

Information technology management governance analysis using cobit 5 (Case Study at Universitas Dian Nuswantoro-PSDKU Kediri)

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Artikel dikirim: 07/02/2023

Artikel direvisi: 01/03/2023

Artikel diterima: 02/03/2023

ABSTRACT

A higher education facility called Universitas Dian Nuswantoro (UDINUS) is situated in Semarang City, Central Java, at Jl. Imam Bonjol Number 207. In order to offer top-notch educational services in the East Java region, UDINUS established a Study Program Outside the Main Campus (PSDKU) in the City of Kediri. Information technology is used by UDINUS to manage the company. beginning with student services, personnel, funding, and educational infrastructure. There isn't currently a system in place to gauge how effectively information technology administration is being used. In this study, a thorough analysis was done to establish how the COBIT 5 framework should be used for IT management. It is anticipated that by carrying out this research, it will be possible to learn more about the state of IT governance at UDINUS, Kediri City Campus, and offer recommendations to leaders for improvement in order to improve management. method for governing information technology at UDINUS's Kediri Campus. Additionally, the goal of this study is to learn more about the maturity level of the IT Governance program presently underway at the UDINUS campus in Kediri City. The approach taken in this study is a Cobit 5 framework analysis with several stages, including: initiate program (movers within the organization), define problems and opportunities (know the position of IT management in the organization), define road map (improvement goals), and plan program (planning to do). UDINUS Kediri has a value of 2.88 at the Established Process level, which can be interpreted as having an IT governance system maturity level with a value of 2.88, according to the study's conclusion, which was drawn from the findings of the analysis of information technology governance systems using COBIT 5. UDINUS PSDKU Kediri has carried out a description of the objectives and structure in accordance with the established standards at the Established Process level.

Keywords: IT Governance, Cobit 5, Established Process.

1. INTRODUCTION

Almost every industry in the world that conducts business now uses information technology. Businesses rely heavily on information technology. Information technology supports organizational strategic decision-making and is used for business processes.

Information technology is integral to all activities in the realm of contemporary education. Information technology is used to analyze the performance of the institution as a whole, not just for data storage. starting with the updated student admissions, academic, lecture, staffing, finance, alumni information, and other systems.

Effective information technology administration will help universities provide higher-quality educational services. Large sums of money are invested by universities in the growth of information technology. Colleges establish a separate department to advance information technology.



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A institution called Universitas Dian Nuswantoro (UDINUS) can be found in Semarang City, Central Java, at Jl. Imam Bonjol Number 207. In order to offer top-notch educational services in the East Java region, UDINUS established a Study Program Outside the Main Campus (PSDKU) in the City of Kediri. Information technology is used by UDINUS to manage the company. beginning with student services, personnel, funding, and educational infrastructure.

Many instructional and learning activities took place online during the pandemic. The KULINO application (Online Lectures) and SIADIN are used to monitor instruction and learning activities (Dian Nuswantoro University Academic Information System). At UDINUS Semarang and UDINUS PSDKU, Kediri City, in addition to KULINO and SIADIN, there are numerous other integrated apps that are used to provide services to students, lecturers, and educational staff.

Given the significance of IT in UDINUS PSDKU Kota Kediri, there aren't any metrics in place to assess the effectiveness of IT administration and management at the moment. COBIT 5 is a measurement system that can be used to evaluate IT governance and management. The framework outlines the steps that must be taken to successfully manage information technology risks, including some of the steps that must be implemented. The COBIT 5 framework is expected to help with risk reduction and resource utilization within the organization, as well as with the management of information technology (IT Governance), in order to support all organizational decisions, objectives, and benefits through the effective and efficient use of information technology.

In this study, a thorough analysis was done to establish how the COBIT 5 framework should be used for IT management. It is anticipated that by carrying out this research, it will be possible to learn more about the state of IT governance at UDINUS, Kediri City Campus, and offer recommendations to leaders for improvement in order to improve management. UDINUS's Kediri Campus has a governance structure for information technology. As a result of the background information provided above, the issue is that UDINUS PSDKU, Kediri City's IT governance preparedness level has not been measured.

2. REVIEW OF LITERATURE AND METHODS STUDY

2.1 Analysis

To see the parts in depth, the relationships between the various parts, and the ability of each part to function as a cohesive whole, this analysis breaks the whole down into simpler parts [1].

2.2 Information Technology Governance (IT Governance).

Due to advancements in information technology and telecommunications, information technology (IT) governance has taken on a significant amount of importance within companies and organizations. Every company benefits from IT governance, which is essential to achievement and profitability. The adoption and implementation of IT Governance are significantly influenced by the workforce and intellectual resources available [2]. Companies with good governance can boost profits by 20% more than those with bad governance [3].

It is possible to think of governance as an art or process for getting things done in relation to something to achieve goals. Governance is a process and structure for providing information, giving guidance, managing, and overseeing activities to achieve corporate goals [4].

IT governance is defined as the right to an accountable and strategic structure for decision-making to promote desired behavior in the use of IT. By emphasizing the management and use of IT to achieve organizational performance objectives, it represents the larger principles of organizational governance [5].

According to the company's strategic goals, information technology governance examines the efficiency of the business processes of the firm through structured measurements of information technology [6].

2.3 Udinus PSDKU City of Kediri

Kediri, East Java, is home to a campus of Dian Nuswantoro University. There are four study options: management, information systems engineering, visual communication design, and informatics engineering. Out of the four study programs, Management was admitted to the Department of Economics & Business while the other three were admitted to the Faculty of Computer Science. For the individuals in responsibility of running the four study programs on the Kediri campus under the supervision of the PSDKU coordinator. While each faculty is responsible for academics and education

administration. The Semarang campus's rules are followed by the Kediri city campus's information technology governance. The same information technology is utilized on the Kediri and Semarang campuses.

2.4 Information and related technology control goal (Cobit 5).

The use of COBIT 5 within the organization is used to assess how well information technology is being used, as well as to minimize risk and maximize resources for the good of the organization and its users. Auditors and users (users) can use COBIT 5's documentation and guidelines to apply IT Governance and manage technical issues [7]. The IT Governance Institute (ITGI) created COBIT 5 for the Information System Audit and Control Association (ISACA) [8].

2.5 Process Reference Model (PRM)

The amount of governance and management processes is explained and described in COBIT 5's process reference model. The two primary areas of Cobit 5 are governance and process management [9]:

- There are 5 steps in 1 domain of policy (governance).
- There are 32 procedures and 4 domains in management.

2.6 Process Capability Model (PCM)

When measuring process capability, COBIT 5 offers a capability dimension that is used to accomplish corporate objectives. To achieve present organizational objectives, there are six levels that are used, including Level Incomplete Process, Performed Process, Established Process, Predictable Process, and Optimizing Process [10]. The Table 1 shows the worth of each process's capability level:

Table 1. Mapping of the capability number range

Capability value	Value Range	Capability Level
0.00	0 – 0.50	0 – <i>Incomplete Process</i>
1.00	0.51 – 1.50	1 – <i>Performed Process</i>
2.00	1.51 – 2.50	2 – <i>Managed Processes</i>
3.00	2.51 – 3.50	3 – <i>Established Process</i>
4.00	3.51 – 4.50	4 – <i>Predictable Processes</i>
5.00	4.51 – 5.00	5 – <i>Optimizing Process</i>

The capability value, which is split into 6 assessments, is described in Table 1 [8]:

- a. *Incomplete Process*: At this stage, the process is either not implemented or does not succeed in achieving its objectives.
- b. *Execution of the procedure (Performed Process)*: At this stage, the procedure is complete and successful in achieving its objectives.
- c. *Managed Process*: At this level, the process is planned, carried out, and routinely executed (planned and monitored).
- d. *Process that is Fixed or Standardized*: At this level, the company has implemented IT processes.
- e. *Predictable Process*: In a foreseeable process, the process is carried out at this point within the predetermined parameters to produce the desired outcome.
- f. *Process Optimization*: The process is currently being optimized after it has been put into place and is continuously being improved.

2.7 Governance Information Technology

There are 5 steps that are completed in the COBIT 5 framework [11]:

- a. Stage 1 – *Initiate Program*:

Table 2. Stage 1 – Initiate Program [8]

Stage 1 – <i>Initiate Program</i>	
Input (<i>Input</i>)	- Organizational structure - Organizational duties and authorities.

Output _ - Organizational overview.

Table 2's first stage gives a description of the individuals involved in running/relating to the group. Understanding the organization's objectives, the responsibilities of each section, and the authority within the current structure are the objectives at this point.

b. Stage 2 – *Define Problems and Opportunities*

Table 3. Stage 2 – Define Problems and Opportunities [8]

Stage 2 – Define Problems and Opportunities	
Input (<i>Input</i>)	RACI diagram
Output _	<i>Current Capability Rating</i>

The capabilities of all parties involved in IT and actively using IT are described in this second stage. Data from a questionnaire distributed to individuals directly involved in information technology within the business is used to create an overview of current capabilities (as is) in **Table 3**.

c. Stage 3 – *Define Road Map*

Table 4. Stage 3 – Define Road Map [8]

Stage 3 – Define Road Map	
Input (<i>Input</i>)	- <i>Current Capability Rating</i>
Output _	- <i>Target Capability Rating</i> - <i>Gap Analysis</i>

The discrepancy between the organization's goals and its present state will be determined in this third stage. This step also identifies several conveyable potential solutions that can be chosen in order to accomplish future objectives in **Table 4**.

d. Stage 4 – Plan Programme

Table 5. Plan Program [8]

Stage 4 – Plan Programme	
Input	- <i>Current Capability Rating</i>
(<i>Input</i>)	- <i>Target Capability Rating</i> - <i>Gap Analysis</i>
Output _	- Recommendations for improvements to each process that has been selected

This stage explains what the organization must do in the form of suggestions and solutions for growth. Additionally, at this point, the business has the chance to enhance the chosen organizational processes in **Table 5**.

2.8 RACI (Responsible, Accountable, Consulted, Informed) diagram.

The Responsible, Accountable, Consulted, and Informed (RACI) Chart is a matrix of all organizational tasks and authorities that aids in decision-making [12]. The RACI Table is explained in the paragraphs that follow:

- Responsible*, is who gets the task to be done and plays the main role or person in charge
- Accountable*, is responsible for task success
- Consulted*, is giving input
- Informed*, are those who receive information

2.9 Guttman scale.

The Likert scale, Thurstone scale, and the Guttman scale are the other two unidimensional measures. One component of a variable with multiple dimensions is measured using the Guttman scale [13]. Numbers 1 and 0 were used to represent the information from interviewees' responses.

2.10 Information technology governance domain

The term "domain IT governance" refers to the company's adopted IT rules. There are 4 dimensions: people, procedure, technology, and goals [14]. Choosing information technology governance areas based on goals. Consequently, based on the goals, the following process domain scope is chosen [15]:

1. Managing the Goal-Achieving Framework and Approach This group's procedure is EDM 01, which stands for "Ensure Governance Framework Setting and Maintenance".
2. Ensuring Contribution to Company Value EDM 02 Ensure Benefits Delivery is the procedure under this division.
3. Controlling Danger. EDM 03 Ensure Risk Optimization and APO 12 Manage Risk are the procedures in this group.
4. Organize your resources. The procedures in this group are APO 07 Manage Human Resources and EDM 04 Ensure Resource Optimization.
5. Managing Stakeholder Associations This group's procedures follow EDM 05: Ensure Public Transparency.
6. Control Protection The DSS 05 Manage Security Service procedures are included in this group. The procedures in this group, Managing Infrastructure, are BAI 09 Manage Assets and DSS. Coordinate operations in 1.

3. RESULTS AND DISCUSSION

The four phases of COBIT 5 implementation for information technology governance analysis are initiate program, define problems and opportunities, define road map, and plan program.

3.1 First Stage: Initiate Program

Determine the user's position within the organization at this point. The information used to determine how well the structure was understood came from interviews with the current sections of UDINUS PSDKU Kediri. According to the defined sections, each section has its own obligations and responsibilities.

- The PSDKU Coordinator in Kediri.
The responsibility for organizing all actions taken within the Kediri PSDKU scope falls to the PSDKU Kediri Coordinator.
- Head of Study Program.
Academic pursuits within each study program are to be led by the heads of those study programs. Coordinate activities with the Kediri PSDKU Coordinator, and academic matters with the faculties in charge of the corresponding study fields. Work with the Faculty of Computer Science to organize study programs for IS, IT, and DKV. The Management study program is in communication with the School of Economics and Business at the same time.
- Head of administration
All academic assistance requirements must be coordinated by the head of administration. The PSDKU Kediri TU leader is also in charge of the academic and finance departments.

3.2 Second Stage: Define problems and opportunities

This stage describes the organization's current position within the business in terms of IT. This is accomplished by evaluating the organization's level of current capability (as is) based on the responses to the capability questionnaire it was provided.

3.2.1 RACI Matrix

The responsibilities of each stakeholder in an organization who has a direct interest in the IT management process are described in a matrix or diagram. **Table 6** displays the RACI map, which has been modified to reflect the circumstances at UDINUS PSDKU Kediri right now.

Table 6. Diagram of RACI PSDKU Kediri
**PSDKU Kediri RACI
 diagram**

K	tu	B1	B2	B3	B4	B5
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EDM 01.	A	I	R	R	R	R	R
EDM 02.	A	I	R	R	R	R	R
EDM 03.	A	I	R	R	R	R	R
EDM 04.	A	I	R	R	R	R	R
EDM 05.	A	I	R	R	R	R	R
APO 12.	A	I	R	R	R	R	R
APO 07.	A	I	R	R	R	R	R
DSS 05.	A	I	R	R	R	R	R
BAI 09.	A	I	R	R	R	R	R
DSSS 01.	A	I	R	R	R	R	R

Information:

- K : PSDKU Coordinator
- B1 : Head of Study Program
- B2 : Field of Research and Community service
- B3 : Student Affairs
- B4 : Academic Section
- B5 : Finance department

In order to conduct interviews about processes that have been or are presently running, it is possible to identify who is responsible for managing the process based on the RACI diagram in Table 6. Data about the present state of UDINUS PSDKU Kediri was generated as a result of the interviews, and this data was then used to make a Guttman scale calculation in order to determine the current capability rating, or the degree to which the company's IT governance is currently prepared.

3.2.2 Current capability rating

At UDINUS PSDKU Kediri, the readiness state of IT governance is evaluated using the Current Capability Rating. The ranking for capability is 2.88 at the moment. According to Table 1's mapping of the spectrum of capability values, the UDINUS PSDKU Kediri's information technology governance is at level 3, or Established Process.

3.3 Third stage – define roadmap

After learning about the organization's current level of capability, this stage will explain the improvement goals that will be pursued by the organization. It will also analyze the gap between the conditions currently in place and the objectives the campus has set for itself in order to find solutions to those objectives.

3.3.1 Target capability rating

The degree of capability of the current resources within the current organization can be used to determine the organization's goals. Targets are expectations for the organization's progress that must be met.

Graph of the current condition and future targets of UDINUS Kediri

- Current condition
- Future targets

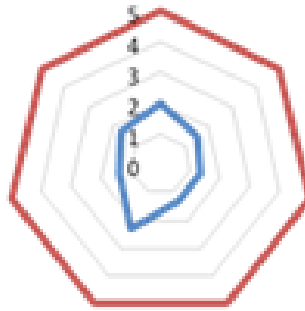


Figure 1. Current conditions and future goals of UDINUS Kediri

At PSDKU Kediri, the expected goals for managing the information technology governance system are to be able to manage, minimize risk, present, and provide data and information services to the fullest extent possible, specifically at level 5.

3.3.2 Gap Analysis

Because the capabilities of the present organization and the conditions the organization wants to achieve differ, there is a gap between current conditions and goals. The findings of the gap study are listed below:

Table 7. The results of the UDINUS PSDKU Kediri gap analysis

Objective	Gap Capability Levels
Manage Framework and Achievement Strategy Objective	The target or prospective users of the application have not yet received any or all of the project deliverables.
Ensure Contribution Business Value	The project deliverables have not yet been received by the application's intended or potential consumers, in whole or in part.
Managing Risk	IT service quality and customer satisfaction cannot be measured using any specific criteria.
Manage Source Power	There is no risk assessment or paperwork provided to connected parties.
Manage Security	There is no program for health examinations and consultations regarding the welfare of the IT workers.
	There are no programs for Occupational Health and Safety training (K3).
Manage Infrastructure	The ability of the admin to create a user ID under the direction of the leadership is dependent on the creation of a new user ID.
	Transaction logs, data logs, and event logs are not being routinely logged.
	There is no effort to regularly and consistently monitor and document server performance (such as CPU usage, memory usage, and HDD) as data for analysis if anomalous conditions arise.
	The use of the UPS by other devices that can shorten the UPS supply time is not being mitigated by compiling a list of equipment, particularly critical/IT devices, that only uses the UPS.
	If the OnSite server or production server encounters disruptions or catastrophes in the same location, there is no OffSite data backup that can take its place.

Table 7 demonstrates that UDINUS Kediri lacks the organizational capacity to handle IT in accordance with the desired expectations.

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3.4 Fourth stage: plan programme

This phase outlines the organization's plans for development and offers suggestions for how organizational objectives can best be met. By measuring the gap between the current situation and the conditions the organization wants to achieve, this stage aims to help the organization better the current situation in order to achieve its goals.

3.4.1 Recommendation

For organizations to instantly meet organizational goals, recommendations are made in the shape of suggestions from researchers. The top level of leadership in UDINUS PSDKU Kediri receives recommendations. According to the results of the gap analysis in the preceding sub-chapter, recommendations are modified.

Table 8. Recommendation

Objective	Recommendation
Manage Framework Work and Achievement Strategy Objective	For all procedures, policies, Standard Operating Procedures (SOP), and legal definitions should be determined and documented. Every work action, both technical and non-technical, should always be documented or recorded in order to be readily accounted for.
Ensure Contribution Business Value	To ensure reciprocity between stakeholders and application users, it is preferable to develop a method, instrument, or means that can be used as a suggestion box to evaluate the caliber of services that have been utilized by the community.
Managing Risk	We advise you to always communicate with coworkers and other partners in order to identify and address potential risks. To improve knowledge of workplace safety, occupational health and safety (K3) training is preferable.
Manage Security	It is best to put cameras as soon as possible on vital assets, including CCTV, automatically locking doors, alarms from unauthorized access, fire extinguishers, etc. On critical assets, such as CCTV, automatically locking doors, alarms from unauthorized entry, fire extinguishers, etc., it is best to install cameras as soon as feasible.
Manage Infrastructure	To replace the primary server having issues, we advise you to perform an on-site server backup. Always communicate with the building management so that they know every part and layout of the building and building facilities.

For effective IT management governance, it is necessary to adopt a number of the recommendations from **Table 8**. The leadership will receive recommendations to consider as an urgent implementation agenda.

3.5 Analysis of results

The maturity value was 2.88 according to calculations of the stage 2 capability evaluation and interviews with UDINUS PSDKU Kediri respondents. According to table 1, the maturity value range at the Established Process level includes a number of 2.88.

The Semarang Campus Data and Information Unit (UDI) and UDINUS PSDKU Kediri have collaborated on training related to information systems, network maintenance on campus is handled by DINUSTEK directly, and there is transparency between staff and the Semarang PSDKU Coordinator regarding the Information Technology facilities used. A number of processes, including the addition or removal of hardware, server performance (CPU, memory, HDD utilization), onsite and offsite data backups, and the physical security of IT devices like fire extinguishers, have not been consistently

monitored by UDINUS PSDKU Kediri. The present and maximum conditions based on the procedures used at UDINUS PSDKU Kediri are shown in **Figure 1**.

4. CONCLUSION

According to the findings of this study's examination of information technology governance systems using COBIT 5, UDINUS Kediri has an IT governance maturity level with a value of 2.88. At the level of Established Process, UDINUS PSDKU Kediri has defining goals and frameworks, providing business contributions to UDINUS Kediri students, lecturers, and staff, transparency between UDINUS Kediri staff and coordinators, and controlling IT operations like UDINUS Kediri's internal internet networks. UDINUS Kediri controls PCs by granting security via logins, but has not implemented risk management practices like risk identification, consequences, and risk solutions, updated Disaster Recovery Plan (DRP) documents, onsite and offsite data backups, hardware management practices like monitoring CPU server performance, and monitoring the operational readiness of supporting equipment like generators, light fire extinguishers, hydrants, and UPS checks to avoid overloading equipment.

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