

# MEASUREMENT OF IT GOVERNANCE MATURITY LEVEL IN ACADEMIC INFORMATION SYSTEMS AT MANADO STATE UNIVERSITY

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## MEASUREMENT OF IT GOVERNANCE MATURITY LEVEL IN ACADEMIC INFORMATION SYSTEMS AT MANADO STATE UNIVERSITY

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### ABSTRACT

Current academic business processes have been helped by the existence of several Information Systems, but current academic SOPs have not implemented the system properly. As a result, some of the IT responsibilities that should be carried out in each unit are delegated to the IT sector, because they have not been regulated in the Standard Operation Procedure. Therefore we need a governance model that can overcome these problems. This research was conducted by applying the COBIT 4.1 framework which can see all aspects of the technology planning used, its application to the evaluation of the technology. Data collection techniques are carried out using interviews, observation and documentation studies. Data collection was carried out in two forms, namely: the first stage regarding management awareness and the second stage regarding maturity level. Phase I data collection is intended to carry out risk identification analysis, while data collection II is intended to measure maturity level. The results of the research are in the form of an IT Governance Model that uses the COBIT 4.1 framework for academic processes which are embodied in the form of proposed policies and procedures for IT academic governance processes. And also carried out a feasibility test of the academic process IT Governance Model in which in general the respondents have stated its suitability so that it is feasible to implement and get the results of using information technology that is effective and efficient. 1 for the academic process which is manifested in the form of proposed policies and procedures for IT academic governance processes. And also carried out a feasibility test of the academic process IT Governance Model in which in general the respondents have stated its suitability so that it is feasible to implement and get the results of using information technology that is effective and efficient. 1 for the academic process which is manifested in the form of proposed policies and procedures for IT academic governance processes. And also carried out a feasibility test of the academic process IT Governance Model in which in general the respondents have stated its suitability so that it is feasible to implement and get the results of using information technology that is effective and efficient.

**Keyword :**COBIT, IT Governance, information systems, Maturity level

### INTRODUCTION

The pace of development of information and telecommunications technology requires people to be more active in increasing their effectiveness and efficiency in all fields. Effectiveness, efficiency, confidentiality, integrity, availability, reliability, compliance are

measurements in achieving the vision, business goals or targets, as well as predetermined goals. Computerized systems and information systems are one way to increase effectiveness and efficiency in the provision and processing of quality information to achieve the company's vision and goals in a quality and quality manner so as to increase added value so as to be able to compete in global competition.

Computer applications have grown rapidly nowadays, as have web applications and internet and intranet browsers. The web lifestyle will be characterized by the rapid emergence of innovative applications. The infrastructure that supports the web lifestyle is high-speed connectivity, such as fiber cable networks and broadband internet. People will turn to the web to get the latest news, to shop online, buy tickets and so on. One example of the idea is a web-based bus ticket booking application. The system is a conceptual structure composed of interrelated functions that work as an organic unit to achieve a desired result effectively and efficiently. The Information System is a collection of resources and a network of procedures that are related to each other in an integrated manner, integrated in a certain hierarchical relationship (Gondodiyoto, 2007: 106-109). The maturity level of IT Governance is the process of collecting and evaluating evidence about information to determine and report the conformity of information with established criteria and is carried out by competent and independent people (Gondodiyoto, 2007: 442-447). IT Governance maturity level activities are carried out to ensure management of information systems so that they are directed within the framework of continuous improvement (Sarno, 2009: 173-174). Information system IT Governance maturity level requires measurement standards. The information system IT Governance maturity level standard can measure alignment between business processes, applications,

The main activities in tertiary institutions are in accordance with their main function as higher education institutions, namely the tri dharma of higher education, one of which is education providers, namely academic services. In implementing these academic services, it is necessary to use IT that can support speed, convenience and comfort in academic services, so that the quality of academic services can be provided to students. Manado State University is one of the educational institutions that organizes higher education that uses information technology as a means and infrastructure to provide services. In carrying out its main activities where Manado State University is a tertiary institution that provides educational services, it is supported by a Bureau, namely the Administrative and Academic Bureau. In carrying out its duties, this academic bureau has been supported by IT in the form of an online application, where IT development is carried out by a separate Bureau, namely the IT Bureau.

However, in the academic process, Manado State University also has its own SOP which regulates all academic activities. In the current conditions, the SOP of the Manado State University academic process has not been properly implemented in the AIS that is owned. All academic activities have indeed been assisted by the existence of an SIA but are not yet in accordance with the academic process SOP. As a result, some of the IT responsibilities that should be carried out in each unit are not optimal, because they have not been regulated in the SOP. For this reason, in managing IT, Manado State University requires a management model that can be used to overcome the obstacles encountered in carrying out the academic process. Control Objectives for Information and Related Technology (COBIT) is a representative and comprehensive governance standard model, which covers planning, implementation, operational and monitoring issues of all IT processes. Based on this, this research will create

an IT management model for academic processes at Manado State University using the COBIT framework.

This also applies to the academic section at UNIMA. UNIMA as one of the educational institutions that organizes higher education in the North Sulawesi region, uses information technology as: 1. One of UNIMA's positionings is an information technology-based university, namely providing education based on a curriculum based on information technology and computer competencies. 2. Supporting business processes, namely using information technology as a means and infrastructure to provide services to students, lecturers and all staff and to help carry out activities in all existing work units. In carrying out its main activities, UNIMA as a tertiary institution that provides educational services is supported by an academic bureau, namely the Academic and Student Administration Bureau (BAAK) which has the goal of being a bureau providing administrative services and academic information that is fast, accurate, orderly and friendly. In carrying out this task, BAAK has been supported by IT in the form of an academic information system, where IT procurement is carried out by a separate division, namely UPT Computer UNIMA. However, there are problems in the current academic information system, namely monitoring and evaluating IT performance, especially the academic information system used and evaluation of system and employee performance, both non-IT employees and IT employees involved in the academic information system, has not been carried out optimally by the parties. university because supervision and assessment of IT is only carried out if there are complaints from the work unit regarding the IT service.

These problems are related to the services that need to be provided to users of the academic information system, starting from the operations that need to be carried out on existing academic data security and sustainability aspects to the training of human resources that support the process of the academic information system. In addition, these problems are related to supporting processes that must first be established to be able to provide services. Given these problems, this study aims to make a recommendation for appropriate IT management so that it can be used as a guide that can be used by users and can increase the optimal use of these facilities.

Making IT Governance in this study uses the COBIT (Control Objectives For Information And Related Technology) framework, where the basic concept of the COBIT framework is that the determination of control in IT is based on the information needed to support business objectives and the information resulting from a combination of its applications.

## METHOD

### *Development style*

The research subject that will be discussed in this final project is to create a model of information technology governance for academic processes. This governance model was created using the COBIT 4.1 framework and aims to make information technology-based academic activities run properly and in accordance with existing SOPs.

The development model in this study used observation, interviews and collection of evidence from the field. The data is then mapped based on the financial perspective of the Balanced Scorecard and using the COBIT 4.1 Standard, resulting in a report on the maturity level of IT Governance, the value of the maturity level is then depicted with a spider web and

preparation of recommendations (Samo, 2009).

The steps taken to obtain the right data are used:

### Method of collecting data

In this method, data collection is done in two ways, including:

- a. Interview : Doing question and answer to the related parts in their fields and the people involved in it so that the information obtained is more accurate.
- b. Observation : This step is to conduct research directly into the field, namely observing every process carried out in the office academic and re-registration service centers both at the Palu head office and a branch office in the city of Manado.
- c. Literature Study: This methodology is carried out by reading, studying, and citing theories related to the topics we discuss either through books or the internet.

### Analysis Method

The COBIT framework that will be used in this research is the 4 (four) domains as follows:

a. Plan and Organize

PO1	Defining the IT strategic plan
PO2	Define information architecture
PO3	Define technology direction
PO4	Defining IT processes, organization and interrelationships
PO5	Manage IT investments
PO6	Communicating management goals and direction
PO7	Manage IT resources
PO8	Manage quality
PO9	Assess and manage IT risk
PO10	Manage projects

b. Acquire and Implement

AI1	Identify automated solutions
AI2	Acquire and maintain application software
AI3	Acquire and maintain technology infrastructure
AI4	Allows operation and use
AI5	Meet IT resources
AI6	Manage change
AI7	Installation and accreditation of solutions and their changes

c. Delivers and Support

DS1	Define and manage service levels
DS2	Manage third party services
DS3	Manage performance and capacity
DS4	Ensuring continuous service
DS5	Ensuring system security
DS6	Identify and allocate costs
DS7	Educate and train users
DS8	Manage service desk and incidents
DS9	Manage configuration
DS10	Manage problems
DS11	Manage data
DS12	Manage the physical environment
DS13	Manage operations

d. Monitor and Evaluate

ME1	Monitor and evaluate IT performance
ME2	Monitor and evaluate internal controls
ME3	Ensuring fulfillment of external needs
ME4	Provide IT governance

The stages of analysis in research include:

1. Needs Analysis
2. Development of Governance Model
  - a. Design and implementation of data collection
  - b. Result recapitulation
  - c. Analysis of results Data collection
  - d. Solution design
  - e. Governance model design
3. Testing the Governance Model

**Implementation of IT Governance Information System maturity level**

The steps for implementing the IT Governance maturity level of information systems are based on best practice (Samo, 2009), namely:

1. Determination of Scope of IT Governance Information System maturity level
2. Evidence Gathering
3. Implementation of fit test
4. Calculation of Maturity Level Value
5. Compilation of Findings and Recommendations

**RESULTS AND DISCUSSION**

The results of this study illustrate that the interview process did not refer to RACI, the attributes/parameters used to determine the maturity level were not explained, and there were

no detailed recommendations for increasing the maturity of each process. Subsequent research, in the interview process did not refer to RACI and only discussed the 3 DS domains, namely DS 4, DS 8 and DS 11. The results of previous research, what distinguishes this research is the domains discussed include PO2, PO 3, AI 1, AI 5, AI 7, DS 4, DS 7, and DS 11, while the maturity process is only through awareness and communication maturity attributes, while the similarity in this study is in providing recommendations using ITIL V3.

In this study, the same procedure was carried out according to the research method used. The following is the result of one of the processes in the DS domain, namely DS 8, Manage Service Desk and Incidents.

1. Determining the RACI Diagram Functions/Positions in the RACI diagram are adjusted to the organizational structure at Manado State University. This diagram will later be used to determine who questions related to the activity will be asked.

**Table 1. Raci Diagram for DS 8 Managing Service Desks and Incidents**

No	Function/Position Activity	Head of Puskom	Puskom administra tion staff	Puskom web staff	Puskom Network	Head of BAA	BAA staff	Rector
1	Make classification (severity and impact) escalation procedures (functional and hierarchical)		C	C	C		A/R	
2	Detect and log incidents/service requests/information requests						A/R	
3	Classify, investigate, and diagnose questions	I	C	C	C	C	A/R	
4	Resolving, returning and closing incidents	I	R	R	R	I	A/R	
5	Inform the user (e.g. about incident status)	I				I	A/R	
6	Create management reports	I				C	A/R	I

2. Conducting a Questionnaire For each activity of the RACI diagram, 6 questions were created, each of which was asked to find out the maturity level of the 6 maturity attributes

COBIT 4.1 Table 2 contains the definition of maturity for the attributes of policies, plans and procedures taken from COBIT 4.1. Referring to the description of maturity in COBIT 4.1 as shown in TABLE 2, namely for the attributes of Policies, Plans and Procedures, editorials were then made to answer the questionnaire questions. Table 5 shows an example of a questionnaire for activity number 2 of DS 8. The question is used to find out the maturity level of the attributes of policies, plans and procedures for that activity. It can be seen in table 5 that the editorial of the alternative answers refers to table 2.

**Table 2. Description of Maturity for Policy Attributes, Plans and Procedures**

<p><b>Level 1</b>                  There are provisional approaches to processes and practices. Undefined processes and policies.</p>
<p><b>Level 2</b>                  A similar and common process emerges, but is highly intuitive according to individual expertise. Some aspects of the process are repetitive due to individual expertise and there is some informal documentation and understanding of policies and procedures.</p>
<p><b>Level 3</b>                  The use of emerging good practice. Defined and documented processes, policies and procedures for all key activities.</p>
<p><b>Level 4</b>                  Robust and complete process, internal best practices applied. All aspects of the process are documented and iterative. The policy has been approved and signed by management. Standards for developing and maintaining processes and procedures are adopted and followed.</p>
<p><b>Level 5</b>                  Best practices and external standards are applied. Process documentation evolves towards automated workflows. Processes, policies and procedures are standardized and integrated to enable management and development</p>

**Table 3. Interview Questions for Activity Number 2 on Ds 8 For Attributes of Policies, Plans and Procedures**

<p>What is the process for recording and detecting incidents/service requests/information requests?</p>
<ol style="list-style-type: none"> <li>1. There are no policies and SOPs in carrying out this process. Activities are carried out spontaneously and the policies adopted are reactive and temporary.</li> <li>2. Activities are carried out intuitively based on individual expertise that is considered capable. Some documentation regarding procedures and policies has started to be made.</li> <li>3. Processes, policies and procedures for core activities are standardized and documented.</li> <li>4. Processes, policies and procedures for all activities have been standardized and documented and approved and formalized by management.</li> </ol>



5. Recording, reporting, analysis on the framework and determination of the results are carried out automatically and integrated with management

3. Calculation of maturity level table 4 shows the recapitulation of the questionnaire results for DS 8. The recapitulation results are used to calculate the cumulative maturity index of each maturity attribute using (1). These values are then used to calculate the maturity index of a process in the DS domain using (2). The final results are summarized in a table to be displayed along with the results of processing values from other processes in the DS domain. Table 4 is a combined recapitulation of the maturity index of the six maturity attributes of each process in the DS domain. Table 5 shows the final results of the maturity index for each process. Because the maturity index is a fractional number, it is necessary to convert it into an integer so that the maturity level can be determined.

**Table 4. Calculation of Maturity Level for DS 8**

No	Aktivitas	RACI	Kesahaman dan Komunikasi	Kebijakan, Rencana dan Prosedur	Alat dan Organisasi	Skill dan Keahlian	Tanggung Jawab dan Akuntabilitas	Penetapan Tujuan dan Pengukuran
1	Membuat klasifikasi (keparahan dan dampak) prosedur eskalasi (fungsional dan hierarkis)	Staf Adm. Puskom	1	1	1	1	1	1
		Staf Web Puskom	1	1	1	1	1	1
		Staf Jaringan Puskom	1	1	1	1	1	1
		Staf BAA	1	1	1	1	1	1

2	Mendeteksi dan mencatat insiden/permintaan layanan/permintaan informasi	Staf BAA	2	1	1	1	1	1
3	Mengklasifikasikan, menginvestigasi, dan mendiagnosa pertanyaan	Direktur Puskom	2	1	1	1	1	1
		Staf Adm. Puskom	2	1	1	1	1	1
		Staf Web Puskom	2	1	1	1	1	1
		Staf Jaringan Puskom	2	1	1	1	1	1
		Staf BAA	2	1	1	1	1	1
4	Menyelesaikan, mengembalikan dan menutup insiden	Direktur Puskom	1	1	1	2	3	1
		Staf Adm. Puskom	1	1	1	2	3	1
		Staf Web Puskom	1	1	1	2	3	1
		Staf Jaringan Puskom	1	1	1	2	3	1
		Kepala BAA	1	1	1	2	3	1
		Staf BAA	1	1	1	2	3	1
5	Menginformasikan kepada aser (misal tentang status insiden)	Direktur Puskom	1	1	1	1	1	1
		Kepala BAA	1	1	1	1	1	1
		Staf BAA	1	1	1	1	1	1
6	Membuat laporan manajemen	Direktur Puskom	1	1	1	1	1	1
		Kepala BAA	1	1	1	1	1	1
		Staf BAA	1	1	1	1	1	1
		Rektor	1	1	1	1	1	1
Rata - Rata			1,3	1,0	1,0	1,2	1,3	1,0

**Table 5. Calculation of the Maturity Level for All Processes in the Deliver and Support Domain**

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No	Proses	Kesediaan Komunitas I	Kebijakan, Rencana dan Prosedur	Alat dan Otomatisasi	Skill dan Keahlian	Tanggung Jawab dan Akuntabilitas	Pencapaian Tujuan dan Pengukuran	Maturity Level As Is	Maturity Level To Be
DS1	Mendefinisikan dan Mengelola Tingkat Layanan	1.8	2.0	1.0	2.0	2.0	2.0	1.8	3
DS2	Mengelola Layanan Pihak ke Tiga	2.0	1.3	1.2	2.0	2.0	2.0	1.8	3
DS3	Mengelola Performa dan Kapasitas	2.2	1.5	1.7	2.3	1.8	2.0	1.9	3
DS4	Memastikan Keberlanjutan Layanan	2.1	2.0	2.0	2.3	2.0	2.0	2.0	3
DS5	Memastikan Keamanan Sistem	2.3	2.0	2.0	2.0	2.0	2.0	2.0	3
DS6	Mengidentifikasi dan Mengelompokkan Bivva	2.0	2.0	2.0	2.0	2.0	2.0	2	3
DS7	Mendukung dan Melatih User	2.0	2.0	2.0	2.0	1.0	1.0	1.7	3
DS8	Mengelola Service Desk dan Insiden	1.3	1.0	1.0	1.2	1.3	1.0	1.3	2
DS9	Mengelola Konfigurasi	1.5	1.3	1.0	1.0	1.3	1.0	1.5	2
DS10	Mengelola Permasalahan	2.2	1.8	1.5	2.0	2.2	1.7	2.2	3
DS11	Mengelola Data	1.4	1.4	1.0	1.2	1.2	1.0	1.4	2
DS12	Mengelola Lingkungan Fisik	1.4	1.0	1.0	1.0	1.2	1.0	1.4	3
DS13	Mengelola Operasi	1.9	1.4	1.0	1.9	1.6	1.7	1.9	3

The rounding rules for defining maturity level criteria are shown in table 6.

**Table 6. Maturity Level Assessment Criteria**

<i>Maturity Index</i>	<i>Maturity Level</i>
0.00 – 0.50	0 – <i>Non Existent</i>
0.51 – 1.50	1 – <i>Initial / Adhoc</i>
1.51 – 2.50	2 – <i>Repeatable but Intuitive</i>
2.51 – 3.50	3 – <i>Defined Process</i>
3.51 – 4.50	4 – <i>Managed and Measurable</i>
4.51 – 5.00	5 – <i>Optimized</i>

Table 5 also displays the target maturity level (To Be). This value is obtained in the same way as the current maturity level (As Is), namely through interviews with respondents. Along with questions to find out current conditions, questions about expected future conditions are also asked.

Referring to table 5, a graphical display is made in Figure 1. The figure shows that there

is a gap between the current (As Is) and expected (To Be) maturity levels.



**Figure 1. Gap analysis diagram**

Furthermore, it is necessary to determine corrective steps to close the gap. For example, for DS 8 from interviews and observations it is known that the maturity level as is is 1 and to be is 2. Table 7 is a recommendation based on Cobit 4.1 and ITIL SO 19 which is given based on the findings found in order to achieve the maturity level according to the target. i.e. 2.

**Table 7. Recommendations for Closing the DS Gaps 8**

No	Temuan	Rekomendasi
1	Tidak terdapat SOP dalam mengatasi insiden, aktifitas dilakukan secara reaktif dan intuitif.	Pembuatan SOP untuk mengatasi insiden mulai dari identifikasi hingga penutupan insiden.
2	Insiden yang muncul tidak terdokumentasi dan tidak terklasifikasi.	Pencatatan tiap insiden yang muncul serta diklasifikasikan untuk mengetahui trend.
3	Resolusi dari insiden tidak terdokumentasi.	Pencatatan tiap resolusi insiden yang muncul
4	Tidak terdapat prosedur eskalasi untuk mengatasi masalah.	Pembuatan prosedur eskalasi fungsional maupun hierarkis untuk mengatasi masalah.
5	Tidak terdapat prioritas insiden	Membuat prioritas insiden.

To enrich the recommendations given, the ITIL V3 framework is used. Before making recommendations with ITIL V3, a mapping is first carried out from COBIT 4.1 to ITIL V3. On the recommendations, the COBIT framework helps drive what needs to be done, is supported by ITIL V3 services as a strategy, and ITIL's how-to guide for improvement is supported by COBIT controls and practices.

From the results of the COBIT to ITIL V3 mapping, recommendations are then proposed for each process. Table 8 contains recommendations for strategies to achieve the target maturity level to be achieved.

**Table 8. Process Improvement Recommendations To Achieve Target Maturity Level**

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DS 1 Target Maturity 3	
COBIT 4.1	ITIL V3 SD 4.1
Membuat portofolio layanan SI dalam manajemen antara pengguna dan penyedia layanan, agar pengguna & penyedia layanan mengetahui rencana-rencana kerja yang akan dilakukan sehingga pekerjaan tersebut lebih terarah.	Membuat kebijakan tentang layanan SI, Membuat portofolio layanan SI, Membuat katalog layanan SI, Membuat report layanan yang berisi rincian semua aspek layanan, Membuat rencana peningkatan layanan SI, Membuat perencanaan kualitas layanan SI, Membuat standarisasi template dokumen, Membuat SLA (Service Level Agreement), Membuat SLR (Service Level Requirements), Membuat Operational Level Agreements (OLAs)
DS 2 Target Maturity 3	
COBIT 4.1	ITIL V3 SD 4.7
Membuat kebijakan dan prosedur dalam manajemen hubungan layanan pihak ketiga	Membuat perencanaan peningkatan pelayanan pemasok, Membuat laporan survey pemasok
DS 3 Target Maturity 3	
COBIT 4.1	ITIL V3 SD 4.4
Membuat perencanaan strategis SI untuk meninjau kinerja dan kapasitas sumberdaya SI	Membuat rencana ketersediaan untuk peningkatan teknologi dan layanan SI; Melakukan pemantauan, pengelolaan dan pelaporan ketersediaan layanan SI
DS 4 Target Maturity 3	
COBIT 4.1	ITIL V3 SD 4.5
Mengembangkan kerangka keberlanjutan pelayanan SI untuk menjamin pelayanan yang keberlanjutan secara menyeluruh agar dapat mendukung pelayanan yang lebih baik	Membuat kebijakan tentang layanan keberlanjutan SI di universitas; Membuat kerangka keberlanjutan layanan SI untuk seluruh SI dalam universitas dan diterapkan secara konsisten; Tersedianya pengelolaan manajemen resiko; Tersedianya service desk sebagai kunci

	dalam berkolaborasi dengan staf dan pengguna (manajemen)
DS 5 Target Maturity 3	
COBIT 4.1	
Membuat prosedur keamanan SI	ITIL V3 (SD 4.6 & SO 4.5) Membuat kebijakan manajemen keamanan SI; Membuat rencana manajemen keamanan SI; Melakukan audit keamanan dan penerimaan laporan; Melakukan perencanaan dan penjadwalan <i>security test</i> ; Membuat kebijakan, proses dan prosedur untuk mengelola mitra dan pemasok dan akses mereka ke layanan dan informasi; Membuat perencanaan manajemen akses layanan SI.
DS 6 Target Maturity 3	
COBIT 4.1 & ITIL V3 (SS 5.1)	
	Membuat kebijakan dalam pembelian di bidang SI
DS 7 Target Maturity 3	
COBIT 4.1	
Mengadakan pendidikan dan pelatihan para pengguna untuk pengembangan sistem ke masa yang akan datang supaya sistem yang dipakai dapat memenuhi kebutuhan dan sesuai dengan kemajuan teknologi saat itu	ITIL V3 (SO 5.14) Membuat kebijakan manajemen keamanan SI; Membuat rencana manajemen keamanan SI; Melakukan audit keamanan dan penerimaan laporan; Melakukan perencanaan dan penjadwalan <i>security test</i> ; Membuat kebijakan, proses dan prosedur untuk mengelola mitra dan pemasok dan akses mereka ke layanan dan informasi; Membuat perencanaan manajemen akses layanan SI.
DS 8 Target Maturity 2	
COBIT 4.1	
Rekomendasi dengan Membuat SOP yang jelas mengenai penanganan insiden Membuat pencatatan atas setiap insiden yang muncul Mendokumentasikan setiap resolusi dari insiden Mengadakan training bagi staf pengelola insiden	ITIL V3 (ST 4.3) Membuat perencanaan identifikasi insiden; Membuat kategori insiden; Membuat prioritas insiden; Membuat diagnosis insiden; Membuat <i>incident escalation</i> ; Melakukan diagnosis dan investigasi; Mendokumentasikan resolusi dan <i>recovery</i> ; Melakukan <i>incident closure</i> ; Merencanakan pilihan menu terhadap <i>request fulfillment</i> ; Melakukan <i>financial approval</i> ; Melakukan <i>fulfillment</i>

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DS 9 Target Maturity 2	
COBIT 4.1	ITIL V3 (ST4.3)
Melakukan penyempurnaan file konfigurasi	Membuat perencanaan dan manajemen konfigurasi, Membuat kebijakan dan SOP tentang konfigurasi control. Melakukan pelaporan dan status akuntansi, Melakukan audit dan verifikasi
DS 10 Target Maturity 3	
COBIT 4.1	ITIL V3 (SO 7.5)
Rekomendasi dengan Meningkatkan kesadaran pihak manajemen akan pentingnya pengelolaan permasalahan Memberikan tanggung jawab secara spesifik kepada staf tertentu Membuka komunikasi antar staf terhadap penyelesaian masalah yang pernah dilakukan	Merencanakan deteksi masalah berdasarkan ITIL V3; Membuat <i>problem logging</i> ; Membuat kategori masalah Membuat prioritas masalah; Membuat penyelesaian masalah; Melakukan pencatatan kesalahan; Mendokumentasi resolusi masalah; Melakukan deteksi kesalahan dalam lingkungan pengembangan sistem
DS 11 Target Maturity 2	
COBIT 4.1	ITIL V3 (SD 5.2 & SO 5.2.3)
Rekomendasi dengan Perlu diadakan komunikasi mengenai pentingnya pengelolaan data, Mengadakan back up data secara berkala	Mengadakan komunikasi akan pentingnya pengelolaan data; Terjadinya proses manajemen data dalam mengelola aset data; Melakukan pembentukan tanggung jawab manajemen data; Mengadakan backup dan restore data Mengadakan backup dan restore data
DS 12 Target Maturity 3	
COBIT 4.1	Memberikan batasan akses ke aset fisik, hanya personal yang diizinkan saja yang boleh mengakses
DS 13 Target Maturity 3	
COBIT 4.1	ITIL V3 V3 (SO 7.2)
Meningkatkan kesadaran pihak manajemen tentang pentingnya pengelolaan operasi sebagai penyedia fungsi layanan TI	Mencatat terjadinya <i>event</i> ; Mencatat notifikasi <i>event/kejadian</i> ; Melakukan deteksi <i>event</i> ; Melakukan penyempurnaan <i>event</i> Melakukan <i>response selection</i> ; Melakukan peninjauan dan tindakan.

## CONCLUSION

From the results of this study, it can be concluded that the Academic Information System of Manado State University has only reached maturity level 2 even though it has implemented Academic Information Systems for approximately 10 years. This indicates that the development of the system is slow and there is a need for improvement innovations immediately.

Recommendations for reaching maturity level 3 can be seen in the recommendation table. To find out more about the condition of Academic Information System services, audits can be carried out in other domains, namely Plan and Organize, Acquire and Implement, or Monitor and Evaluate.

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