Risk Assesment Analysis on Bumil-KU Application using COBIT 5 Framework

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ABSTRACT
One of the flagship initiatives of the Kulon Progo Regency Government is the Bumil-KU application, a digital platform to facilitate access to health services and monitoring of pregnant women. Bumil-KU allows risks to occur such as the synchronization process which is carried out manually, besides the failure of the home location pointing process due to internet constraints. The purpose of this study is to analyze the risk assessment of the Bumil-KU Application using the Capability Level calculation. In the COBIT 5 framework, research is carried out through three stages of analysis, namely current capability level analysis, expected capability level analysis and gap analysis. To ensure the level that has been achieved, data collection techniques include observation, interviews, questionnaires, and assessment assessments used to identify the value of capability level, current capability, expected capability, gap analysis, and recommendations for the risks collected. Based on the results of the capability level calculations that have been carried out, the current capability is at level 4 with a value of 3.97, while the expected capability is at level 5 with a value of 4.50, so there is a gap of 1. Based on Bumil-KU's problems and the fulfillment of the APO12 process attribute criteria, this research provides recommendations that can be reviewed to improve Bumil-KU's IT risk management performance.

Keywords
Risk Management, Bumil-KU, Capability Level, COBIT 5.

1. INTRODUCTION
The role of technology in the current era of globalisation is very important for information processing in organisations [1]. Information technology can be used as a web-based information system that is able to process and produce precise and useful information for organizations and agencies [2]. The development of information technology has been implemented by the Health Office, namely the Bumil-KU application. The Bumil-KU application is a digital platform for tracking pregnant women and offering convenient health services. By accurately knowing the number of pregnant women whose data is updated every day.

With digital data, the Bumil-KU Application certainly has a variety of possible risks that can arise at any time [3]. The possibility of these risks can be caused by several factors encountered, namely that the data is not actual because the synchronization process with SIMKIA is carried out manually and is not carried out every day, besides that the failure of the home location pointing process often occurs due to internet constraints, it can cause less than optimal location accuracy.

Based on the above problems, this study aims to analyze and assess risk management in the Bumil-KU application based on capability level calculations. provide recommendations for risk prevention and management so as to minimize risk. The only framework that maintains high-quality data and accompanying technology to manage business and functional tasks and considers the benefits of information technology for stakeholders is Cobit 5 [4].

2. LITERATURE STUDY
2.1 Definition of Risk
Risk is uncertainty and has a negative impact on a goal or desire to be achieved [5]. Risk is defined as something that can create obstacles in the achievement of organisational objectives, due to internal and external factors, depending on the type of risk that exists in a particular situation [6]. [7] provides an explanation of the definition of risk given by several experts. A. Abas Salim defines risk as uncertainty (incertainty) that can result in loss, while Soekarto defines risk as uncertainty around an event.

2.2 Types of Risk
Risk types are divided into two categories to simplify the division of risk classification levels [8]:

1. Primary, for the type of risk scenario that indicates a higher level, which is denoted using the letter 'P'.
2. Secondary, for the type of risk scenario that indicates a lower category, symbolised by the letter 'S'.

2.3 Definition of Risk Assessment
Risk assessment is part of risk management, which is a process to assess how often a risk occurs or how much impact the risk has [9]. As part of risk management, risk assessment offers an organized method for finding out how objectives may be affected and evaluating risks in terms of likelihood and consequences before making a judgment about whether or not to proceed with further processing [10].The risk assessment methodology has six different steps, which are as follows:

1. Information Identification - this risk assessment process begins with the identification and inventory of assets related to information or information systems.
2. Threat identification - threats are unforeseen circumstances that may occur that could adversely affect business operations. The purpose of threat identification is to discover potential threats to the organisation's systems.
3. Vulnerability identification - vulnerabilities are holes or weaknesses in well-managed information security procedures that can cause damage or make things worse. The goal is to assist the company in identifying weaknesses in its information security management system.

4. Determining the likelihood of threats (Probability) - at this stage it is done to identify risks that are likely to occur based on the risks that have been found, whether they come from human activity, the environment, or nature.
5. Impact analysis - assessing the risks faced by a company or its business operations due to threats or vulnerabilities is known as impact analysis.
6. Determine the risk value - the risk value illustrates how serious an information security breach is to the company [11].

2.4 Definition of Risk Management

According to Nugroho cited by [12] IT risk management is a form of documenting threats and their consequences for resources, so it is very important to make modifications to these risk factors to avoid these unexpected consequences. The process of identifying risks, analysing risks, and handling to reduce risks until their impact on business processes in the organisation is at an acceptable or permissible level is known as information technology risk management [13].

2.5 COBIT 5

COBIT (Control Objectives for Information and Related Technology) is an IT governance framework and supporting tool set that enables managers to bridge the gap between control needs, technical issues and business risks [14]. COBIT serve as a link between technological difficulties, control specifications, and business issues. Users, managers, and auditors all use this framework [15]. COBIT 5 has five main principles, which are outlined in Figure 1 [16].

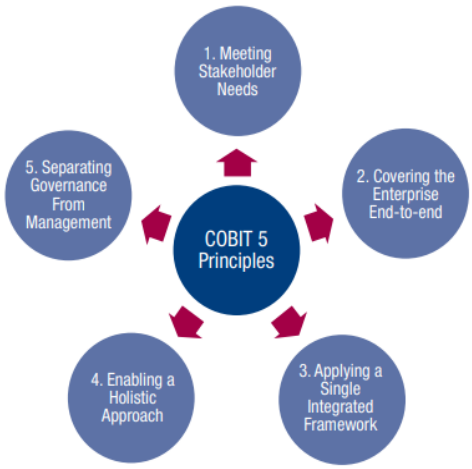

Figure 1. Priciple COBIT 5

The core principles of COBIT 5 are described in each of the following principles:

1. Meeting Stakeholder Needs, a company exists to maximize risk, use resources wisely, and realize profits to generate value for its stakeholders.
2. Covering the Enterprise End-to-End, COBIT 5 offers a thorough and methodical perspective of enterprise risk management and IT governance depending on the number of facilitators.
3. Appling a single Integrated Framework, companies can use other standards and frameworks as a scope management framework for enterprise IT by adapting COBIT 5 to those standards and frameworks.
4. Enables a holistic approach, a comprehensive strategy is required to manage and operate an IT company successfully and efficiently.
5. Separating governance from Management, governance and management are clearly distinguished in COBIT 5.

COBIT 5 uses enablers to practice IT governance and management. Companies can achieve their goals with the help of enablers. The following are the seven categories of COBIT 5 enablers [16] as shown in Figure 2.

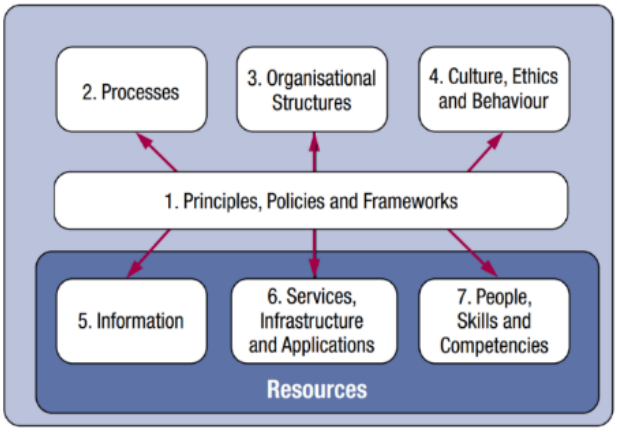

Figure 2. Enabler COBIT 5

1. Principles, Policies and Frameworks that form the basis for a company's IT operations.
2. Processes that describe the steps required to achieve organizational goals within the IT department.
3. Organizational Structure that plays an important role in the company's decision-making.
4. Culture, Ethics and Behavior that can affect the values and goals of the company.
5. Information used for internal decision making and problem solving.
6. Services, Infrastructure, and Applications that are key drivers in achieving the company's IT goals.
7. People, Skill and Competencies that must match the company's business goals.

2.6 COBIT 5 Mapping

The mapping in COBIT 5 aims to align business objectives with IT-related objectives in the organization by carefully setting priorities based on the complexity and urgency of the problem at hand. The following COBIT 5 mapping is based on [16].

1. Enterprise Goals (EG) is a mapping using the Balance Scorecard (BSC), which defines the company's goals into 17 points of EG according to the BSC perspectives.
2. Aligning the relationship between EG and ITG is a mapping process known as mapping EG with IT-Related Goals (ITG). ITGs define the COBIT 5 enablers required to achieve these IT goals and link the organization's key business objectives into specific IT goals.
3. ITGs are mapped with domain processes by aligning them with the relevant domain processes.

2.7 RACI

The Raci Chart was needed to determine who would be the resource persons in the research conducted. Raci is an

abbreviation consisting of Responsible, Accountable, Consulted and Informed. COBIT 5 explains that the RACI chart is a matrix for all activities or authorisation decisions that must be taken in an organisation that are associated with all parties or positions involved [17]. The following RACI Chart APO12 as shown in Figure 3.

APO12 RACI Chart

Management Practice	Board	Chief Executive Officer	Chief Financial Officer	Chief Operating Officer	Business Executives	Business Process Owners	Strategy Executive Committee	Steering (Programmes/Projects) Committee	Project Management Office	Value Management Office	Chief Risk Officer	Chief Information Security Officer	Architecture Board	Enterprise Risk Committee	Head Human Resources	Compliance	Audit	Chief Information Officer	Head Architect	Head Development	Head IT Operations	Head IT Administration	Service Manager	Information Security Manager	Business Continuity Manager	Privacy Officer
APO12.01 Collect data.		I				R			R		R	R		I		C	C	A	R	R	R	R	R	R	R	R
APO12.02 Analyse risk.		I				R			C		R	C		I		R	R	A	C	C	C	C	C	C	C	C
APO12.03 Maintain a risk profile.		I				R			C		A	C		I		R	R	R	C	C	C	C	C	C	C	C
APO12.04 Articulate risk.		I				R			C		R	C		I		C	C	A	C	C	C	C	C	C	C	C
APO12.05 Define a risk management action portfolio.		I				R			C		A	C		I		C	C	R	C	C	C	C	C	C	C	C
APO12.06 Respond to risk.		I				R			R		R	R		I		C	C	A	R	R	R	R	R	R	R	R

Figure 3. RACI Chart APO12

2.8 Process Capability Level

Process attributes (PAs) are the basis of capability evaluation, each PA identifies a specific element. The capability level of a process is determined by this assessment, which also selects the next action to be taken to improve the process capability value [18].

The Process Assessment Model (PAM) in the COBIT 5 framework is used to evaluate process capability. Figure 4 displays the PAM in accordance with [19].

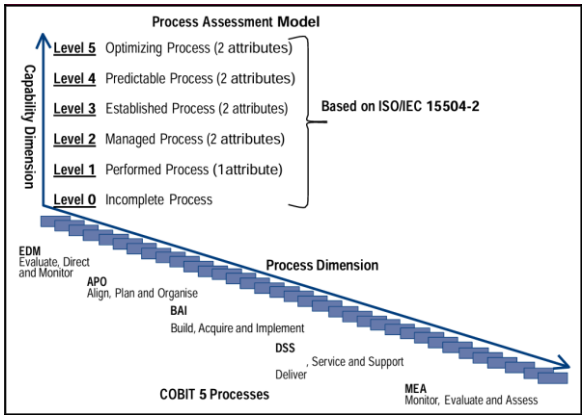

Figure 4. Process Assesment Model COBIT 5

The PA described in ISO/IEC 15504-2:2003 initiates nine process attributes as follows [20]:

1. Level 0 (Incomplete Process)
   The method is either not performed at this stage or does not succeed in achieving its goal. At this stage, the purpose of the procedure seems to be achieved little or nothing systematically.
2. Level 1 (Performed Process)
   The process is controlled by a single property at this level. At this stage, the organization has implemented, but the goal has not been achieved. To improve results, there are three parts to the process: planning, evaluation, and adjustment.
3. Level 2 (Manage Process)
   Planning, monitoring, and adjustments have been used to implement, manage, control, and maintain processes in accordance with the work products at this level.
4. Level 3 (Estabilished Process)
   In this stage, processes are managed and executed, and the procedures that can produce these results are outlined.
5. Level 4 (Predictable Process)
   The implementation stage of this process ensures that the desired results can be achieved while staying within the set parameters.
6. Level 5 (Optimizing Process)
   At this stage, previously predictable processes are continuously improved to meet current and future company goals.

The scoring system used to assess each PA is based on ISO/IEC 15504, specifically [19]:

1. N (Not Achieved)
   Achievement ranging from 0% to 15%, there is little or no indication that the process attribute has been met.
2. P (Partially Achieved)
   This rating scale has achievements between 15% and 50%, some evidence of near achievement of process attributes on this scale.
3. L (Largely Achieved)
   This rating scale shows evidence of close to major achievement of the process achievement characteristic being assessed, with scores ranging from 50 to 85%.
4. F (Fully Achieved)
   This score ranges from 85 to 100% achievement, indicating full evidence of total achievement of the process attribute.

2.9 Questionnaire Data Management

Data management is carried out based on the results of respondents' answers in filling out the questionnaire according to the Likert scale to calculate the recapitulation of respondents' answers to the questionnaire, calculate the value of each question in the COBIT 5 process, and determine the level capability value of the questionnaire results [21]. Then it is described by the following formula:

1. Calculating the Percentage of Questionnaire Answers

$$C = \frac{H}{JR} \; x \; 100\%$$

   Description:
   C = Recapitulation of Capability Level questionnaire answers
   H = Number of answers to the Capability Level questionnaire on each answer choice in each activity
   JR = Number of Respondents
2. Calculating the capability value of each subdomain

$$NK = \frac{(Lp \; x \; Nk0) + (Lp \; x \; Nk1) + (Lp \; x \; Nk2) + (Lp \; x \; Nk3) + (Lp \; x \; Nk4) + (Lp \; x \; Nk5)}{100}$$

   Description:
   NK = Maturity value of the IT process
   LP = Level percentage
   Nk = Maturity value listed in the answer mapping table, value and maturity level.
3. Calculating Capability Level

$$Capability\ Level = \frac{\sum \text{Capability Value}}{\sum Process\ Domain}$$

4. METHODOLOGY

4.1 Research Stages

Researchers perform several stages as a basic framework so that each process is structured and easily identified. To understand the flow, it is necessary to conform to the framework used as follows:

1. The first step, Literature study was carried out by collecting references and other data relevant to the research question. This was done at the Kulon Progo Regency Health Office to support understanding in risk management in the Bumil-KU Application. COBIT 5 framework rules and scientific books, articles, theses, and journals on risk management are some of the materials consulted.
2. The second step is COBIT 5 mapping. At this stage, Enterprise Goals, IT-Realized Goals and IT-Process are carried out to obtain domain priorities for research.
3. The third step, collecting data, collecting data needed for information technology evaluation through distributing questionnaires, interviews with related parties, and observations.
4. the fourth step, analyzing data is needed to manage data so that it can be used to make decisions. Researchers will find how much maturity level the agency currently has and then analyze the maturity value expected by the executive to analyze the resulting gap level.
5. The fifth step, reporting the results of the analysis obtained from the results of the analysis in the previous stage, will then be reported to the Stakeholders and at the same time provide recommendations for the results of the Research to the agency.
6. Step six, make recommendations for additional research and draw conclusions from all research activities that have been completed.

4.2 Method of Collecting Data

The data methods used in this research are questionnaires, interviews, and observations to obtain data and literature.

1. Observation
   Observation is done to see directly the process that occurs [22]. In this study, observations were made by coming directly to the Health Office & the Communication and Informatics Office to collect information related to problems and conditions that exist in the Bumil-KU Application.
2. Literature study
   The literature study was conducted to find references related to the research topic taken, so that we can find out the process of research process and the resulting output [23].
3. Interview
   Interviews are one of the main techniques used to collect data. The purpose of the interview process is to collect information data related to the Bumil-KU Application at the Kulon Progo Regency Health Office. Data collection is carried out by interviewing the IT and implementers of the Bumil-KU Application related to the COBIT 5 process.
4. Questionnaires
   The questionnaire is used as a tool to obtain data so that research can be carried out. The questionnaire is prepared by following the COBIT 5 guidelines which take each process in the COBIT domain to be used as question items [24]. In this study, the questionnaire was distributed by the author to respondents who had been identified using the RACI diagram.

4.3 Analyzing data

At this stage the researcher takes 3 (three) steps including analyzing the expected capability value, the current capability value and calculating the Gap value to make recommendations.

1. Expected Level Capability
   At this stage the researcher will conduct an analysis of the level of capability desired by the Kulon Progo Regency Health Office, starting with explaining to the agency that the criteria for organisations that are believed to at least carry out risk management must be able to at least reach level 2.
2. Current Level Capability
   At the stage of assessing the current capability level of respondent data processing, researchers use a Likert scale which is calculated by looking at the distribution of responses as the basis for determining the current value obtained from the results of the questionnaire calculation to determine the level of capability.
3. Gap Level
   At this stage the researcher calculates the Gap value based on the results of the respondent's questionnaire responses, then compares it with the desired capability value, if the respondent's value is lower than the expected capability value, recommendations are made to achieve the desired value. If the questionnaire results are higher than the expected capacity value, then the existing process needs to be maintained and does not require further recommendations.

5. RESULTS AND DISCUSSION

5.1 COBIT 5 Mapping

COBIT 5 mapping aims to align business goals with the organization's IT goals by setting priorities based on the problems faced [25]. The mapping results are used to evaluate the level of capability. The main goal of the Kulon Progo Regency Health Office at this time is to become a professional institution in realizing an increase in the degree of public health. The main goal is linked into 17 Enterprise Goals points, then the Enterprise Goals are identified to find out the current Enterprise Goals of the Kulon Progo Regency Health Office.

The results of the Enterprise Goals mapping resulted in 3 Enterprise Goals points, namely points 7 (Business service continuity and availability), 8 (Agile responses to a changing business environment) and 17. Point 7 and point 8 are included in the BSC Dimension Customer, while point 17 is included in the BSC Dimension Learning and Growth.

The next stage is mapping between Enterprise Goals into IT-related Goals, the results of the mapping are used to determine how to align Enterprise Goals with IT-Related Goals. To create IT-Related Goals, namely points 01, 04, 07, 09, 10, 14, and 17, you must first select points with the letter P or Primary from the relationship between Enterprise Goals and IT-Related Goals. This map is used to determine the agency's IT-related goals, which are derived from the agency's vision to become a professional institution in order to realize the improvement of public health status.

Based on the agency's vision, the relevant IT-related Goals are point 07, point 10, and point 14. The next step is to map the IT-

related Goals to processes in the COBIT 5 domain by aligning the IT-related Goals with the appropriate domain processes.

Based on the mapping done, see the identification of research problems and determination of domains. The process domain that is the focus of the problem in the Bumil-KU Application is the APO12 domain which can assist the organization in determining the extent to which the institution has conducted a risk assessment on the Bumil-KU Application.

5.2 Preparation of Questionnaires

The preparation of the questionnaire in this study used the APO12 domain with the COBIT 5 standard with subdomains APO12.01 to APO12.06. The preparation of this questionnaire helps in assessing the Capability Level of the APO12 process. The results of the calculation of this capability level assessment are used to measure the extent of the risk level in the Bumil-KU Application at the Kulon Progo Regency Health Office.

5.3 Determination of Respondents

In determining respondents, it is seen through an organizational structure that describes the function and position of each job position clearly adjusted to the responsibilities in an agency. Stakeholder involvement in the implementation of these activities is adjusted in the RACI Chart based on the APO12 RACI Chart domain. Determination of respondents based on RACI obtained 5 respondents. The results of respondent customization can be seen in Table 1.

Table 1. Result of Determining Respondents APO12

No	COBIT 5 Structure	Work Unit	ID
1	Chief Executive Officer	Head of Service	R1
2	Bussiness Process Owners	Head of Service	R1
3	Project Management Officer	Head of the health sector	R2
4	Chief Information Officer	Head of health section	R3
5	Head Architect	IT Senior	R5
6	Head Development	IT Senior	R5
7	Head IT Operations	IT Senior	R5
8	Head It Administration	IT Senior	R5
9	Service Manager	Heatlh program manager	R4
10	Privacy Officer	IT Senior	R5

Based on the RACI Chart in Table 1 APO12 has 10 work units that are in accordance with the COBIT 5 framework and are adjusted to the work units of the Bumil-KU Application team. However, in the Bumil-KU Application team work unit there are only 5 work units from the 3 fields that are the focus of research, because several COBIT 5 work units are carried out by the same person.

5.4 Recapitulation of APO12 Questionnaire Answers

This section provides a summary in percentage form of the APO12 questionnaire answers for expected and existing conditions. The questionnaire is divided into six subdomains, numbered APO12.01 to APO12.06.

There are thirteen questions in subdomain APO12.01, ten questions in subdomain APO12.02, seven questions in subdomain APO12.03, five questions in subdomain APO12.04, three questions in subdomain APO12.05, and four questions in subdomain APO12.06. The average percentage of APO12 questionnaire answers can be seen in Table 2.

Table 2. Average Recapitulation of APO12 Questionnaire Answers

No	Questionnaire Answer	Status	Average answer distribution (%)					
			0	1	2	3	4	5
1	APO 12.01	Current	0	6,15	13,85	6,15	27,69	46,15
		Expected	0	0	1,54	18,46	0	80
2	APO 12.02	Current	0	12	8	2	20	58
		Expected	0	0	10	10	0	80
3	APO 12.03	Current	8,57	8,57	5,71	5,71	20,00	51,43
		Expected	8,57	0,00	2,86	8,57	2,86	77,14
4	APO 12.04	Current	0	12	8	0	28	52
		Expected	0	0	8	12	0	80
5	APO 12.05	Current	0	20	0	0	26,67	53,33
		Expected	0	0	13,33	6,67	0	80
6	APO 12.06	Current	0	5	15	0	20	60
		Expected	0	0	0	15	5	80

From Table 2 in number 1, it can be concluded that according to the respondents' assessment, Bumil-KU currently has risk management at level 5 with a percentage of 46.15%, while the expected level is level 5 with a percentage of 80%.

From Table 2 in number 2, it can be concluded that respondents assess Bumil-KU in collecting data, in current conditions the evaluation results show that risk management is at level 5 with a percentage of 58%. Meanwhile, for expected conditions (Expected), the evaluation results show that risk management is at level 5 with a percentage of 80%.

From Table 2 in number 3, it can be concluded that respondents assess Bumil-KU in collecting data, in the current condition the evaluation results show that risk management is at level 5 with a percentage of 51.43%. While for expected conditions (Expected) the evaluation results show that risk management is at level 5 with a percentage of 77.14%.

From Table 2 in number 4, it can be concluded that according to the respondents' assessment, Bumil-KU currently has risk management at level 5 with a percentage of 52%, while what is expected is level 5 with a percentage of 80%.

From Table 2 in number 5, it can be concluded that respondents assess Bumil-KU in collecting data, in the current condition the evaluation results show that risk management is at level 5 with a percentage of 53.33%. Meanwhile, for the expected condition (Expected), the evaluation results show that risk management is at level 5 with a percentage of 80%.

From Table 2 in number 6, it can be concluded that respondents assess Bumil-KU in collecting data, in current conditions the evaluation results show that risk management is at level 5 with a percentage of 60%. Meanwhile, for expected conditions

(Expected), the evaluation results show that risk management is at level 5 with a percentage of 80%.

5.5 Calculation of Capability Score

This section contains the calculation of the capability value based on the recapitulation of questionnaire answers. The following is the calculation of the capability value in each subdomain:

5.5.1 Capability score of APO12.01 (Collect data)

Current

$$NK = \frac{(0\ x\ 0)+(1\ x\ 6{,}15)+(2\ x\ 13{,}85)+(3\ x\ 6{,}15)+(4\ x\ 27{,}69)+(5\ x\ 46{,}15)}{100} = 3{,}94$$

Expected

$$NK = \frac{(0\ x\ 0)+(1\ x\ 0)+(2\ x\ 1{,}54)+(3\ x\ 18{,}46)+(4\ x\ 0)+(5\ x\ 80)}{100} = 4{,}58$$

The capability value in the current APO12.01 process condition (Current) gets a result of 3.94, which means that the capability level is at level 4. While the expected conditions (Expected) get a result of 4.58, which means that the level of capability is at level 5.

5.5.2 Capability score APO12.02 (Analyzing Risk)

Current

$$NK = \frac{(0\ x\ 0)+(1\ x\ 12)+(2\ x\ 8)+(3\ x\ 2)+(4\ x\ 20)+(5\ x\ 58)}{100} = 4{,}04$$

Expected

$$NK = \frac{(0\ x\ 0)+(1\ x\ 0)+(2\ x\ 10)+(3\ x\ 10)+(4\ x\ 0)+(5\ x\ 80)}{100} = 4{,}50$$

The capability value in the current APO12.02 process conditions (Current) gets a result of 4.04, which means that the capability level is at level 4. While the expected conditions (Expected) get a result of 4.50, which means that the level of capability is at level 5.

5.5.3 Capability value of APO12.03 (Maintaining Risk Profile)

Current

$$NK = \frac{(0\ x\ 8{,}57)+(1\ x\ 8{,}57)+(2\ x\ 5{,}71)+(3\ x\ 5{,}71)+(4\ x\ 20)+(5\ x\ 51{,}43)}{100} = 3{,}74$$

Expected

$$NK = \frac{(0\ x\ 8{,}57)+(1\ x\ 0)+(2\ x\ 2{,}86)+(3\ x\ 8{,}57)+(4\ x\ 2{,}86)+(5\ x\ 77{,}14)}{100} = 4{,}29$$

The capability value in the current APO12.03 process conditions (Current) gets a result of 3.74, which means that the capability level is at level 4. While the expected conditions (Expected) get a result of 4.29, which means that the level of capability is at level 4.

5.5.4 Capability value of APO12.04 (Articulate Risk)

Current

$$NK = \frac{(0\ x\ 0)+(1\ x\ 12)+(2\ x\ 8)+(3\ x\ 0)+(4\ x\ 28)+(5\ x\ 52)}{100} = 4{,}00$$

Expected

$$NK = \frac{(0\ x\ 0)+(1\ x\ 0)+(2\ x\ 8)+(3\ x\ 12)+(4\ x\ 0)+(5\ x\ 80)}{100} = 4{,}52$$

The capability value in the current APO12.04 process condition (Current) gets a result of 4.00, which means that the capability level is at level 4. While the expected conditions (Expected) get a result of 4.52, which means that the level of capability is at level 5.

5.5.5 Capability value of APO12.05 (Determine Risk Management Action Portfolio)

Current

$$NK = \frac{(0\ x\ 0)+(1\ x\ 20)+(2\ x\ 0)+(3\ x\ 0)+(4\ x\ 26{,}67)+(5\ x\ 53{,}33)}{100} = 3{,}93$$

Expected

$$NK = \frac{(0\ x\ 0)+(1\ x\ 0)+(2\ x\ 13{,}33)+(3\ x\ 6{,}67)+(4\ x\ 0)+(5\ x\ 80)}{100} = 4{,}47$$

The capability value in the current APO12.05 process conditions (Current) gets a result of 3.93, which means that the capability level is at level 4. While the expected conditions (Expected) get a result of 4.47, which means that the level of capability is at level 4.

5.5.6 Capability value of APO12.06 (Respond to Risks)

Current

$$NK = \frac{(0\ x\ 0)+(1\ x\ 50)+(2\ x\ 15)+(3\ x\ 0)+(4\ x\ 20)+(5\ x\ 60)}{100} = 4{,}15$$

Expected

$$NK = \frac{(0\ x\ 0)+(1\ x\ 0)+(2\ x\ 0)+(3\ x\ 15)+(4\ x\ 5)+(5\ x\ 80)}{100} = 4{,}65$$

The capability value in the current APO12.06 process condition (Current) gets a result of 4.15, which means that the capability level is at level 4. While the expected conditions (Expected) get a result of 4.65, which means that the level of capability is at level 5.

5.6 Determination of Capability Level

A detailed explanation of the APO12 capability level evaluation may be found in Table 3. This section provides a detailed discussion of how the capability value calculation results recorded in each relevant subprocess can be used to determine the APO12 capability level.

Table 3. Determination of Capability Level APO12

No	Subdomain	Capability Level		Capability Level	
		Current	***Expected***	***Current***	***Expected***
1	APO12.01	3,94	4,58	4	5
2	APO12.02	4,04	4,50	4	5
3	APO12.03	3,74	4,29	4	4
4	APO12.04	4,00	4,52	4	5
5	APO12.05	3,93	4,47	4	4
6	APO12.06	4,15	4,65	4	5
Average		**3,97**	**4,50**	**4**	**5**

In Table 3, the APO12 capability value is obtained from the calculation of the sum of the APO12.01 to APO12.06 capability values divided by the number of subdomains. The results for the capability level for the current condition

(Current) at level 4 (Predictable Process) based on a rounding scale with a value of 3.97. While for the expected condition (Expected) is at level 5 (Optimizing Process) based on a rounding scale with a value of 4.50. For a clearer picture, you can find the APO12 process graph shown in Figure 5.

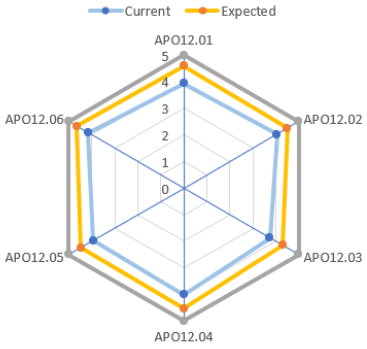

Figure 5. APO12 Process Graph

5.7 Gap Analysis

In this study, the results of the calculation of the APO12 (Manage Risk) process gap value that have been obtained from the results of the questionnaire and analysed based on the comparison of the capability level value expected by the Kulon Progo Regency Health Office with the current capability level value, as shown in Table 4 APO12 process gap.

Table 4. APO12 Process Gap

Process	*Current*	*Expected*	*Gap*
APO12 *(Manage Risk)*	4	5	1

Based on Table 9 above, it can be seen that the gap of the APO12 process is 1, where the current condition (Current) is at level 4 while the expected condition (Expected) is at level 5. From this difference, it can be concluded that Bumil-KU needs to make improvements to improve risk management in the Bumil-KU Application using the APO12 domain in order to achieve the expected level.

5.8 Recommendation

Based on the results of the analysis of the APO12 capability level achievement process, it is found that there are several achievements that have not been fully achieved. Therefore, the recommendation given in accordance with domain APO12 of the COBIT 5 framework is to improve the capability level and risk management associated with the Bumil-KU Application. This will enable this application to reach the desired level of achievement, which will greatly increase the likelihood of achieving the desired goals. The results of the recommendations can be seen in Table 5.

Table 5. Recommendation APO12

No	Recommendation
1	Collaborate with outside parties to complete risk assessments to ensure ongoing oversight.
2	Plan & define IT risk management processes that include information on process performance objectives.
3	Establish IT risk management process standards and improve understanding of process behavior, manage effectiveness, and make continuous improvements.
4	Improve and enhance process performance measurement, analysis and reporting to make better decisions.
5	Implement relevant and adequate performance measurement systems within the organization to improve operational efficiency and effectiveness.
6	Conduct measurement data analysis to identify specific reasons for variations that may impact process performance.

6. CONCLUSION

Based on the results of the research conducted, the results of the calculation of the level of capability based on the APO12 process on Bumil-KU are obtained, namely, the level of capability for the current condition obtained a value of 3.97 which means it is at level 4 (Predictable Process) and the level of capability for the expected condition obtained a value of 4.50 which means it is at level 5 (Optimizing Process), so that there is a gap of 1. Based on the findings of the gap, recommendations are given to improve the Capability Level and risk management on the Bumil-KU Application according to the problems and fulfillment of the APO12 attribute process criteria.

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