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Evaluation and Implementation of IT Governance Using the 2019 COBIT Framework at the Department of Food Security, Agriculture and Fisheries of Balangan Regency

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***Abstract*— The food security, fisheries and agriculture services work with local government to help the community. In carrying out its work, the government applies information technology to achieve the goals. Therefore, it is necessary to have an IT governance design to ensure the alignment of the government's objectives and the use of IT. Governance is an important asset to measure the effectiveness and efficiency of work process improvement using IT. This research is conducted because there has never been an IT governance design assessment. The analysis and design of IT governance at government agencies are carried out using the COBIT 2019 framework to measure the level of IT capability. The research method used is descriptive qualitative by conducting interviews with influential government parties. This study obtained an IT governance design and detected important processes for the domains used, namely EDM04, APO04, APO07, APO08, APO11, BAI03, BAI08, BAI10.**

Keywords*— *information technology; IT governance design; effectiveness; efficiency; IT governance design assessment

1 INTRODUCTION

At this time, information technology used by the government or called electronic government (e-government) is an absolute necessity and must be continuously developed as an acceleration tool in strategic policy and decision making [1]. IT is no longer only seen as a support but has become a major part of the organization to be more competitive in the organization. Work patterns, employee performance, and management systems in an organization have changed because of the role of IT. It is recognized that IT improves corporate governance practices because critical business processes will usually be automated, and directors rely on information provided by IT systems [2].

IT governance is one of the most important parts of the successful implementation of good governance. Governance measures the effectiveness and efficiency to improve the company's business processes through IT-related structures. The benefit obtained by the company implementing IT governance includes risk and resource optimization. This analysis is useful to evaluate the level of maturity of the use of information technology and to correct errors or irregularities in IT implementation. As for the IT governance and control, it will help organizations optimize IT investments, ensure the provision of services, and provide measurements to check for non-conformances [3]. The Department of Food Security, Agriculture and Fisheries is managing the improvement and the development of the economy of rural and urban communities, such as Balangan District. IT governance audits need to be carried out to improve the performance of an agency, the management and distribution of information, and public services.

Audit in the field of governance is useful to assess the organization and figure out the maturity level of its IT governance. The outcome of the audit can be used to increase the IT capability. IT capability describes an organization's ability to create business value and to acquire, deploy, combine, and reconfigure IT resources to support and improve business strategies and business processes.

Research on IT governance audits at the Balangan District Food Security, Agriculture and Fisheries Department using the COBIT 2019 framework has never been conducted. This study aims to analyze the IT governance audit to determine the capability level. COBIT 2019 produces an important output and prioritized governance/management aiming to optimize the IT management of the organization [4].

2 METHOD

Using the COBIT 2019 framework, giving recommendations based on COBIT 2019 and the implementation stages that can be carried out based on recommendations given through several processes can be seen in Fig. 1.

Fig. 1 is a flow from the research implementation stage to determine the capability level which includes the observation and interview stages, literature review, identification of critical points through interviews, identification of business goals, identification of alignment goals, domain selection process, determination of the level of importance, determination of maturity ratings and providing advice as well as repairs. The flowchart of making recommendations can be shown in Fig. 2.

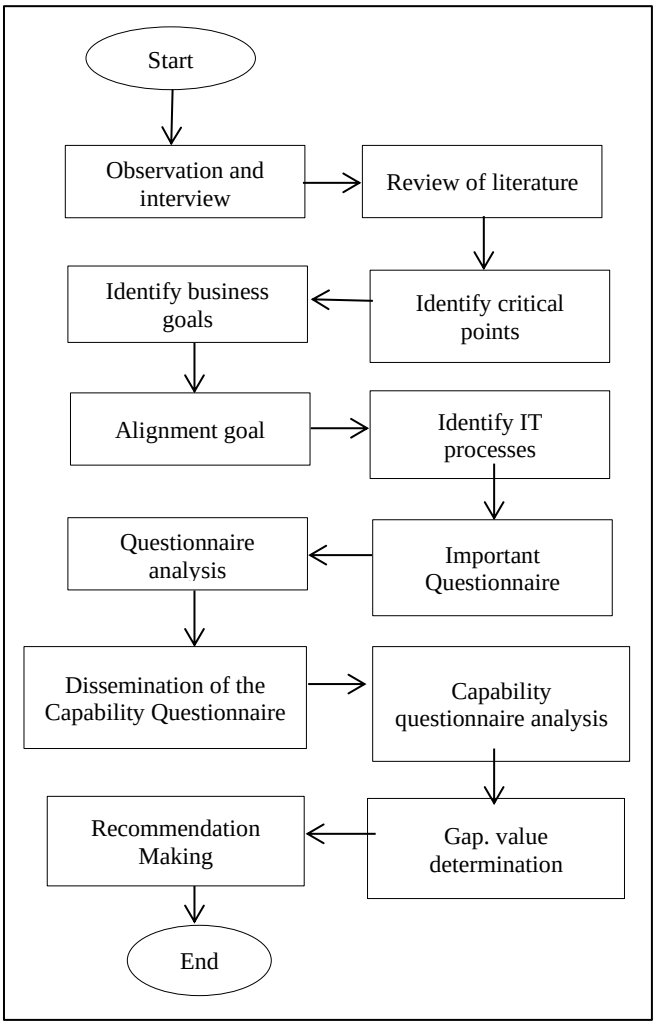

Figure 1. Research methods

Fig. 2 demonstrates the flow of the advising process with the COBIT 2019 framework. The management objectives offer steps to improve satisfactory practice that can be used to increase the functionality level value of the Food Security, Agriculture and Fisheries Department of Balangan District. The flowchart of the implementation of the recommendations can be seen in Fig. 3.

Fig. 3 shows the flow of the recommendation process and the aims for a clean and planned implementation technique. The implementation segment and monitoring become the primary stage of the method of imposing the tips executed via the research.

2.1 IT Governance design

This research applied the governance device design workflow according to the COBIT 2019 technique guidebook [5]. It was done in 3 stages consisting of the assessment of IT governance, imparting tips, and the implementation stage. All

of these processes were conducted entirely based on the tips in the COBIT 2019, given through the previous level [6]. It is shown in Fig. 4.

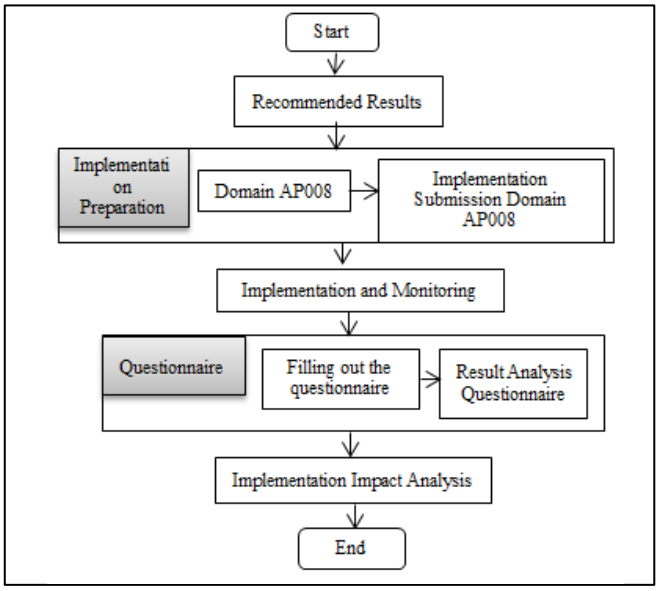

Figure 2. Recommendation making flowchart

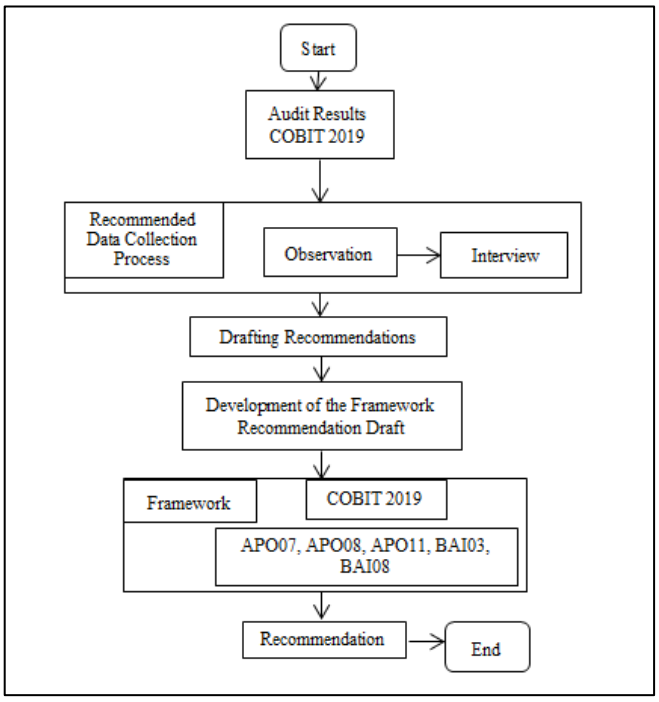

Figure 3. The implementation of the recommendations

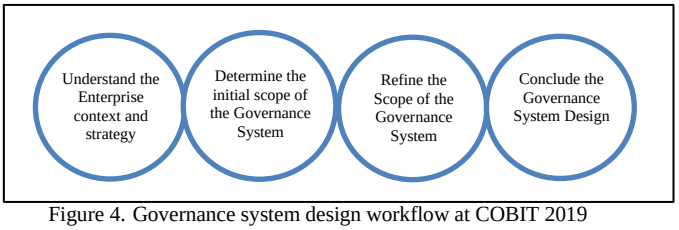

Figure 4. Governance system design workflow at COBIT 2019

In Fig. 4, there are numerous strategies in designing an IT governance device. In the first procedure, the authors did interviews with stakeholders and made some observation at the government office to apprehend the preliminary steps in designing IT governance by way of identifying the existing strategies in the office. This stage explored expert's idea and the employer's strategy, agency goals, profile, and issues related to records and era, which was primarily based on the layout criteria furnished through COBIT 2019. Secondly, interviews were carried out with applicable stakeholders to decide the preliminary scope of the governance system by using layout thing 1 – design factor 4. Then, the 0.33 system was used to identify upgrades to the initial scope of the governance machine with the aid of considering aspects of design issue 5 to layout element 11. At the final stage, the Department of Food Security, Agriculture and Fisheries identified some possibilities to improve the existing governance system by bringing together all inputs from the previous stage regarding the expected governance design. The new design should accommodate all the inputs. Lastly, conclusions were drawn from the layout phase which should propose a layout of governance gadget for the employer [7].

2.2 COBIT 2019

In different phrases, organizational I&T is not only limited to the IT department of an agency but is also advanced with the aid of ISACA (information systems Audit and manipulate affiliation), that is a global professional club affiliation for people inquisitive about or working with IT auditing, IT threat, and IT governance.

COBIT 2019 is a framework that could help formulate IT strategies, IT procedures and their activities, and upgrade IT governance and control talents to make them extra foremost [8]. It addresses governance issues by way of grouping applicable governance components into governance and control objectives that may be controlled to the specified level of functionality [9]. It is the latest version of COBIT and is an improvement from COBIT 5. As is well known, COBIT 2019 is a framework with a wider range of issues and provides flexibility when used. In addition, in this updated version of COBIT there are updates to the structure and content, as well as the addition of new features such as design factors that allow for improvements to the company's IT governance system [10]

- COBIT Framework 2019: creation and method' introduces the overall shape of the 2019 COBIT Framework, explains its principles and terminology (e.g., additives, design elements, focus regions, cascade of targets, and so on.), and gives up to date COBIT standards.
- COBIT 2019 Framework: Governance and management goals consists of an in-depth description of the COBIT 2019 middle version and each of its forty governance and management goals. For each governance or control goal, a description and goal are supplied as well as a cascade of precise goals and examples of metrics for this reason. Then, the additives required to achieve governance or management targets are discussed in turn. It additionally explicitly refers to different standards and frameworks for in addition steerage. Updated alignment to

international standards, frameworks and quality practices continuing the relevance of COBIT and guarantees that COBIT continues its installed role because the overarching EGIT framework.

- COBIT layout manual 2019: Designing data governance and era answers' gives prescriptive how-to insights for COBIT users concerning EGIT device design. With its new idea of 'design factors', COBIT 2019 affords first-hand perception into the ones elements that can have an effect on an EGIT device. This guide similarly covers workflows for designing and tailored EGIT systems to the company's unique context.
- COBIT Implementation manual 2019: Implementation and Optimization of records and technology Governance solutions 'offers a roadmap for non-stop development of the EGIT gadget. This implementation guide is logically intently associated with the design manual [11].

2.3 Agriculture and Fisheries Food Security Agency

The food security service for agriculture and fisheries has the project of assisting the mayor in carrying out authorities' affairs which are the regional authority and helping obligations in the fields of meals protection, agriculture and fisheries. In carrying out the responsibilities of the Agriculture and Fisheries food security carrier, it contains out the subsequent functions:

- Formulation and implementation of areas within the field of food availability, food lack of confidence, food distribution, meals reserves, diversification of consumption and meals protection
- Implementation of nearby rules within the field of meals availability, food insecurity, food distribution, meals reserves, diversification of intake and food security;
- Components of agricultural extension programs;
- Improvement of meals protection, agriculture and fishery infrastructure;
- Pleasant control, distribution and control of the delivery of plant seeds, farm animals' seeds/seeds and animal fodder forage;
- Supervision of the use of agricultural and fishery centers
- Development of production in the fields of agriculture and fishery;
- Control and manage of plant and animal illnesses;
- Natural catastrophe manipulate and management;
- Development, processing and marketing of agricultural and fishery merchandise;
- Implementation of agricultural extension;
- Granting of agricultural business licenses/technical guidelines;
- Components of guidelines for the empowerment of small fish farming businesses, hints for the issuance of SIUP within the subject of fish cultivation, and control of fish cultivation;
- Enforcing rules for empowering small fish farming businesses, recommending the issuance of SIUP within the area of fish farming, and control of fish farming;
- Implementation of assessment and reporting of fish farming small enterprise empowerment guidelines, suggestions for the issuance of SIUP in the field of fish cultivation, and fish farming management;
- Monitoring, assessment and reporting inside the subject of meal security in agriculture and fisheries;
- Enhancing the great of human assets within the fields of meals protection, agriculture and fisheries;
- Administration of food, agriculture and fishery protection services; and
- Implementation of different capabilities given through the mayor in accordance with his duties and features.

2.4 Governance and Management

Governance and control in COBIT are grouped into five domains. Governance is grouped within the evaluation, lead, and display (EDM) area. It includes: regulate the bodies, compare strategic alternatives, direct senior control on selected strategic options and display approach fulfillment. Management is grouped under 4 domains: Align, Plan, and Arrange (APO). It addresses the overall business enterprise, strategy, and support sports for I&T. Builds, Accumulates and Puts in force (BAI) addresses the definition, acquisition and implementation of I&T solutions and their integration in enterprise procedures. Next, Shipping, Service, and Assist (DSS) handles the operational delivery and support of I&T services, including safety. Next, Monitoring, Evaluating and Assessing (MEA) addresses tracking of I&T overall performance and conformance with inner overall performance objectives, internal manipulate objectives, and outside requirements.

To meet the targets of governance and control, every employer wishes to establish, adjust, and keep a governance system that is constructed from a number of components. Components are elements that make contributions to the best operation of the company governance gadget of I&T, engage with every difference, ensuing in a holistic governance system for I&T. Components can be of diverse sorts. The most familiar is the method. However, the governance system additives also consist of organizational structure, rules and procedures, records gadgets, lifestyle and behavior, skills and capabilities and offerings, infrastructure and programs. Fig. 5 displays adaptations of the organizational structure of IT Governance.

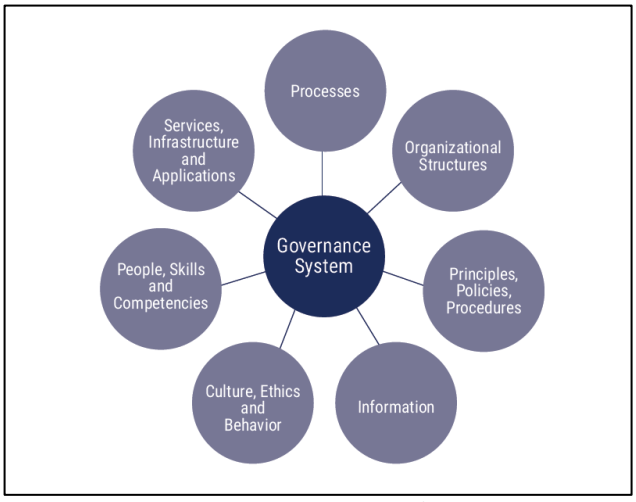

Figure 5. The organizational structure of IT governance

Meanwhile, process describes a fixed practices and activities which can be organized every day to achieve a selected goal and convey fixed outputs that guide the achievement of average IT-related goals.

Factors that can influence the design of a corporate governance system and position it for success in the use of I&T can be seen in Fig.6 [12].

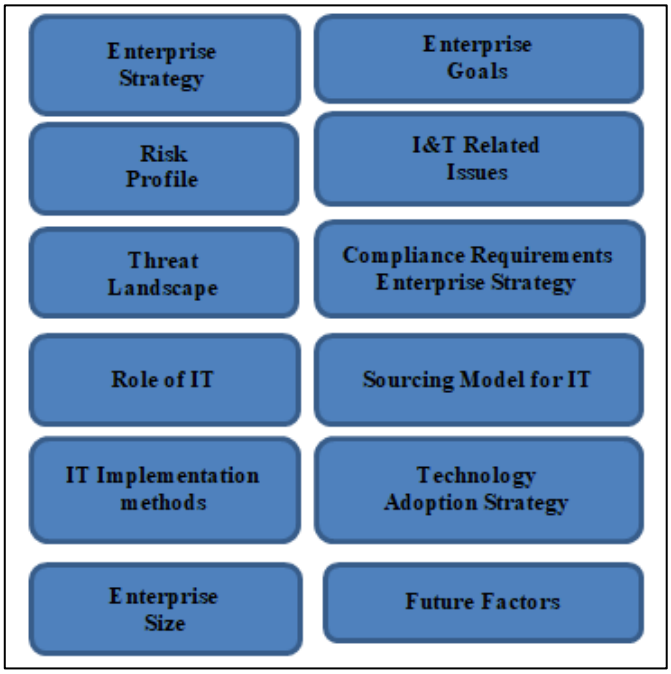

Figure 6. Design factors include the combination

1. Corporate strategy: Firms can have different strategies, which can be expressed as one or more of the archetypes shown in Table 1.

Table 1. Corporate Strategy

Archetype Strategy	Explanation
Growth/ Acquisition	The company has a focus on growth (revenue)
Innovation/ Differentiation	The company offers different and innovative products or services to clients
Cost Leadership	The company minimizes short-term costs
Client Service's Stability	The company provides stable and client-oriented services

2. The company's goals support the company's strategy. The company's strategy is realized by achieving a set of company goals. As shown in Table 2, these objectives are defined within the COBIT 2019 framework, structured along the balanced scorecard (BSC) dimensions, and include the indicated elements [13].

Table 2. Enterprise Goals

Reference	Dimension Balanced Scorecard	Company Goal
EG01	Finance	Competitive Product and Service Portfolio
EG02	Finance	Managed Business Risk
EG03	Finance	External regulatory and legal compliance
EG04	Finance	Financial information quality
EG05	Customer	Customer-oriented service culture
EG06	Customer	Continuity and availability of business services
EG07	Customer	Management information quality
EG08	Intern	Optimization of internal business process functionality
EG09	Intern	Optimization of business process costs
EG010	Intern	Staff skills, motivation and productivity
EG011	Intern	Internal policy compliance
EG012	Growth	Managed digital transformation program
EG013	Growth	Product and business innovation

3. Company risk profile and current issues related to I&T. Company defines problems and opportunities which describes its current capabilities, its shortcomings and everything related to information technology [14]. The risk profile identifies the types of I&T-related risks, indicating which risk areas outweigh appetite risk. Table 3 shows this information.

Table 3. Company Risks and Problems

Ref.	Risk Category
1	IT investment decision making, portfolio definition and maintenance.
2	Program and project life cycle management
3	IT costs and oversight
4	IT expertise, skills and performers
5	Enterprise/IT Architecture
6	IT operational infrastructure incidents
7	Invalid action
8	Software adoption/use issues
9	Hardware incident
10	Software failure
11	Logical attacks (hacks, malware etc.)
12	Third party/supplier incidents
13	Disobedient
14	Geopolitical issues
15	Industrial action
16	Nature's Action
17	Technology-based innovation
18	Environment
19	Data and information management

4. I&T-related issues —A related method of assessing I&T risk for companies is to consider which I&T-related issues are currently being encountered, or, which I&T-related risks have materialized. The most common problems are included in Table 4.

Table 4. I&T-related Issues

Ref.	Description
A	Frustration between unique IT entities throughout the company due to perceived low contribution to business price
B	Frustration between enterprise departments (i.e., IT clients) and IT departments because of failed initiatives or perceived low contribution to business value
C	Significant IT-related incidents, such as data loss, security breaches, project failures, and application errors, are IT-related
D	IT outsourcing service delivery issues
E	Failure to meet IT-related regulatory or contractual requirements

F	Regular audit findings or other assessment reports of poor IT performance or reported IT quality or service issues
G	Hidden and rogue IT spending, that is, IT spending by user departments outside the control of normal IT investment decision mechanisms and approved budgets
H	Duplication or overlap between various initiatives, or other forms of wasted resources
I	Insufficient IT resources, staff with inadequate skills or staff burnout/dissatisfaction
J	IT-enabled changes or projects often fail to meet business requirements and are late or over budget
K	Reluctance of board individuals, executives or senior management to engage with IT, or loss of commercial enterprise sponsors committed to IT
L	Complex IT operating models and/or unclear decision mechanisms for IT-related decisions
M	Too high IT costs
N	Impeded or failed implementation of new initiatives or innovations caused by current IT architectures and systems
O	The space between agency and technical knowledge, which reasons organization clients and data and/or era specialists to talk one-of-a-kind languages
P	Regular issues with data quality and data integration across multiple sources
Q	High-stage stop-user computing, growing (among other problems) a lack of oversight and exceptional control over the programs being evolved and operated
R	Enterprise departments enforce their own records answers with very little involvement of the corporation's IT department
S	Ignorance and/or non-compliance with privacy regulations
T	Inability to exploit new technology or innovate using I&T

5. Threat landscape —The threat landscape in which the company operates can be classified as shown in Table 5.

Table 5. Threat Landscape

Threat Landscape	Description
Normal	The company is operating below the threat level that is considered normal
tall	Due to geopolitical situations, industry sectors or certain profiles, companies operate in environments with threats

6. Compliance requirements —Companies classifies according to the categories listed in Table 6.

Table 6. Compliance Requirements

Regulatory Environment	Description
Low compliance requirements	Companies are subject to a minimum set of lower-than-average regular compliance requirements.
Normal compliance requirements	Companies are subject to a series of regular compliance requirements that are common across a wide range of industries.
High compliance requirements	Companies are subject to higher-than-average compliance requirements, most often related to industry sector or geopolitical conditions.

7. The role of IT —It is classified as shown in Table 7.

Table 7. The Role of IT

IT Role	Description
Support	IT is not essential for the running and continuity of business processes and services, or for their innovation.
Factory	When IT fails, there is a direct impact on the running and continuity of business processes and services. However, IT is not seen as a driver of business process and service innovation.
Turn	IT is seen as a driver for innovation in business processes and services. At this time, however, there is no critical reliance on IT for the running and continuity of current business processes and services.
Strategic	IT is critical to running and innovating an organization's business processes and services.

8. The sourcing model for IT —The sourcing model adopted by the company is classified as in Table 8.

Table 8. The Sourcing Model for IT

Source Model	Description
Outsourcing	The company requests third party services to provide IT services.
Cloud	The company maximizes the use of the cloud to provide IT services to its users.
Hybrid	A mixed model is applied, combining the other three models to varying degrees.

9. IT implementation methods —The methods adopted by the company can be classified as follows (Table 9).

Table 9. IT Implementation Methods

IT Implementation Method	Description
Agile	The company uses Agile development work methods for its software development
DevOps	Companies use DevOps work methods for software creation, deployment, and operation
Traditional	The company takes a more classic approach to software development (waterfall) and separates software development from operations.
Hybrid	Companies use a mix of traditional and modern IT implementations, often referred to as “bimodal IT.”

10. Technology adoption strategy —Technology adoption strategy can be classified as listed in Table 10.

Table 10. Technology Adoption Strategy

Technology Adoption Strategy	Description
First mover	Companies generally adopt new technologies as early as possible and try to get a first mover advantage.
Follower	Companies usually wait for new technologies to become mainstream and proven before adopting them.
Slow adopter	Companies are very late with the adoption of new technology.

11. Size —Two categories, as shown in Table 11, were identified for the design of the corporate governance system.

Table 11. Size Categories

Company size	Description
Large company (Default)	Companies with more than 250 full-time employees (FTE)
Small and medium enterprises	Companies with 50 to 250 FTE

3 RESULT AND DISCUSSION

Results include identification of critical points, identification of business goals, identification of alignment goals, identification of IT processes, determination of interest levels, determination of capability levels, and GAP analysis. These results are used to formulate recommendations to improve IT governance in the Food Security, Fisheries and Agriculture Department of Balangan Regency.

3.1 Identify Critical Points

The first stage in this research is the identification of critical points. Critical points were obtained from interviews and brainstorming with the Department of Resilience. In addition, critical points were also obtained based on the perspectives of people who often use the services of the Department of Food Security, Agriculture and Fisheries of Balangan Regency. Based on the results of brainstorming and interviews, eight critical points were identified. The details can be seen in Table 12. These include four critical points based on the community's perspective and four critical points based on the perspective of the service.

Table 12. Identification of Critical Points

Perspective	Critical Point
Public	The service to the community in terms of providing online information about food security, fisheries, and agriculture to the public is still inadequate. Lack of product socialization, in this case, the applications that enable people to find out the changing price and stock of basic ingredients. Lack of updated online information for the community results in data error which leads to public complaints The information on food, agriculture and fisheries in the online system is not yet maximized
Service	A system that can provide information for the community to process food, fisheries, and agricultural services During the process, many people still do not understand how online services have been provided, and thus the service becomes less effective. Limited quality employees who can operate computers and information technology related to the service system of the food security service, fisheries and agriculture. Lack of up-to-date information on the website as a medium of digital information.

3.2 Business Goals

The business objective identification stage was conducted by matching the critical points that had been obtained from the business objectives listed in the 2019 COBIT guideline. The results of the matching can be seen in Table 13.

Table 13. Business Goals

No	Critical Point	Business Purpose	
		Code	Description
1.	The service to the community is not yet optimal in terms of food, agriculture and fisheries	EG10	Staff skills, motivation and productivity
2.	Lack of outreach to the public regarding the flow of online services and information on food, fisheries and agriculture to the community	EG06	Continuity and availability of business services
3.	Lack of updates by officers in operating computer equipment so that errors in data information often occur which cause public complaints about the results of the process.	EG12	Managed digital transformation program
4.	The online community service system is not yet optimal	EG07	Management information quality
5.	A system that can process online services at the Food Security, Fisheries and Agriculture Service	EG12	Managed digital transformation program
6.	The public does not understand the online service provided so that the service process becomes less work	EG10	Staff skills, motivation and productivity
7.	Limited quality of employees who can operate computers and information technology	EG10	Staff skills, motivation and productivity
8.	Updating information on the Website as a digital information medium is quite slow.	EG13	Product and business innovation

Based on the eight critical points obtained and the 13 business objectives contained in the 2019 COBIT guideline, matching results were obtained, namely the selection of six business objectives with codes EG06, EG07, EG10, EG12, EG13 which correspond to critical points at Balangan District's Food Security, Fisheries and Agriculture Department.

3.3 Identify Alignment Goals

The results of the matching between business objectives and alignment objectives based on the 2019 COBIT guidelines can be seen in Table 14.

Table 14. Identify Alignment Goals

Code EG	Business Purpose	Code AG	Alignment Goal
EG06	Constitution and Availability of business services	AG07	Information security, infrastructure and application processing
EG07	Management information quality	AG04	Quality of technology-related financial information
	Staff management skills, motivation and productivity	AG10	IT management information quality
EG10	Managed digital transformation program	AG12	Competent and motivated IT experts for existing businesses
EG12	Knowledge, expertise and initiative for business innovation	AG03	Realized benefits of IT-enabled investment and service portfolio
	Continuity and availability of business services	AG08	Enabling and supporting the organization's business processes, by integrating applications and technology
	Management information quality	AG09	On time in program delivery, at a reasonable cost and meeting quality requirements and standards

EG13	Staff skills, motivation and productivity	AG13	Knowledge, expertise and initiative for business innovation

The matching results are obtained, namely the selection of eight alignment objectives with codes AG03, AG04, AG07, AG08, AG09, AG10, AG12, AG13 which will then be used in determining the IT process.

3.4 Identify IT Process

At this stage, re-matching was conducted between the identified critical points and the IT process based on the alignment objectives which refer to the COBIT 2019 guidelines. The matching results between the critical points and the IT process domain based on the 2019 COBIT guidelines are shown in Table 15.

Table 15. Identify IT Process

No	Domain	IT Process	Critical Point
1	APO07	Managing human resources	The service related to informing the availability of food ingredients to the community is still inefficient.
2	BAI10	Manage configuration	Lack of outreach to the public and provision of information via online platforms.
3	EDM04	Ensure resource optimization	Lack of officers with upgraded skills to operate the computer equipment, so the data errors occur.
4	APO11	Managing quality	The online community service system is still inefficient.
5	BAI03	Managing and identifying solutions, as well as building	A system that can provide services online to the community regarding staple food, agriculture, and fisheries.
6	APO08	Managing relationships	In terms of accessibility, many people are still not familiar with the application.
7	BAI08	Managing knowledge	Limited quality of employees who can operate computers and have sufficient knowledge about the latest information technology.
8	APO04	Managing innovation	Information updates on the website as a source of digital information are quite slow and inadequate.

3.5 Determining the Level of Interest

To understand the level of interest, a questionnaire was distributed to eight respondents from the Department of Food Security, Agriculture and Fisheries of Balangan Regency. The survey consists of statements related to critical points and based on the IT process domain that has been identified in the previous stage. The questionnaire was prepared using a Likert scale consisting of items ranging from very unimportant, not important, moderately important, important, to very important. Based on the results, five domains with the highest level of importance were found. The details are in Table 16.

Table 16. Determining the Level of Interest

No.	Domain	IT Process	Critical point
1	APO07	Managing human resources	The service related to informing the availability of food ingredients to the community is still inefficient.
2	APO11	Managing quality	Poor quality of online information system for the community.
3	BAI03	Manage identification and development solutions	Incomplete online updated data on food accessibility,
4	APO08	Managing relationships	Lack of public knowledge on how to apply the information provided.
5.	BAI08	Managing knowledge	Limited quantity and quality of human resources capable of operating the information technology

The domain that had been selected as the highest level of importance was then analyzed in terms of its capability level and GAP value so that later recommendations for improvement can be given based on that domain.

3.6 Determination of Capability Level

Capability level was used to determine the level of maturity at the Department of Food Security, Fisheries and Agriculture of Balangan Regency. The capability level questionnaire refers to the PAM using COBIT 5 Toolkit that can be used in COBIT 2019 (ISACA, 2019). The process of determining the capability level was done through questionnaire based on 5 domains that were selected in the previous importance level process and distributed to respondents who had been selected based on RACI mapping, that is, one whose role is carry out tasks.

After measuring the maturity level of IT Governance, the next step was to calculate the gap, which is the difference between the current maturity level and the maturity level. expected, as shown in equation (1) [15].

Gap = A-B
Where,
A = level of expected maturity, (1)
B = level of maturity

The GAP/gap value obtained through the capability level measurement at the Department of Food Security, Fisheries and Agriculture of Balangan Regency was used to determine the steps for transforming current conditions into expected conditions in the future. GAP values are shown in Table 17.

Table 17. Determination of Capability Level

No	Proses TI	Current Capability (CC)	Expected Capability (EC)	GAP (CC-EC)
1	APO07	2	4	2
2	APO11	1	4	3
3	BAI03	1	5	4
4	APO08	1	4	3
5	BAI08	1	5	4

Table 17 shows the current capability value, the level of capability based on the expectations of superiors from the organization (expected capability), and the difference in the level of maturity (GAP). The results show that the level of capability value rewarding the IT processes was 1, which means that the IT processes in the organization started to achieve their goals, by implementing a series of activities but there were still some shortcomings, which could be characterized as the beginning of the process of achieving goals in a more organized way.

3.7 Recommendation

Following the steps described in Fig.2., some recommendations with reference to the 2019 COBIT Framework were given based on the capability value of the Department of Food Security, Agriculture and Fisheries at Balangan Regency. This time the target was to increase the capability level. The recommendations can be seen in Table

Table 18. Recommendation

Domain	Framework	Recommendation
APO07	COBIT 2019	Evaluating employee skills, conducting employee background checks, and conducting supervision when recruiting employees.
APO11	COBIT 2019	Evaluating Service SOP, with learn examples of service system implementation good and learn from mistakes or lack of service systems, so it can serve as learning and reference for service system upgrade.
BAI03	COBIT 2019	Designing the online service system that can be used later easily by the community based on the SOP and build systematic online applications with the help of application developers who are experienced in the development process.
APO08	COBIT 2019	Utilizing other social media facilities such as Instagram, Facebook, and YouTube in providing information on needs and updating information on food, agriculture and fisheries.
BAI08	COBIT 2019	Assessing each employee's ability regarding information technology and assigning duties and obligations of employees according to their abilities so that each employee makes an appropriate contribution in carrying out tasks related to information technology.

3.8 Implementation

The implementation of the recommendations for improvement was focused on the APO08 domain process aiming to find out how it could impact the capability value. The initial stage in the implementation requires a time schedule that aims to make the implementation run smoothly and orderly.

- Update Bio on Facebook and Instagram
- Assistance in manufacturing
- Pamphlet making
- Post template creation
- Assistance in uploading videos on YouTube and posting via social media
- Monitoring
- Dissemination of capability level questionnaires

The time schedule and activities during the implementation process were divided into four weeks including the first week, namely updating bio on Facebook and Instagram as well as assisting in making videos. The second week was for making pamphlets, post templates and assisting in uploading videos on YouTube and posting pamphlets on social media of the Department of Food Security, Agriculture and Fisheries at Balangan Regency. The third week was for monitoring the implementation. The fourth week was to disseminate and re-analyze the results of the questionnaire to determine the increase of the capability level in the APO08 domain. The results of the capability level questionnaire in the APO08 domain can be seen in Table 19.

Table 19. Maturity Level

Respondent	Maturity Level								
	Lv. 1.1	Lv. 2.1	Lv. 2.2	Lv. 3.1	Lv. 3.2	Lv. 4.1	Lv. 4.2	Lv. 5.1	Lv. 5.2
R1	92	86	84	60	62	60	70	50	65
R2	90	87	82	65	64	62	68	50	55
Rata-rata	91	86	83	62	63	61	68	50	60

The scoring on the questionnaire was carried out by two respondents who were selected based on the RACI mapping. Several aspects of the problem, such as the lack of information conveyed to the public has begun to be resolved by implementing recommended practices in order to be upgraded to level 2. For instances, by posting information on updated stocks or prices of food, staples, etc. to the YouTube channel, and other social media platforms such as Instagram as well as by monitoring social media usage as a medium to deliver information to the public. The results of the analysis show that the APO08 process is at level 2, and it can be concluded that the implementation of the recommended solutions can increase the capability level from 1 to 2 in accordance with the implementation target.

4 CONCLUSION

The Department of Food Security, Agriculture and Fisheries of Balangan Regency has carried out an Information Technology Governance Audit using the 2019 COBIT framework. Recommendations were given based on the COBIT 2019 reference with the aim of improving information technology governance at the department. The implementation of improvement for a period of 1 month was carried out to increase the capability level in the APO08 domain. It has done in accordance with the time schedule, and the there was an increase in the capability level in the APO08 domain, from previously level 1 to the current level 2.

AUTHOR'S CONTRIBUTION

Rini Audia is the first author conducting literature review of the previous research, data collection, analysis, recommendations and implementation, while Bambang Sugiantaro as the second author advises and manages the concept of the research.

COMPETING INTEREST

Complying with the publication ethics of this journal, Rini Audia and Bambang Sugiantaro as the authors of this article declare that this article is free from conflict of interest (COI) or competing interest (CI).

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