# Sustainable Development Goals Analysis at Setu Village in Tegal Using COBIT 4.1

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Abstract— The role of Modern Technology (IT) is growing and is needed by many agencies including the government, one of which is Information Technology Governance (ITG). ITG has a role in relevant agencies related to IT and the best services to help staff and community activities become important related to the village head office business. The purpose of this study is to analyze IS risk management at the Setu Village Head Office using the Framework Control Objective for Information and Related Technology (COBIT) 4.1. This study uses quantitative research methods by distributing questionnaires to respondents. The questionnaire got the data validity and reliability test well. The data will be analyzed and get the results showing the maturity level at level 3 meaning that the values are in the specified position. To achieve the goal through a much more structured way, namely using assets from the organization that are owned and well defined. Recommendations for this research are the need for additional infrastructure such as computers, wifi or others and the addition of human resources in the IT department at the Setu Village Head Office.

Keywords— cobit 4.1, maturity level, risk management, sdgs application

## I. INTRODUCTION

Information Technology (IT) today is important, because there are benefits that make people use information technology as a tool to complete an activity, one of which is the government [1]. Utilization of IT in the government itself has a positive influence on the work performance of employees or staff. Work performance itself here is related to the performance management system [2]. Performance management system is the governance or managerial of an organization in which there is a performance assessment, risk management or other of each activity with the aim of supporting business processes [3]. One example of the application of performance management is in the village government office in the Tegal area, Central Java. At the Setu village government office there is a work program made by the village head, namely the SDGs program such as the use of the Sustainable Development Goals application or commonly called the SDGs to assist in reporting population data, so that the work program can run, the local government must plan a good and effective management . The SDGs program is a government program in an integrated effort for the purpose of realizing faster village development through work programs such as data-based community empowerment in accordance with the achievement of sustainable development goals and is stated in presidential regulation number 59 of 2017 [4].

Good and effective management is made in accordance with their vision and mission, therefore stakeholders, namely village heads need to pay attention to risk management management of each available service, the hope is that the government will have IT governance based on substantial risk analysis and support their business strategy [5].

Control Objective for Information and Related Technology (COBIT) 4.1 is a measuring tool which contains a framework to assist in knowing the progress of the


ISSN 2442-7888 (online) DOI 10.24167/Sisforma

management of each planned service [6]. COBIT 4.1 is used to analyze IT governance on the service risk management side of the setu village government for Plan and Organize (PO) [7]. IT Governance can ensure that IT users in local governments are successful in supporting the performance of government institutions from this strategy based on the mandate of the Presidential Instruction on the use of IT in supporting the performance of government institutions, as mandated by Presidential Instruction Number 33 of 2003 concerning "National Development Policies and Strategies E-Government". IT Governance is the governance of an organization that focuses on IT management, including IT system performance and risk management [8]. COBIT 4.1 describes tools to support IT managers, auditors and users in bridging gaps in relation to control requirements, technical issues and business risks in order to provide strategic guidance for management and business process owners [9]. The 4 domains in COBIT 4.1 are Planning and Organization domain (PO), Acquisition and Implementation (AI), Delivery and Support (DS), and Monitoring and Evaluation (ME).

## Plan and Organize (PO)

This domain describes the IT strategies, techniques and identification of the organization in order to contribute to achieving business goals so as to form a good organization with the appropriate IT infrastructure.

**Table 1. Indicators of Plan and Organize**

| Indicator | Describe |
|---|---|
| PO1 | Determine a strategic information technology plan. |
| PO2 | Define the information architecture. |
| PO3 | Specify technology direction. |
| PO4 | Define IT organization and relationships. |
| PO5 | Manage investment in information technology |
| PO6 | Communicate management objectives and direction |
| PO7 | Manage human resources. |
| PO8 | Manage quality |
| PO9 | Assess risk. |
| PO10 | Manage the project. |

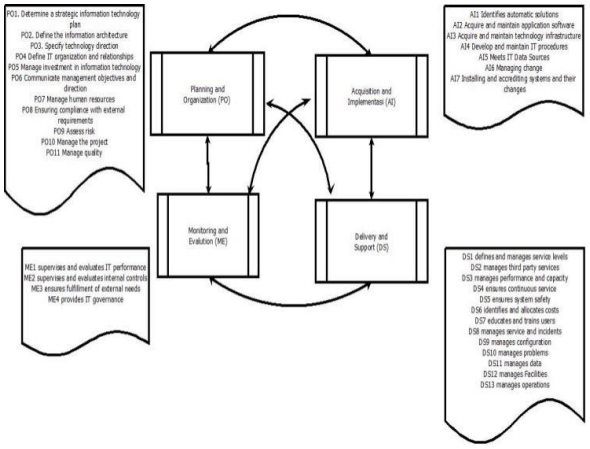


**Figure 1. COBIT Framework 4.1**

## Maturity Level of Cobit 4.1

The maturity level in COBIT 4.1 has a goal level to control their IT processes using a scale of 0 to 5. The COBIT 4.1 maturity level is in table 2 below.

**Table 2. Maturity Level of COBIT 4.1**

| Value | Explain |
|---|---|
| 0 - 0,5 | 0: None |
| 0,51 - 1,50 | 1: Initials |
| 1,51-2,50 | 2: Repeatable but Intuitive |
| 2.51-3.50 | 3: Defined Process |
| 3.51-4.50 | 4: Managed and Scalable |
| 4,51-5.00 | 5: Optimized |

## Compliance Value

The technique for measuring the value of compliance or maturity level is by using several questions, each question that is determined has an appropriateness grouping with reference to the assessment as shown in table 3.

**Table 3. Compliance Value**

| Scale | Statement | Value |
|---|---|---|
| 1 | Not True | 0 |
| 2 | Little Truth | 0.33 |
| 3 | Most of it it true | 0.66 |
| 4 | Correct | 1 |

Based on the background that has been written above, there are three questions that were chosen to guide the implementation of the research.

RQ1 : How is the maturity level of risk management in accordance with the


ISSN 2442-7888 (online) DOI 10.24167/Sisforma

condition of the object in the use of SDGs applications based on the Plan and Organize domain?

RQ2 : What kind of recommendations will the researcher give based on the condition of the level of maturity of risk management at the village head office in using the SDGs application?

This research method was made through a process based on steps, namely research procedures, determination and data sampling, data analysis, discussion and research conclusions. This analysis was carried out based on descriptive analysis and carried out the process of making conclusions based on research data which was strengthened by previous research recommendations.

## II. METHOD

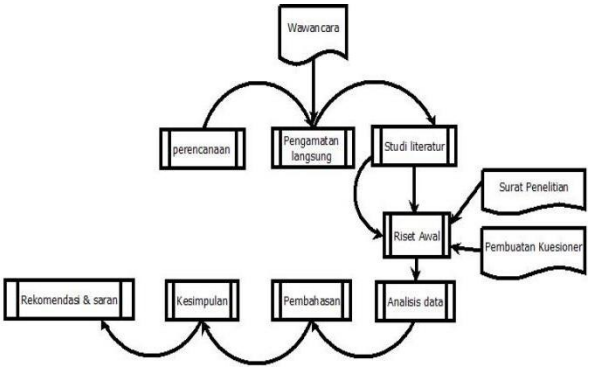


**Figure 2. Research Procedure**

### Planning

This initial stage is related to research planning, the author needs to find topic ideas, determine objects, problems, methods, data collection and data analysis, so that it can assist the author in providing an overview of research on risk management at the village head's office.

### Observation

The author made initial observations by interviewing several staff of the village head's office setu before making and distributing a questionnaire that had been corrected by the author for the object.

### Study of literature

This literature is related to management services at the village head's office and COBIT 4.1 media instruments and the use of the SGDs application to help work programs that have been made by the village head and his staff, the authors need to understand the level of risk management maturity with reference to the PO9 domain based on previous research that the author feels suitable for reference.

### Preliminary Research

At this stage, the authors conducted initial research by bringing a permit to obtain approval from the object of research, making improvements to the questionnaire so that it became a good and appropriate questionnaire, and asking questions to several respondents or new targets in the form of interviews. The author conducted an instrument test with the aim of knowing the validity and reliability of the questionnaire questions that had been created and distributed.

The author conducted a validity test using the product correlation technique to test the validity of the data and using the Statistical Product and Service Solutions (SPSS) method. The purpose of data validation is to assist the author in knowing whether the measuring instrument can measure what needs to be measured. The author also uses the product moment method, which is to connect each question by giving a score for each question variable. The numbers obtained in the form of statistics from the results of connecting each question variable score must be compared with the critical statistics table and the relationship between the r values with a significant level of 95%.

This comparison results in r arithmetic > r table, meaning that the information data is valid and feasible for hypothesis testing. On the other hand, if r count < r table, it shows that the information data is not valid and does not need to be included in the hypothesis testing of the research.

Reliability test, the author distributes a questionnaire test in the form of a questionnaire to find out whether the data collection tool used can show accuracy and stability in providing results from each


ISSN 2442-7888 (online) DOI 10.24167/Sisforma

individual. This reliability test is carried out at different times to each individual and the questionnaire is distributed based on valid statements. . The technique of this test uses Cronbach's alpha because this technique provides an answer value consisting of a range of agreement in the form of numbers with a larger alpha coefficient. Reliability, which is trustworthy, means that the instruments contained in the reliability can provide the right results for processing this research data.

**Data analysis**

At this stage the authors analyze the data using COBIT 4.1 specifically for the main domain, namely PO9 in determining the level of maturity of risk management.

The author also needs to calculate the normalization of the value data to determine the maturity level of the PO9 domain. This normalized value is obtained from each group of respondents by dividing each compliance value and the total compliance value. The author also needs to calculate the contribution value of each group by multiplying the value of each compliance with the individual's compliance value.

$$ML = \sum CON \quad \dots (1)$$

CON: Value Contribution

ML: Maturity Level

$$NV = \frac{CV}{TCV} \quad \dots (2)$$

CV: Compliance Value

NV:Normalization of Data Value

TCV: Total Compliance Score

$$CONV = \frac{CV}{LV} \quad \dots (3)$$

CV: Compliance Value

LV: Level

CONV: Contribution Value

**Discussion**

The author compares the results of this study with previous research from experts who were used as literature for making this research regarding risk management and the use of SDGs applications in the village head's office in Setu.

**Conclusion**

The author concludes from a series of studies that have been carried out to produce solutions to research problems to make recommendations and suggestions

**Recommendations & Suggestions**

This stage discusses the conclusions that have been determined by the author in the form of positive recommendations for the Setu village head office. The author also provides suggestions for researchers who are interested in continuing the research being carried out.

## III. RESULTS AND DISCUSSION

This research was carried out based on a step-by-step process, one of which was data analysis. This step contains the identification of the respondent's profile. This step is carried out based on a questionnaire that has been made to see risk management at the village head office in the use of the SDGs application that has a standard, namely job position or position/profession.

**Table 4. Profile Responden**

| Standard | Indicator | % |
|---|---|---|
| Position/ Profession | Village Head | 100 |
| | Village Staff | 9,1 |
| | Enumerators | 36,4 |
| | People | 54,5 |

**Validity Test**

This research was carried out based on a step-by-step process, one of which was data analysis. This step contains the identification of the respondent's profile. This step is carried out based on a questionnaire that has been made to see risk management at the village head office in the use of the SDGs application that has a standard, namely job position or position/profession.

**Realibility Test**

The results of the reliability with standard 0.6 and calculated using SPSS version 28.0 produce a relabitity of 0.838, so that the


ISSN 2442-7888 (online) DOI 10.24167/Sisforma

reliability results are more than the standard reliability so that it can be concluded that the value is valid. Purpose of reliability measurement Same with validity, namely to see the quality of a research measuring instrument is valid or not [10].

The test results from the maturity level risk management in the application of Sustainable Development Goals in the village of Setu, using the COBIT 4.1 PO9 domain as shown in Table 5; Table 6; Table 7; Table 8; Table 9' Table 10 below.

## Maturity Level Test

**Table 5. Compliance Level 0**

| Maturity Level 0 | | | | | | |
|---|---|---|---|---|---|---|
| No | Question | 0 | 0.33 | 0.66 | 1 | Total |
| 1 | Does the risk assessment occur in the use of the SDGs application at the Setu Village sub-district office? | 2 | 3 | 4 | 3 | 6.63 |
| 2 | Is risk management not suitable for acquiring vulnerabilities on computers when exposed to viruses in the village office setu? | 0 | 6 | 4 | 1 | 5.62 |
| 3 | Does the village office setu not consider security against computer virus vulnerabilities in using the application? | 2 | 7 | 1 | 1 | 3.97 |
| Total | | | | | | 16.22 |
| Compliance Value | | | | | | 5.41 |

**Table 6. Compliance Level 1**

| Maturity Level 1 | | | | | | |
|---|---|---|---|---|---|---|
| No | Question | 0 | 0.33 | 0.66 | 1 | Total |
| 1 | In your opinion, has the Setu Village Office started to pay attention to the risks that occur in the use of the SDGs application? | 1 | 5 | 4 | 2 | 6.29 |
| 2 | In determining access to the SDGS application service, can the Setu village office determine the risk assessment that occurs? | 0 | 3 | 2 | 7 | 9.31 |
| 3 | In your opinion, does the office in the village of Setu rarely carry out risk assessments on the use of the SDGs application? | 2 | 4 | 3 | 3 | 6.3 |
| 4 | Is there an occasional risk assessment in using the SDGS application? | 0 | 4 | 4 | 4 | 7.96 |
| Total | | | | | | 29.86 |
| Compliance Value | | | | | | 7.47 |

**Table 7. Compliance Level 2**

| Maturity Level 2 | | | | | | |
|---|---|---|---|---|---|---|
| No | Question | 0 | 0.33 | 0.66 | 1 | Total |
| 1 | Is the village head agreed to participate in the risk assessment at the village office? | 1 | 2 | 6 | 3 | 7.62 |
| 2 | In your opinion, does risk assessment only apply when the risk is severe enough? | 3 | 5 | 3 | 1 | 4.63 |
| 3 | Is the application of risk assessment only carried out during the action process? | 2 | 4 | 3 | 3 | 6.3 |
| Total | | | | | | 18.55 |
| Compliance Value | | | | | | 6.2 |

**Table 8. Compliance Level 3**

| Maturity Level 3 | | | | | | |
|---|---|---|---|---|---|---|
| No | Question | 0 | 0.33 | 0.66 | 1 | Total |
| 1 | Is there a risk management policy for each division in Setu Village to have a risk management policy in the use of SDGs applications? | 0 | 2 | 4 | 5 | 8.3 |
| 2 | In your opinion, is there any RM training in risk management provided for staff and teams in using the SDGS application? | 0 | 6 | 2 | 4 | 7.3 |
| 3 | In your opinion, has every individual been able to take the initiative in following risk management? | 0 | 4 | 5 | 3 | 7.62 |


ISSN 2442-7888 (online) DOI 10.24167/Sisforma

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 | Can each individual in using the SDGS application accept the risk assessment given by the village head? | 0 | 3 | 5 | 3 | 7.29 |
| 5 | Does the village head participate in providing the assessment in conducting a risk assessment when using the SDGs application? | 0 | 2 | 5 | 5 | 8.96 |
| Total | | | | | | 39.47 |
| Compliance Value | | | | | | 7.9 |

**Table 9. Compliance Level 4**

| Maturity Level 4 | | | | | | |
|---|---|---|---|---|---|---|
| No | Question | 0 | 0.33 | 0.66 | 1 | Total |
| 1 | Is there an official risk assessment procedure at the village office of Setu Village? | 1 | 6 | 2 | 3 | 6.3 |
| 2 | Is there an official report on risk management activities at the village office of Setu Village? | 2 | 4 | 2 | 4 | 6.64 |
| 3 | In your opinion, is the village head responsible for monitoring the risk management management of the SDGs application? | 1 | 6 | 2 | 3 | 6.3 |
| 4 | Does the sub-district office have activities to monitor risks when using the SDGS application? | 2 | 4 | 2 | 4 | 6.64 |
| Total | | | | | | 25.88 |
| Compliance Value | | | | | | 6.47 |

**Table 10. Compliance Level 5**

| Maturity Level 5 | | | | | | |
|---|---|---|---|---|---|---|
| No | Question | 0 | 0.33 | 0.66 | 1 | Total |
| 1 | In your opinion, has the Setu Village Office started to pay attention to the risks that occur in the use of the SDGs application? | 0 | 2 | 4 | 6 | 9.3 |
| 2 | In determining access to the SDGS application service, can the Setu village office determine the risk assessment that occurs? | 0 | 6 | 3 | 3 | 6.96 |
| 3 | In your opinion, does office in the village of Setu rarely carry out risk assessments on the use of the SDGs application? | 0 | 5 | 4 | 3 | 7.29 |
| 4 | Is there an occasional risk assessment in using the SDGS application? | 0 | 6 | 5 | 1 | 6.28 |
| Total | | | | | | 29.83 |
| Compliance Value | | | | | | 7.46 |

**Table 11. Maturity Level Assess risk.**

| Calculation of PO9 maturity level (level 0-5) | | | |
|---|---|---|---|
| Level | Compliance | Normalize | Contribution |
| 0 | 5.41 | 0.13 | 0 |
| 1 | 7.47 | 0.18 | 0.18 |
| 2 | 6.2 | 0.15 | 0.3 |
| 3 | 7.9 | 0.19 | 0.57 |
| 4 | 6.47 | 0.16 | 0.64 |
| 5 | 7.46 | 0.18 | 0.9 |
| | 40.9 | Total | 2.59 |

## A. RESULT

Based on the calculations that the author has done, the validity test of the calculation above produces an Average rcount > rtable with an rtable value of 0.576, it is concluded that the value obtained from the calculation of the validity test is valid. The author's reliability test resulted in a Cronbach's Alpha value > 0.6 so that it can be concluded that all values on the reliability test instrument are reliable, the calculation of the maturity level of PO9 level 0-5 also shows the contribution value of the COBIT maturity level of 4.1.

## B. DISCUSSION

Based on respondent data from research that has been distributed, the results are declared accurate and accountable based on information systems on risk management [11]. Analyzing risk management in the information system at the Setu village head office, especially in the use of the SDGs application using the COBIT 4.1 framework [12]. The validity and reliability test of the


ISSN 2442-7888 (online) DOI 10.24167/Sisforma

questionnaire questions resulted in a calculation that the results were valid and consistent, very accurate to be used as a measuring tool for IT governance of risk management information systems [13].

## IV. CONCLUSION

The results of this study indicate the maturity level of information system risk management At level 3, it means that the maturity level is in the process define position. The process to achieve goals uses a much more structured way of using organizational assets and is defined. Recommendations in this study are the need for infrastructure improvements in the form of computers or other hardware and the addition of human resources for the IT department to improve the performance of staff in the village head's office in carrying out work activities. Suggestions for further research is the need to use a different measuring tool other than COBIT 4.1 and the addition of the PO 9 domain, as a basic reference for risk management analysis.

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ISSN 2442-7888 (online) DOI 10.24167/Sisforma