AUDIT OF THE REGIONAL DEVELOPMENT PLANNING INFORMATION SYSTEM (SIPD) USING COBIT 5.0 FRAMEWORK

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Abstract— *Tasikmalaya Regional Representative Council's is one of the legislative institutions that runs the local government. In carrying out the duties and functions of the Leadership and Members of the Regional People's Representative Council in the regional development planning sector, the Secretariat of the Regional People's Representative Council of Tasikmalaya City has implemented information technology in the regional development planning process, namely the Regional Development Information System. This information system is inseparable from problems that can hinder the regional planning process. This study aims to find out how effective and efficient the use of this information system is based on the maturity level of COBIT 5. This research only focuses on the domains EDM05, APO03, APO07, BAI09, DSS01, and MEA03. Data collection techniques are carried out through observation, interviews, and the dissemination of questionnaires. Tasikmalaya Regional Representative Council's has implemented IT governance at level 3, namely the Established Process. The results of the questionnaire processing obtained an average value of 3. 04 from a value scale of 0 to 5. The results showed weaknesses in the governance of the regional development planning information system found in the APO07 sub-domain which has the lowest maturity level value from other sub-domains, namely 1. 86.*

Keywords: Capability Level, COBIT 5.0, SIPD

Intisari— Dewan Perwakilan Rakyat Daerah Kota Tasikmalaya merupakan salah satu lembaga legislatif yang menjalankan pemerintah daerah. Dalam menjalankan tugas dan fungsi Pimpinan dan Anggota DPRD pada sektor perencanaan pembangunan daerah, Sekretariat DPRD Kota Tasikmalaya telah mengimplementasikan teknologi informasi pada proses perencanaan pembangunan daerah yaitu Sistem Informasi Pembangunan Daerah. Sistem informasi ini tidak terlepas dari masalah yang dapat menghambat proses perencanaan daerah. Penelitian ini bertujuan untuk mengetahui seberapa efektif dan efisien penggunaan sistem informasi ini berdasarkan tingkat kematangan COBIT 5. Penelitian ini hanya berfokus pada domain EDM05, APO03, APO07, BAI09, DSS01, dan MEA03. Teknik pengumpulan data dilakukan melalui observasi, wawancara, dan penyebaran kuesioner. DPRD Kota Tasikmalaya telah menjalankan tata kelola TI pada level 3 yaitu *Established Process.* Hasil pengolahan kuesioner didapatkan nilai rata-rata 3,04 dari skala nilai 0 sampai 5. Hasil penelitian menunjukan kelemahan dalam tata kelola sistem infomasi perencanaan pembangunan daerah terdapat pada sub domain APO07 yang memiliki nilai *maturity level* paling rendah dari sub domain lainnya yakni 1,86.

***Keywords*: *Capability Level*, COBIT 5.0, SIPD**

INTRODUCTION

DPRD is a legislative institution that is included in the elements of local government administration. According to Law Number 23 of 2014 concerning Regional Government, the DPRD as a legislative institution has 3 important functions, namely: a. as an agent for the formulation and formation of regional regulations, b. budgeting, and c. supervision. In addition to these three functions, the DPRD has an obligation to collect and follow up on the aspirations of the community as a form of public service. The aspirations of the accommodated community will be followed up by the leadership and members of the DPRD as a Local Government Work Plan (RKPD) and become a priority list of community needs. This is specifically regulated in Permendagri Number 86 of 2017 (Tristiani, 2017)(Dio Lavarino, 2017).

Tasikmalaya Regional Representative Council's implements information technology in the regional development planning process, namely the Regional Development Information System or SIPD which is an innovation of the Ministry of Home Affairs of the Republic of Indonesia which aims to facilitate input, monitoring and evaluation as well as assist the process of processing regional development planning data. (*Permendagri-No-70-Tahun-2019-Sistem Informasi-Pemerintah-Daerah*, n.d.)

Regional development planning is the process of determining future policies, through a series of options, by involving various stakeholders, for the use and allocation of existing resources within a certain period of time in the regions.(Mahi & Trigunarso, 2017)

In general, SIPD is an integrated data collection network at the regional and national levels by utilizing information technology, to support regional development planning and assessment. (Prasetya, 2019)

In the implementation of this information system, it is still not optimally realized, this is because Tasikmalaya Regional Representative Council's has experienced several obstacles such as changing procedures and policies resulting in a lack of understanding of human resources towards the management of the running system so that it needs to be adjusted to the current development of information technology, the system is only fixated on the initial input process by SKPD and has not been integrated in the OPD network so that OPD must do re-inputting with the same data, data collisions during the input process, and slow access during the *log in* process.

Based on these problems, an evaluation of the regional development information system is needed so that the system can run in accordance with user expectations. Evaluation or audit of an information system is very useful for evaluating agencies and seeing the level of maturity of organizational IT governance. IT governance reviews should be conducted to improve agency performance, improve information dissemination, and improve public services.

The audit process collects and evaluates a fact data regarding data that is tested using an economic entity by an expert and independent to be able to determine and report the suitability of data belonging to the criteria in it that have been determined.(Winarto, 2022)

One form of operational audit is in the form of an information system audit. The implementation of information system audits can be done with *framework* guidelines that will become scientific guidelines in actualizing the audit process. *Commonly applied frameworks* are COBIT 2019, COBIT 5.0, COBIT 4.1, ITIL, COSO, CICA, ISO, BSBS, FIPS, TOGAF, and the like. (Driya et al., 2022)

COBIT (*Control Objectives for Information and Related Technology*) is a framework that summarizes information technology management best practices to help understand and manage risks and realize the benefits associated with information technology(Az-zahra, 2021) .

COBIT is the best part of IT governance that helps auditors, administrators, and users connect IT business, control, and technical needs. Because COBIT provides business-oriented policies, business process owners and administrators, including managers and audit users, are expected to implement these policies well. In principle, the (Eva Zuraidah, 2020) COBIT 5 framework makes a clear distinction between governance and management. COBIT 5 is also the fifth edition of the IT framework developed by ISACA to manage the management and control of information technology. (Wahyuni, 2022)(ISACA, 2018a)

In detail COBIT 5 describes several management and operational processes that provide a framework to support organizations in achieving organizational goals in terms of governance and management of business information and technology (IT) assets (ISACA, 2018b)

In COBIT 5 framework, there are six levels of capability that must be taken. The capabilities of each process are expressed in process levels of *0-incomplete*, *1-performed*, *2-managed*, *3-established*, 4-predictable, and 5-optimizing processes. (Ramdhan, 2021) The advantages of COBIT 5 are that the principles used are more concise so as to make it easier for auditors, and all domains used in COBIT 5 are based on the process, the calculation of the COBIT 5 performance level is with the capability level because it adjusts to ISO 15504 / ISO 33000, in COBIT 5 there are 7 *enablers.* The disadvantage of COBIT 5 is that COBIT 5 is not adaptive so it cannot adapt to technological developments, the domain used still shows that the process is not focused on results and there is no design factor, so there is no alignment standard for organizations (Syuhada, 2021).

According to a scientific journal entitled Evaluation of Information technology governance using the COBIT 5 Framework, based on the results of the calculation of the level of capability that has been achieved with the process domains EDM01, EDM02, EDM03, EDM05, the level of IT implementation capacity in the Baturraden sub-district office is currently level 1 (sustainable) with a value of 1.75. This shows that the implementation of IT in the Baturraden sub-district office is running and achieving its goals, but there is no process that

guarantees the benefits of the identified risk distribution and optimization process, as well as achieving the desired results.(Fajarwati et al., 2018).

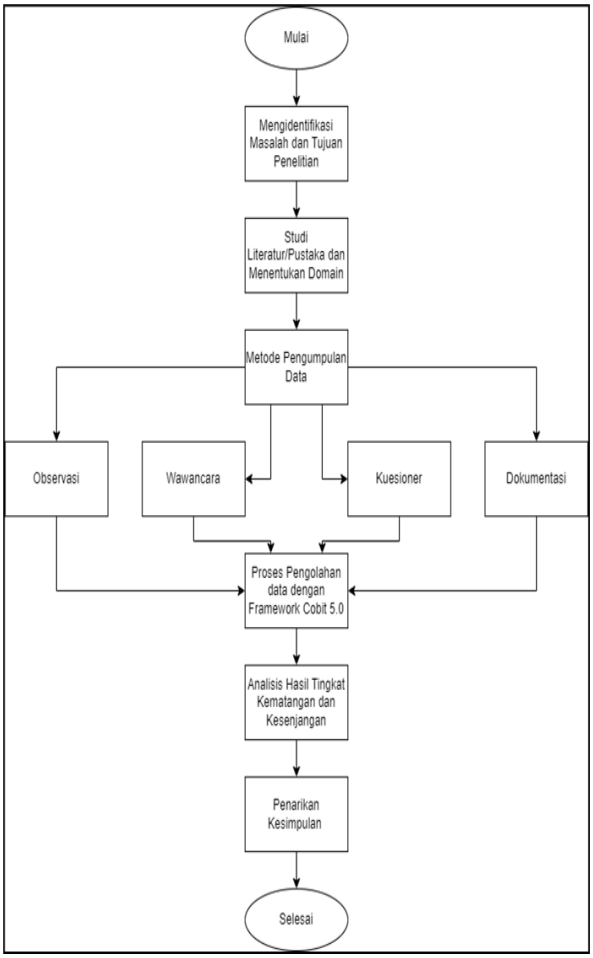
Table1. COBIT Capability Model Rounding Scale 5

Index Rounding Scale	
Rounding Scale	Capability Model Level
4,51 - 5	*5-Optimizing*
3,51 – 4,5	*4- Predictable*
2,51 – 3,5	*3- Established*
1,51 – 2,5	*2- Managed*
0,51 – 1,5	*1-Performed*
0 - 0,5	*0-Incomplete*

The purpose of this study is to find out how effective and efficient the use of the regional development information system that has been running in Tasikmalaya Regional Representative Council's based on the results of the maturity level assessment, help solve problems that occur in the management of this regional development information system based on the results of recommendations, and as a reference for the development of information systems in the future based on the results of recommendations.

MATERIALS AND METHODS

In this study, the author uses a type of descriptive research with a quantitative approach where descriptive research is research with methods that visualize or provide an overview of research results and the quantitative approach is research by collecting data that can be measured mathematically or with statistical techniques. (Ramdhan, 2021) The research conducted by the author explores the stages of observing the regional development planning information system directly, and conducting interviews with relevant officials, collecting data through the dissemination of questionnaires, and finally calculating the results of findings data using the COBIT 5.0 *Framework*



Source: Author's Research (2022)

Figure 1. Stages of Research

1. Questionnaire Dissemination

The data collection process is carried out by distributing questionnaires filled out by 50 system users, the details are found in the following table:

Table2. List of Researcher Respondents

Respond	Number of Respondents
Leaders and Members of the Tasikmalaya City Parliament	45
Secretary of the DPRD	1
Policy Analyst Functional Coordinator	1
Functional Executor	3
Total	**50**

Source: Author's Research (2022)

Based of table 2, the questionnaire is formed with an ordinal measurement model with a likert scale,

Vol. 20, No. 1 March 2023 | DOI https://doi.org/10.33480/techno.v20i1.3541

where the given ordinal size contains levels to measure objects from the lowest to the highest level, the size given is only for sorting only and is not given the absolute value of an object. Set the object to number 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree .(Febriani & Manuputty, 2021)

Table3. Ordinal Measurement

Sequence Value	Information
1	Very Disagree
2	Disagree
3	Neutral
4	Agree
5	Very Agree

Source: Author's Research (2022)

After the questionnaire data is collected, the next stage is calculation using the COBIT 5.0 Framework.

2. Data Processing with COBIT 5.0 *Framework*

The author performs the calculation of the results of the questionnaire with the formula:

Questionnaire Index = $\frac{\Sigma \textit{ Jawaban Kuesioner}}{\Sigma \textit{ Domain Proses}}$

Information:
Σ Questionnaire Answers = Total Number of Questionnaire Respondents
σ Process Domain = Total Number of Process Domains

3. Analysis of Maturity and Gap Level Results

At this stage, an analysis of the current level of maturity (as is) and an analysis of the gaps that occur at the current maturity level are carried out. The author calculates the maturity index of the domain using the formula:

Maturity Index Domain=
$\left\{\frac{\%\ Ketercapaian}{Work\ Product}\right\} x\ Index\ Kuesioner$

After the maturity index value of each domain is obtained, then to determine the level of capability of the author using the formula:

Maturity Level **=** $\frac{\Sigma \textit{ Maturity Index Domain}}{\Sigma \textit{ Domain Proses}}$

4. Drawing conclusions
The last stage of this study, the results of the audit consisting of the conclusions of all types of audit findings which contain the impact on Tasikmalaya Regional Representative Council's.

RESULTS AND DISCUSSION

Based on the results of the google form questionnaire that has been completed by 50 respondents, it will then be processed using the maturity level calculation formula based on COBIT 5:

A. Calculating *Maturity Level*

1. Maturity level EDM05 *Ensure Stakeholder Transparency*

a) Calculating the Maturity Index

The results of the questionnaire that have been recapitulated for EDM05.01 *Evaluate stakeholder reporting requirements* there is 1 respondent who chooses a value of 1, 8 respondents choose a value of 2, 50 respondents choose a value of 3, a value of 4 has a total of 53 respondents then 38 respondents choose a value of 5. Then the data will be processed with COBIT 5 calculations:

Questionnaire value EDM05.01 = (1*1) + (8*2) + (50*3) + (53*4) + (38*5) = 569

Questionnaire index = 569 / 3 =190

Actual WP value = 15%; standard WP value of EDM05 = 5

Maturity Index = (15%/5) * 190 = 5,69

b) Calculating *Maturity Level*

Table4. EDM05 *Ensure Stakeholder Transparency*

Sub Domain	**Control Name**	***Maturity index***
EDM05 Ensure Stakeholder Transparency	*EDM05.01 Evaluate stakeholder reporting requirements*	5.69
	EDM05.02 Direct stakeholder communication and reporting.	5.72
	EDM05.03 Monitor stakeholder communication.	5.59
Total Maturity Index		**17.00**
***Maturity Level* Domain EDM05 = 17,00/3 (total kontrol)**		**5.67**

Source: Author Research (2022)

Base of table 4, after obtaining the *index* maturity value, all values are totaled and the process for calculation looks for the maturity level value, as in the table above, the maturity level result for the EDM05 domain is 5.67 or 567% worth. Based on

the percentage calculation, it means that it has reached level F or *Fully Achieved* and the capability level is at level 5 – optimizing which means that the IT governance process is running well HR, processes and technology have been able to support the goals of the agency / organization.

2. Maturity Level APO03 *Manage Enterprise Architecture*

Tabel5. APO03 *Manage Enterprise Architecture*

Sub Domain	Control Name	Index maturity
APO03 Manage Enterprise Architecture	*APO03.01 Develop the enterprise architecture vision.*	2,23
	APO03.02 Define reference architecture.	1,99
	APO03.03 Select opportunities and solutions.	1,90
	APO03.04 Define architecture implementation.	2,18
	APO03.05 Provide enterprise architecture services.	2,06
Total Maturity Index		**10,36**
Maturity Level Domain APO03 = 10,36/5 (total kontrol)		**2,07**

Source: Author Research (2022)

After obtaining the index maturity value, all values are totaled and the process for calculation looks for the maturity level value, as in the table above, the maturity level result for the APO03 domain is 2.07 or 207% worth. Based on the percentage calculation, it means that it has reached level F or *Fully achieved* and the capability level is at level 2, namely the managed process so that in the process the goals with the programs carried out by the agencies are in line and the agencies are also ready to face the changes that will be faced.

3. Maturity Level APO07 *Manage Human Resources*

Tabel6. APO07 *Manage Human Resource*

Sub Domain	Control Name	Maturity index
APO07 Manage Human Resources	*APO07.01 Maintain adequate and appropriate staffing.*	1.87
	APO07.02 Identify key IT personnel.	1.78
	APO07.03 Maintain the skills and competencies of personnel.	1.92
	APO07.04 Evaluate employee job performance.	1.86
	APO07.05 Plan and track the usage of IT and business human resources.	1.90
	APO07.06 Manage contract staff.	1.84
Total Maturity Index		**11.16**
Maturity Level Domain APO07 = 11,16/6 (total kontrol)		**1.86**

Source: Author Research (2022)

After obtaining the *index* maturity value, all values are totaled and the process for calculation looks for the maturity level value, as in the table above, the maturity level result for the APO07 domain is 1.86 or 186% worth. Based on the percentage calculation, it means that it has reached level F or *Fully achieved* and the capability level is at level 2, namely the managed process so that in the process of managing human resources in the Tasikmalaya City DPRD is good, but specific performance targets are needed so that all regional development planning processes can run according to the main tasks and functions of each section.

4. Maturity Level BAI09 *Manage Assets*

Table7. BAI09 *Manage Assets*

Sub Domain	Control Name	Maturity index
BAI09 *Manage Assets*	*BAI09.01 Identify and record current assets.*	2.36
	BAI09.02 Manage critical assets.	2.27
	BAI09.03 Manage the asset life cycle.	2.33
	BAI09.04 Optimise asset costs.	2.25
	BAI09.05 Manage licences.	2.18
Total Maturity Index		**11.38**
Maturity Level Domain BAI09 = 11,38/5 (total kontrol)		**2.28**

Source: Author Research (2022)

After obtaining the *index* maturity value, all values are totaled and the process for calculation looks for the maturity level value, as in the table above, the maturity level result for the BAI09 domain is 2.28 or 228% worth. Based on the percentage calculation, it means that it has reached level F or

Fully achieved and the level of capability is at level 2, namely the managed process so that the asset management process in Tasikmalaya Regional Representative Council's is good, but there are several things that must be considered in asset management such as maintenance schedules, asset repair status, and a list of items that need to be updated to improve the public service process to the community.

5. Maturity Level DSS01 *Manage Operations*

Tabel8. DSS01 *Manage Operations*

Sub Domain	Control Name	*Maturity index*
DSS01 Manage Operations	*DSS01.01 Perform operational procedures.*	2.86
	DSS01.02 Manage outsourced IT services.	2.63
	DSS01.03 Monitor IT infrastructure.	2.77
	DSS01.04 Manage the environment.	2.80
	DSS01.05 Manage facilities.	2.84
Total Maturity Index		**13.88**
***Maturity Level Domain* DSS01 = 13,88/5 (total kontrol)**		**2.78**

Source: Author Research (2022)

After obtaining the *index* maturity value, all values are totaled and the process for calculation looks for the maturity level value, as in the table above, the maturity level results for the DSS01 domain are 2.78 or 278% or 278% and the capability level is at level 3, namely the established process. Based on the percentage calculation, it means that it has reached the F or *Fully achieved* level, that is, the activities and operational procedures needed to provide services have been managed quite well.

6. Maturity Level MEA03 *Monitor, Evaluate and Assess Compliance with External Requirements*

Tabel9. MEA03 *Monitor, Evaluate and Assess Compliance with External Requirements*

Sub Domain	Control Name	*Index maturity*
MEA03 Monitor, Evaluate and Assess Compliance with External Requirements	*MEA03.01 Identify external compliance requirements.*	3.66
	MEA03.02 Optimise response to external requirements.	3.67
	MEA03.03 Confirm external compliance.	3.52
	MEA03.04 Obtain assurance of external compliance.	3.59
Total Maturity Index		**14.43**
Maturity Level Domain MEA03 = 14,43/4 (total kontrol)		**3.61**

Source: Author Research (2022)

After obtaining the *index* maturity value, all values are totaled and the process for calculation looks for the maturity level value, as in the table above, the maturity level results for the MEA03 domain are 3.61 or 361% or 361% and the capability level is at level 4, which is predictable. Based on the percentage calculation, it means that it has reached level F or *Fully achieved*, namely in terms of IT processes and regional development planning operations have been running according to the law and complying with the requirements of external parties

Table10. *Maturity Level* of Regional Development Information System

Domain	*Index Maturity*	*Maturity Level*
EDM05 Ensure Stakeholder Transparency	17.00	5.67
APO03 Manage Enterprise Architecture	10,36	2,07
APO07 Manage Human Resources	11.16	1.86
BAI09 Manage Assets	11.38	2.28
DSS01 Manage Operations	13.88	2.78
MEA03 Monitor, Evaluate and Assess Compliance with External Requirements	14.43	3.61
Sum	**78,22**	**18,26**
Average value *of index maturity*	**13.04**	**3,04**
Average *Capability Level / Maturity Level*		

Source: Author Research (2022)

Table11. *Capability Level* of Regional Development Information System

Domain	*Maturity Level*	Achievement Value	IT Capabilities
EDM05 Ensure Stakeholder Transparency	567%	*Fully Achieved*	*Optimizing*
APO03 Manage Enterprise Architecture	207%	*Fully Achieved*	*Managed Process*
APO07 Manage Human Resources	186%	*Fully Achieved*	*Managed Process*
BAI09 Manage Assets	228%	*Fully Achieved*	*Managed Process*

DSS01 Manage Operations	278%	*Fully Achieved*	*Establised Process*
MEA03 Monitor, Evaluate and Assess Compliance with External Requirements	361%	*Fully Achieved*	*Predictable*

Source: Author Research (2022)

For the calculation of the average *maturity* level of the five sub-domains, which is 304%, which when viewed from the rating scale is included in the F level which indicates that it is *Fully Archieved*, meaning that there is a complete and systematic approach and full achievement. In terms of the rounding scale, the capability model mapping index is at level 3, namely the *Established Process*, which means that the regional development information system process applied to the Tasikmalaya Regional Representative Council's has implemented formal standard procedures for regional development planning in writing in accordance with applicable laws and regulations and has been successfully implemented even though it has not fully achieved the expected goals.

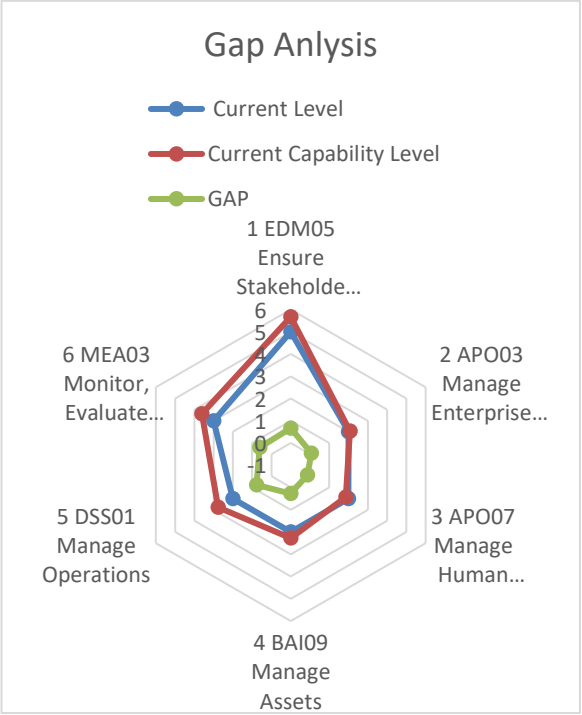
B. The Value of the Current Maturity Gap

Based on the results of the calculation of the capability level above, the gap value obtained from the difference between the maturity value of the domain level and the targeted level value is as follows:

Table12. GAP *Analisys Capability Level*

No	Domain	Target Level	Current Maturity Level	GAP
1	*EDM05 Ensure Stakeholder Transparency*	5	5.67	0.67
2	*APO03 Manage Enterprise Architecture*	2	2.07	0.07
3	*APO07 Manage Human Resources*	2	1.86	-0.14
4	*BAI09 Manage Assets*	2	2.28	0.28
5	*DSS01 Manage Operations*	3	2.78	0.22
6	*MEA03 Monitor, Evaluate and Assess Compliance with External Requirements*	4	3.61	0.39

Source: Author Research (2022)



Source: Author Research (2022)

Figure 2. Gap Analysis Radar Chart

Base of Figure 2, from the results of the calculation of *maturity* level and gap or gap, it is known that there is one domain that has not reached the target level and there are five domains that have reached the expected target level. The results of the evaluation show findings from the domain analysis that:

1. EDM05 *Ensure Stakeholder Transparency*

In the transparency sub-domain, stakeholders found that at this stage they have achieved the expected goals and have carried out innovations and continuous development to improve the capability process in regional development planning.

2. APO03 *Manage Enterprise Architecture*

In the sub-domain of enterprise architecture management, it is found that this stage has achieved the expected goals, in its implementation the objectives with the programs carried out by the agencies are in line with each other, the agencies are also ready to face changes that will occur both from policies, systems, human resources and so on.

3. APO07 *Manage Human Resources*

In the human resource management sub-domain, it was found that in the process of managing this information system, there are still several employees who need to conduct training to run this

regional development information system. So that the recommendations in this sub-domain are the need for information technology guidance or training to support service improvement for stakeholders and the need for performance evaluation at each planning stage.

4. BAI09 *Manage Assets*

In the asset management sub-domain in the asset recording process, it was found that there were several assets that needed to be repaired but were not controlled and left without follow-up. so that the recommendations in this sub-domain are that an asset maintenance schedule is needed, asset repair status, and a list of assets that need to be updated to support the regional development planning process at Tasikmalaya Regional Representative Council's.

5. DSS01 *Manage Operations*

In the operational management sub-domain, it was found that the facilitation, supervision and budgeting department in facilitating regional development planning through the leadership and members of Tasikmalaya Regional Representative Council's has been running based on standard operating procedures or policies set. To support the operational activities of the regional development information system, cooperation between OPD and SKPD and related stakeholders is needed to increase the expected target level by optimizing communication intensely in managing the operations of each activity related to the regional development information system.

6. MEA03 *Monitor, Evaluate and Assess Compliance with External Requirements*

In this sub-domain, it was found that the facilitation, supervision and budgeting department of collecting, validating, and evaluating business objectives and metrics, IT has been running according to the specified targets. As well as the facilitation department has been successful in monitoring the process of agreed performance and successfully providing systematic and timely reporting.

CONCLUSION

The regional development information system implemented in Tasikmalaya Regional Representative Council's has been implemented well even though it has not fully achieved the expected goals. At each stage this information system is still ineffective and needs to be improved to support the regional development planning process.

The author recommends the holding of further information technology guidance or training to support the improvement of services for stakeholders and the need for performance evaluation of each stage of regional development planning. As a reference material for the development of a regional development planning system in Tasikmalaya Regional Representative Council's, the author recommends priority improvements in the APO07 sub-domain in accordance with the recommendations that have been submitted in this study.

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