

Indonesian Journal of Computer Science

ISSN 2549-7286 (*online*) Jln. Khatib Sulaiman Dalam No. 1, Padang, Indonesia Website: ijcs.stmikindonesia.ac.id | E-mail: ijcs@stmikindonesia.ac.id

IT Project Management Control and The Control Objectives for IT and Related Technology COBIT 2019 Framework

Ruddy Kusuma Jaya¹, Melissa Indah Fianty²

ruddy.kusuma@student.umn.ac.id, melissa.indah@umn.ac.id* ^{1, 2} Department of Information System, Faculty of Engineering & Informatics, Universitas Multimedia Nusantara, Indonesia

Article Information	Abstract
Submitted : 17 Sep 2023 Reviewed: 3 Oct 2023 Accepted : 10 Oct 2023	The development of information technology has been leveraged by state- owned enterprises (BUMN) operating in the fields of Maintenance, Repair, and Overhaul, as well as industrial services in Indonesia. Among the company's 21 priority projects, three projects have been identified as
Keywords	experiencing delays in the planning phase related to the delivery of business requirements. The measurement of IT governance capability was conducted
Capability Level, COBIT 2019, IT Governance	using the process rating of COBIT 2019. The selected process objectives were APO02, APO03, and APO05. The results of the capability level measurement indicate that APO02, APO03, and APO05 have reached level 2. Based on the measurement results, findings have been identified that require improvement, especially in APO03, such as providing understanding to key stakeholders about enterprise architecture and enterprise architecture design. As a recommendation for improvement, it is expected that the company can engage in Enterprise Architecture design to align strategic program priorities with architectural objectives.

A. Introduction

The competitive business world encourages companies to implement information technology (IT). For companies, IT can be used to achieve competitive advantage [1]. The development of information technology is utilized by several private companies to companies under the auspices of State-Owned Enterprises (BUMN) in Indonesia. BUMN or state-owned enterprises are companies whose ownership is partially or wholly controlled by Indonesia [2].

State-owned companies or BUMN are companies whose ownership is partially or fully owned by Indonesia. BUMN is a tangible manifestation of the government's contribution as an economic actor [3]. BUMN capital is partially or fully owned by the Indonesian government [4] [5] [6] [7]. The company, which focuses on the aircraft maintenance, repair, and overhaul (MRO) industry, as well as industrial services, stands as the largest MRO company in Indonesia. Currently, the company is expanding its business by entering the industrial gas turbine engine market. The company's expanding presence in the MRO market has prompted the implementation of an IT system to support its operations, ultimately aimed at improving operational performance.

IT implementation by companies requires careful planning by making a blue print or IT Master Plan as a reference for companies to implement and develop a system. IT Master Plan is company's strategy for IT system implementation plan [8]. IT Master Plan is an information system (IS) and information technology support strategy that supports the achievement of competitive advantages for organizations and businesses [9].

The company have IT Master Plan from 2022 - 2026 where the focus in 2023 to 2024 is Digital Operation Enhancement and Massive Digitalizations. With Massive Digitalizations, the company is currently digitizing a lot of their operational activities, where in the past 1 year the company has worked on a total of 110 projects where there are 21 priority projects related to the digitization of operational activities. Among 21 priority projects that are being worked on by the company, 3 projects have delays during the planning stage related to the delivery of business requirements. This can happen because the end-users from the business side still have difficulty in identifying the needs for the necessary digital initiatives. The impact of these problems is that with the delay in delivering business requirements, the timeline that has been prepared must be reviewed and operational activities that should have been digitized must be delayed. This encourages the company to implement IT governance in addition, the implementation of IT governance is also encouraged through the Regulation of the Minister of State-Owned Companies No.2 of 2013 for Guidelines for the preparation of information technology management of State-Owned Companies.

Regulation of the Minister of BUMN No.2 of 2013 provides guidelines for managing IT governance in state-owned companies in Indonesia. Article 2 paragraph (1) states that the development and utilization of information technology by BUMN is based on information technology governance. Regulation of the Minister of BUMN No.2 of 2013 was issued to ensure that the principles of GCG (Good Corporate Governance) can be implemented. One of the components of GCG is IT Governance [10] [11]. IT governance is a process conducted by organizations to align IT with the vision and mission that the organization wants to achieve [12]. IT governance is an obligation of Executive Management, and part of enterprise governance. The main focus of IT governance is how information technology efforts can provide value to the business and how related risks can be handled after implementation [13]. Evaluation and improvement of IT governance is very important because it helps organizations control IT management to be effective [14]. The implementation of IT governance in a company is beneficial to provide added value to stakeholders. Effective IT governance that closely aligned to the business needs is extremely vital to the success [15]. COBIT 2019 is one of IT Governance framework.

COBIT is a framework related to information management and IT governance, for the entire enterprise [16] [17]. COBIT 2019 is an IT governance framework designed for IT service staff, management, audit functions and business process owners, to ensure the confidentiality, integrity, and availability of critical and sensitive data and information [18]. COBIT 2019 is formed on two basic principles, such as [19]: Principles that describe the core requirements of an information governance system; Principles for a governance framework that can be used to build a governance system for the enterprise.

B. Research Method

The research methodolgy used to measure IT governance capabilities of the company using the COBIT 2019, with the research object being MRO company.



Figure 1. Research Method

Figure 1 is a methodology used to measure capability level of IT Governance at the company.

1. Problem Identification

The problem identification process aims to identify problems faced by companies that encourage companies to carry out IT governance using COBIT 2019, interviews are conducted with Managers and Senior Managers onsite where it is known that companies face obstacles in the timelines of delivering business requirements in the planning phase.

2. Literature Study

In this literature study stage, learning is done through books, journals, articles related to the topic of this research. The journals, books, and articles reviewed will be used as references that can help this research. Through this literature review, the principles related to the COBIT 2019 framework used in this research are known.

3. COBIT 2019 Objectives Mapping

COBIT 2019 process objective mapping stage is carried out to determine the objective process to be measured. Objectives mapping will use COBIT 2019 COBIT 2019 Design Toolkit as a tool to help determe relevant COBIT 2019 objectives process to be assessed in the company.



Figure 2 shows there are 4 processes for mapping COBIT 2019 objectives.

4. RACI Chart Mapping

RACI is an acronym of Responsible, Accountable, Consulted, Informed [20]. RACI chart is a diagram that illustrates the recommended duties and responsibilities for process practices in various roles and structures in the COBIT framework [21]. At this stage, the mapping of respondents who will answer the questionnaires together with the company is carried out in accordance with each objective of the COBIT 2019 process.

5. Analysis of capability level using COBIT 2019

At this stage, the measurement of the capability level of the COBIT process objectives that have been determined to the respondents who have been identified through the RACI Chart by distributing questionnaires. The results of the questionnaires will be analyzed and categorized into the capability level of each process.

Rating Scale aims to assess the level of capability to a level. The ranking is based on COBIT 2019. If the rating scale on a process activity does not reach the specified criteria, then the measurement of the capability level at the next level will not be carried out [21].

6. Gap Analysis

After measuring the capability level, the next step is to conduct a gap analysis by comparing the capability level of the company with the target capability

level to be achieved with the aim of identifying which process objectives can be improved and given recommendations.

7. Recommendations

The results of the gap analysis can be used as a reference to provide recommendations for companies to improve corporate IT governance and are expected to help companies solve problems faced and increase the level of corporate IT governance capabilities.

Data Analysis Techniques

- 1. Capability Level Measurement
 - The ranking of process activities is done by calculating the value of each subprocess which will be the basis for ranking the process activities to determine whether the COBIT 2019 process can proceed to the next level. To reach a certain level, the result of the capability level must get a value of Largely or Fully achieved, and to go to the next level, all sub-processes must be at Fully Achieved [22]. If the value of each sub-process reaches 85% or more, then capability level 1 is achieved and the data collection process continues to reach level 2, and so on until it reaches level 5. Process ranking is used to measure the current capability of the company using a rating scale. There are four categories in the rating scale, namely:
 - Not Achieved : The Not Achieved scale has a percentage value of less than 15%.
 - Partially Achieved : The Partially Achieved scale has a percentage value of 15% to 50%.
 - Largely Achieved : The Largely Achieved scale has a percentage value from 50% to 85%.
 - Fully Achieved : The Fully Achieved scale has a percentage value of more than 85%.
- 2. Gap Analysis

Gap analysis is useful for facilitating improvements in information technology governance by comparing the difference between expected capability level of company and actual capability level of company [23]. Gap analysis formula can be seen in equation (1) [24].

$$Gap = X - Y$$
 (1)
X= Current capability level
Y = Expected capability level

3. Rating Scale

Rating Scale aims to assess the level of capability to a level. The ranking is based on COBIT 2019. If the rating scale on a process activity does not reach the specified criteria, then the measurement of the capability level at the next level will not be carried out [19]. Rating scale formula can be seen in equation (2) [25].

Rating Scale $= \frac{X}{Y}$ (2) X = Activity Percentage Y = Total Activities

Rating scale category can be seen in Table 1:

Table 1. Rating scale			
Category	Percentage		
N (Not Achieved)	0% - 15%		
P (Partially Achieved)	>15% - 50%		
L (Largely Achieved)	>50% - 85%		
F (Fully Achieved)	>85% - 100%		

. . - - -

C. Result and Discussion **Problem Identification**

At this stage, interviews were conducted with Senior Managers and also IT Manager to get an overview of the IT used by the company and how IT can support the company's business operations. Through the interviews, it was identified that the company was digitizing many operational activities, working on a total of 110 projects in the past year including projects.

Literature Study

After identifying the problem, a literature study was conducted on books, journals and research related to COBIT 2019 as a reference that could help this research. There are 4 COBIT books by ISACA used as a reference in this research. Through the literature study conducted, an overview of the COBIT 2019 framework and the steps to evaluate company's IT governance capability level. Through the literature study conducted, an overview of the COBIT 2019 framework and the steps to measure the company's IT governance capability level is known.

COBIT 2019 Objectives Mapping

1. Understand the enterprise context and strategy

In this step, an understanding of the context and situation of the company is carried out by identifying the enterprise strategy, enterprise goals, IT risk profile, and IT related issues within the company. The enterprise strategy used by the company focuses on growth and innovation. Enterprise goals that the company wants to achieve are creating a competitive product and service portfolio, complying with external company regulations and laws, creating customer-based services, optimizing business process functionality. The IT risk profile that has the potential to occur is IT investment, and enterprise/IT architecture. The problem that occurs at the company is that during the planning phase there is a delay in delivering business requirements because the end-users still has difficulty in identifying the digital innovation needed.

2. Determine the initial scope of the governance system

During this step, the company determine the initial scope of the governance system by filling COBIT 2019 design toolkit's design factor 1-4.

• **Enterprise Strategy**

The main enterprise strategy applied by GMF is growth, which means that the company focuses on growth, especially revenue growth, then the second Enterprise strategy applied is innovation, which means that the company wants to provide products or services that are innovative and different from companies engaged in the MRO industry.

• Enterprise Goals

Enterprise Goals that are considered a priority are creating a competitive product and service portfolio, complying with external company regulations and laws, creating customer-based services, optimizing business process functionality.

Risk Profile

Risks that has the potential to occur in companies are IT investment, program & project lifecycle management, IT cost & oversight, IT expertise, skills & behavior, enterprise/IT architecture, and IT operational infrastructure incidents.

- IT Related Issues There are 15 IT-related issues that are considered to be serious issues by the company.
- 3. Refine the scope of the governance system

Improve the initial scope of the IT governance system by filling design factors 5-11 using the COBIT 2019 Design Toolkit.

• Threat Landscape

Threat landscape that occurred. The results obtained are 80% of the threats faced by the company are in the normal category and 20% of the threats faced by the company are in the high category.

Compliance Requirements

The requirements of regulations to be complied by the company. The results obtained are 78% in high category, 10% are in normal category, and 12% are in low category.

• Role of IT

The role of IT in the company is strategic, which means that the role of IT at the company is crucial to the company's operational activities.

• IT Sourcing Model

The IT sourcing model used by the company. The results obtained are 70% in the insourced category, 25% in the cloud category, and 5% in the outsourced category.

• IT Implementation Methods

The IT implementation methods used by the company. The results obtained are 73% of implementation methods use DevOps, 22% of implementation methods use Traditional (Waterfall), and 5% of implementation methods use Agile.

- Technology Adoption Strategy The IT implementation methods used by the company. The results obtained are 95% in the follower category, and 5% in the slow adopter category.
- Enterprise Sizes COBIT 2019 categorizes the size of an enterprise based on full-time employees the company has. Enterprises are categorized as large enterprises if they have 250 full-time employees and small and medium enterprises if they have 50 to 250 full-time employees. The company has more than 5000 full time employees therefore, the company is categorized as a large enterprise.



4. Resolve conflicts and conclude the governance system design

Figure 3. Results of Design Factors

Figure 3 are the results of COBIT 2019 Design Factors. In this study, the objective process that will be measured at the company is the objective in the APO domain. The APO domain was chosen because it is in accordance with the problems faced by the company, namely the delay in delivering business requirements in the planning phase, which encourages companies to take measurements using the COBIT 2019 framework, especially the APO domain. The process objectives in the selected APO domain are APO02 - Managed Strategy, APO03 - Managed Enterprise Architecture, and APO05 - Managed Portfolio.

RACI Chart

The RACI Chart for respondents in the company for the APO02 process objective consists of three individuals representing job functions in the RACI Chart. These positions include the Senior Manager of Innovation & Digital Transformation, the Manager of Innovation & IT Project Management, and the VP of Corporate Strategy & Business Development.

Management Practices	Senior Manager Innovation & Digital Transformation	Manager Innovation & IT Project Management	VP
APO02.01	R/A	R	C/I
APO02.02	R/A	R	C/I
AP002.03	R	R	C/I

Table. 2 the Senior Manager of Innovation & Digital Transformation holds the role of Responsible (R) for every management practice and Accountability (A) in management practices APO02.01 and APO02.02 within the APO02 process objective. Meanwhile, the Manager of Innovation & IT Project Management and the VP of Corporate Strategy & Business Development are both Responsible (R) for all management practices. Additionally, the VP of Corporate Strategy & Business Development assumes the roles of Consulted (C) and Informed (I) in the COBIT 2019 measurement process.

	Table	3.	RACI	Chart	AP003
--	-------	----	------	-------	-------

Management Practices	Senior Manager Innovation & Digital Transformation	Manager Innovation & IT Project Management	VP
APO03.01	R/A	R	C/I

Table 3 represents the Senior Manager of Innovation & Digital Transformation assumes the roles of Responsible (R) and Accountability (A) in management practice APO03.01 within the APO03 process objective. Meanwhile, the Manager of Innovation & IT Project Management holds the role of Responsible (R) in management practice APO03.01, and the VP of Corporate Strategy & Business Development takes on the roles of Consulted (C) and Informed (I) in the COBIT 2019 measurement process.

Table 4. RACI Chart AP005

Management Practices	Senior Manager Innovation & Digital Transformation	Manager Innovation & IT Project Management	VP
AP005.01	Ι	R/A	C/I
AP005.02	R/A	R	C/I

Table 4 represents the Senior Manager of Innovation & Digital Transformation assumes the role of Informed (I) in management practice APO05.01 and Responsible (R) and Accountability (A) in management practice APO05.02 within the APO03 process objective. Meanwhile, the Manager of Innovation & IT Project Management holds the roles of Responsible (R) and Accountability (A) in management practice APO05.01 and Responsible (R) in management practice APO05.02. Additionally, the VP of Corporate Strategy & Business Development takes on the roles of Consulted (C) and Informed (I) in the COBIT 2019 measurement process.

Analysis of Capability Level using COBIT 2019

The first step in this process is to make questionnaires. Questionnaires are rmade referring to activities in the APO02, APO03, and APO05 processes in the COBIT 2019 framework. Activities are grouped into each level, which means that the distribution of questionnaires will be carried out in stages.

Objective Process	Percentage	Category	Level
APO02	91%	Fully Achieved	Level 2
APO03	49%	Partially Achieved	Level 2
APO05	90%	Fully Achieved	Level 2

Table 5. Capability Level

Table 5 presents the measurement results, the capability level outcomes for the APO02 process objective, which focuses on the comprehensive view of the company regarding the business and IT environment as depicted in Table 4.17, are as follows: APO02 is at level 2 with an average score of 91%. With this percentage score, it indicates that the company has achieved a fully achieved (F) rating at capability level 2. The next process objective is APO03—Managed Enterprise Architecture, which focuses on the foundational architecture of business processes, information, data, applications, and technology architecture layers. APO03 is at level 2 with an average score of 49%. With this percentage score, it indicates that the company has achieved a partially achieved (P) rating at capability level 2. The subsequent process objective is APO05—Managed Portfolio, which centers on IT investments. APO05 is at level 2 with an average score of 90%. With this percentage score, it indicates that the company has achieved a fully achieved (F) rating at capability level 2.

Gap Analysis

Gap analysis is conducted by comparing the measurement results between expected capability level that has been set in the COBIT 2019 Design Factor and company's current capability.

Objective Process	Expected Capability Level	Actual Capability Level	Gap
APO02	2	2	0
APO03	3	2	1
APO05	2	2	0

Tal	hle	• 6	Gan	Ana	lvsis
Ia	DIC	· U.	uap	ппа	19515

Through gap analysis shown in Table 6, objective processes that can be recommended for improvement will be determined. The company wishes to improve capability level to level 3, especially in the APO03.

Recommendations

Through questionnaires results, there are some problems occur in the company such as:

- 1. The stakeholders lack of understanding of the architectural concept could potentially result in the wrong view of the expected architecture.
- 2. The company does not have Enterprise Architecture.

3. The company still finds it difficult to make comprehensive changes when there is a new system or technology to be implemented due to the resistance that sometimes occurs.

Objective Process	Recommendations
1.	Broaden the understanding of the expected architectural concept to all key stakeholders.
2.	When designing Enterprise Architecture, align the architecture objectives with strategic program priorities.
3.	Changes are made gradually and asked for leaders to support the changes.
4.	When designing Enterprise Architecture, determine the scope of the base architecture and target architecture.
5.	When designing Enterprise Architecture, Create an architecture vision based on stakeholder concerns, business capability requirements, scope, constraints and principles.

Table 7. Recommendations

From the findings in the company, Table 7 shows there are recommendations for improvement that can be given to help the company to fix the problems they have.

D. Conclusion

Through this research, it can be concluded that the IT governance capability level of the company in the objective process APO02 is at level 2, APO03 is at level 2, and APO05 is at level 2. Based on gap analysis, it is known that objective process APO02 reaches the target capability level at level 2, APO03 reaches level 2 and has not reached the expected capability level target at level 3, APO05 reaches the target capability level target at level 3, APO05 reaches the target capability level at level 2. The recommendations that can be given to companies to improve their IT governance capability level are to provide understanding to key stakeholders related to architecture so that the architecture vision formed is correct, design an Enterprise Architecture as soon as possible, and when changes need to be happen, do it gradually and asked for leaders to support the change.

E. Acknowledgment

The research has been carried out thanks to the help of advisor from Universitas Multimedia Nusantara who provided author with advice and support to carried out this research.

F. References

- [1] L. Y. Siregar and M. I. P. Nasution, "Perkembangan Teknologi Informasi Terhadap Peningkatan Bisnis Online," *HIRARKI: Jurnal Ilmiah Manajemen Dan Bisnis*, vol. 2, no. 1, pp. 71–75, 2020.
- [2] A. Cahyo and A. D. Manuputty, "Perencanaan Strategi Sistem Informasi Dengan Metode Ward And Peppard di Perusahaan Toko Surabaya cabang Surakarta," *Journal of Information Systems and Informatics*, vol. 3, no. 2, pp. 365–377, 2021.
- [3] I. Koto, "Peran Badan Usaha Milik Negara Dalam Penyelenggaraan Perekonomian Nasional Guna Mewujudkan Kesejahteraan Masyarakat," in

Seminar Nasional Teknologi Edukasi Sosial Dan Humaniora, 2021, pp. 461–470.

- [4] E. P. Sari, D. Cahyono, and R. M. Aspirandi, "Nilai Perusahaan pada Perusahaan Badan Usaha Milik Negara (BUMN): Kajian Sistematis," *Journal of Management: Small and Medium Enterprises (SMEs)*, vol. 14, no. 2, pp. 133– 151, 2021.
- [5] A. J. Sugiharto, "Kerugian Badan Usaha Milik Negara (BUMN) Sebagai Kerugian Keuangan Negara," *Jurnal Education And Development*, vol. 9, no. 1, p. 158, 2021.
- [6] M. V. Dahoklory, "Dinamika Pengelolaan Keuangan BUMN Perihal" Dilema" antara Kerugian Negara ataukah Kerugian Bisnis," *Jurnal RechtsVinding*, vol. 9, no. 3, 2020.
- [7] A. Baitullah and I. Cahyani, "Pengaturan Pengelolaan Dan Pengawasan Keuangan Negara Terhadap Badan Usaha Milik Negara (BUMN)," *Inicio Legis*, vol. 2, no. 2, pp. 153–163, 2021.
- [8] A. Ma'sum, "Preparation of an Information Technology Master Plan Using the TOGAF Enterprise Architecture Framework Case Study of PT Wijaya Karya (Persero) Tbk. 2018 Year," *Formosa Journal of Applied Sciences*, vol. 1, no. 6, pp. 1137–1156, 2022.
- [9] I. Prasetiawan, "IT Master Plan," *Ultima InfoSys: Jurnal Ilmu Sistem Informasi*, vol. 10, no. 1, pp. 1–8, 2019.
- [10] M. A. Erizal, R. Fauzi, and R. A. Nugraha, "Perancangan Tata Kelola Teknologi Informasi Di Bumn Pt. Angkasa Pura Ii Menggunakan Framework Cobit 5 Pada Domain Dss," *eProceedings of Engineering*, vol. 8, no. 5, 2021.
- [11] R. R. J. Intan, L. Abdurrahman, and I. Santosa, "Analisis Dan Perancangan Tata Kelola Teknologi Informasi Bumn Pada Proses Pengelolaan Investasi Dan Pengelolaan Risiko Teknologi Informasi Menggunakan Kerangka Kerja Cobit 2019 (studi Kasus: PT Pos Indonesia (persero)," *eProceedings of Engineering*, vol. 7, no. 2, 2020.
- [12] A. M. Syuhada, "Kajian Perbandingan Cobit 5 dengan Cobit 2019 sebagai Framework Audit Tata Kelola Teknologi Informasi," *Syntax Literate; Jurnal Ilmiah Indonesia*, vol. 6, no. 1, pp. 30–39, 2021.
- [13] H. Kusbandono, D. Ariyadi, and T. Lestariningsih, "Tata Kelola Teknologi Informasi." CV Nata Karya, 2019.
- [14] I. G. M. S. Dharma, G. M. A. Sasmita, and I. M. S. Putra, "Evaluasi dan Implementasi Tata Kelola TI Menggunakan COBIT 2019 (Studi Kasus pada Dinas Kependudukan dan Pencatatan Sipil Kabupaten Tabanan)," Jurnal Ilmiah Teknologi dan Komputer, vol. 2, no. 2, pp. 354–365, 2021.
- [15] E. Nachrowi, Y. Nurhadryani, and H. Sukoco, "Evaluation of governance and management of information technology services using Cobit 2019 and ITIL 4," *Jurnal RESTI (Rekayasa Sistem Dan Teknologi Informasi)*, vol. 4, no. 4, pp. 764– 774, 2020.
- [16] M. I. Fianty and M. Brian, "Leveraging COBIT 2019 Framework to Implement IT Governance in Business Process Outsourcing Company," *Journal of Information Systems and Informatics*, vol. 5, no. 2, pp. 568–579, 2023.
- [17] P. M. Dewi, R. Fauzi, and R. Mulyana, "Perancangan Tata Kelola Teknologi Informasi Untuk Transformasi Digital Di Industri Perbankan Menggunakan

Framework Cobit 2019 Dengan Domain Build, Acquire and Implement: Studi Kasus Bank XYZ," *eProceedings of Engineering*, vol. 8, no. 5, 2021.

- [18] M. P. Purba, "Perancangan Model Tata Kelola Teknologi Informasi Berbasis Cobit pada Proses Mengelola Sumber Daya Manusia IT Pada Politeknik ANIKA," Jurnal TIPS: Jurnal Teknologi Informasi dan Komputer Politeknik Sekayu, vol. 9, no. 2, pp. 46–53, 2019.
- [19] M. Saleh, I. Yusuf, and H. Sujaini, "Penerapan Framework COBIT 2019 pada Audit Teknologi Informasi di Politeknik Sambas," *JEPIN (Jurnal Edukasi dan Penelitian Informatika)*, vol. 7, no. 2, pp. 204–209, 2021.
- [20] D. Sanjaya and M. I. Fianty, "Measurement of Capability Level Using COBIT 5 Framework (Case Study: PT Andalan Bunda Bijak)," Ultima Infosys: Jurnal Ilmu Sistem Informasi, vol. 13, no. 2, pp. 68–76, 2022.
- [21] A. S. Sukamto, H. Novriando, and A. Reynaldi, "Tata Kelola Teknologi Informasi Menggunakan Framework COBIT 2019 (Studi Kasus: UPT TIK Universitas Tanjungpura Pontianak)," *JEPIN (Jurnal Edukasi dan Penelitian Informatika)*, vol. 7, no. 2, pp. 210–218, 2021.
- [22] A. Ishlahuddin, P. W. Handayani, K. Hammi, and F. Azzahro, "Analysing IT Governance Maturity Level using COBIT 2019 Framework: A Case Study of Small Size Higher Education Institute (XYZ-edu)," in 2020 3rd International Conference on Computer and Informatics Engineering (IC2IE), IEEE, 2020, pp. 236–241.
- [23] A. Vatresia, R. Faurina, and D. K. Ramadhan, "Information Technology Governance in Advisory and Economic Development Sector Using Cobit 5 Framework," *Jurnal Teknik Informatika (Jutif)*, vol. 3, no. 2, pp. 255–260, 2022.
- [24] K. Wabang, Y. Rahma, A. P. Widodo, and F. Nugraha, "Tata kelola teknologi informasi menggunakan cobit 2019 pada psi universitas muria kudus," *JURTEKSI (Jurnal Teknologi dan Sistem Informasi)*, vol. 7, no. 3, pp. 275–282, 2021.
- [25] L. Safitri, "Analisis Efektivitas Aplikasi Cek DJP Online Pajak dan Laporan SPT Tahunan E-filling Menggunakan Framework COBIT 5 Domain EDM (Evaluate, Direct, and Monitor) pada KPP Pratama Tanjungpinang," Jurnal Bangkit Indonesia, vol. 10, no. 2, pp. 13–20, 2021.