representation of the KIOSK application capability level. The estimation of the average capability level for the KIOSK application at PT Chemco Harapan Nusantara is as follows:

Capibility Level :

$$\frac{(y_0*0)+(y_1*1)+(y_2*2)+(y_3*3)+(y_4*4)+(y_5*5)}{Z} \quad (1)$$

Information :

Y_n = number of processes at the nth level

Z = number of processes/domains assessed

By using the formula above, the calculation of the average capability level in this research is as follows:

Capibility Level :

$$\frac{(1*0)+(4*1)+(2*2)+(1*3)+(0*4)+(0*5)}{8}$$

Capibility Level = 1.38

The average capability level of the KIOSK application at PT. Chemco Harapan Nusantara was found to be 1.38, and this value was rounded to 1. This indicates that the KIOSK application at PT Chemco Harapan Nusantara has a capability level of level 1 (performed process), which denotes that the process has been executed effectively and has achieved the intended objectives. According to the findings of the information system audit, the KIOSK application's capability level is consistently below the expected level, which was determined by the results of participant interviews following an explanation of the general definition of the COBIT 5 capability level concept..

V. DISCUSSION

In this research, we explain the importance of this Audit Information System for organizations and companies. The role of information technology (IT) control and audit is becoming more important by the day. The results of this research are that there are no control documents to ensure procedures are carried out consistently so that synchronization failure problems can be prevented, there are no procedures that regulate the retention period for manual transactions, but security management and access management have been implemented well. The level of capability or reliability of the KIOSK inventory transaction application is at the level of carrying out the process, namely the process has been implemented and achieved the goal, the MEA02 subdomain received the lowest score among the other 8 subdomains, namely at level 0, so that the suggestions given for further research can be carried out by an SI audit again on the domain MEA, to see the extent to which recommendations for improvement have been implemented.

VI. CONCLUSIONS

Implementation of an information system audit using COBIT 5 is carried out by collecting control documents and aligning them with basic COBIT 5 practices, then conducting an assessment on each selected domain based on existing control documents. In this study, the domains chosen were DSS and MEA with subdomains consisting of DSS1, DSS2, DSS3, DSS4, DSS5, DSS6, MEA1, MEA2. From the results of the discussion above, it can be concluded that the KIOSK application has level 1 capabilities, where currently application management is still running in accordance with its initial function and objectives. Lack of optimal management related to operations, process continuity management, management related to business process control, as well as management related to monitoring performance and conformity can cause KIOSK application performance to be not optimal. The recommendations given focus on points in the attribute ranking process that have not been met, so it is hoped that implementing this can increase the level of capability of the KIOSK application so that it will automatically optimize the management of the application itself. Overall, the KIOSK inventory transaction application has been implemented procedures related to the DSS and MEA base practice domains in COBIT 5. By reaching the performed process level, it means the application is successful carry out the process and achieve its goals, but consistency is still needed in carrying out this

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