Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

IT Governance Design Based on COBIT 2019 SME Focus Area for UMKM BPRBCo Digital Transformation

Dafa Andika[1], Rahmat Mulyana[2], Luthfi Ramadhani[3]

[1]Faculty of Industrial Engineering, Telkom University, Bandung
Jl. Telekomunikasi. 1, Terusan Buahbatu - Bojongsoang, Telkom University, Sukapura, Kec. Dayeuhkolot, Kabupaten Bandung, Jawa Barat, Indonesia
[2]Department of Computer and Systems Sciences, Stockholm University, Stockholm
SE-106 91 Stockholm, Sweden
[3]Faculty of Industrial Engineering, Telkom University, Bandung
Jl. Telekomunikasi. 1, Terusan Buahbatu - Bojongsoang, Telkom University, Sukapura, Kec. Dayeuhkolot, Kabupaten Bandung, Jawa Barat, Indonesia
Email: [1,*]dafaandika@student.telkomuniversity.ac.id, [2]rahmat@dsv.su.se, [3]luthfiramadani@telkomuniversity.ac.id
Correspondence Author Email: dafaandika@student.telkomuniversity.ac.id
Submitted: **09/09/2024;** Accepted: **18/09/2024;** Published: **15/10/2024**

Abstract−Along with the industrial revolution 4.0, incumbent organizations such as BPRBCo need to carry out Digital Transformation (DT) to stay relevant. However, many DT failures are suspected to be caused by suboptimal IT Governance (ITG). Previous research has shown the importance of ambidextrous ITG (traditional and agile hybrid) for large banks with the use of the COBIT 2019 framework that focuses on IT services, information security, and DevOps. However, this approach has not been proven to also apply to small banks. Therefore, this study aims to compile and design recommendations for priority ITG solutions for SME-scale organizations and estimate the increase in maturity level capabilities to support DT success. This study uses five stages of Design Science Research (DSR), namely problem identification, requirements specification, design and development, demonstration, and evaluation. Data was collected through semi-structured interviews and documents triangulation, then analyzed using the SME focus area of COBIT 2019. Based on the priority analysis based on design factors and previous studies, 3 prioritized ITG objectives were found, namely EDM03 Ensured Risk Optimization, MEA03 Managed Compliance with External Requirements, and DSS01 Managed Operations with an average capability maturity level of 3.3. Based on the findings of these gaps, 5 essential solutions were recommended and designed based on 7 ITGM components. These recommendations were then compiled into an implementation roadmap as a priority reference for BPRBCo which is expected to increase its capability to 3.5 if implemented properly. This study contributes to the ITG knowledge base for DT in small banks as a case study of SMEs and provides practical implications for the management of similar organizations.

Keywords: Digital Transformation; Design Science Research; Designing IT Governance; COBIT 2019 SME Focus Area; BPRBCo.

1. INTRODUCTION

The rapid development of digital technology has encouraged companies, especially in the Indonesian banking industry, to carry out digital transformation (TD) to face rapid market changes. This transformation is a fundamental process that relies on digital technology to improve and innovate entities such as companies, business networks, and industries. Digital transformation is a fundamental process that relies on digital technology to enhance and innovate an entity, such as a company, business network, industry, or community, with the aim of creating value for stakeholders. This is achieved by strategically leveraging the resources and capabilities owned by the company [1]. DT also refers to the use of technology to transform and enhance various core aspects within an organizational entity or company, including business models, operations, customer experience, and value propositions. This process implies the integration of digital technology across all sectors within the organization with the goal of driving innovation, efficiency, and strengthening competitiveness in the digital age [2]. Furthermore, DT can be understood as an effort to align the company's vision and strategy, organizational structure, processes, capabilities, and culture with the evolving dynamics of the digital business landscape. This process involves a deep understanding of how external factors, such as globalization, demographics, and sustainability, affect the company's strategy and competitive position. The core foundation of this transformation lies in various digital technology platforms, such as mobile technology, cloud computing, wired and wireless network infrastructure, and the internet of things, which are crucial for economic growth and enable the development of new, more efficient products and services to be delivered to consumers [3][4][5].

Companies or organizations increasingly rely on IT to create business value, making business strategy closely tied to IT strategy and risks. In achieving DT within a company, the role of IT governance (ITG) is crucial for managing the digital strategy [2]. Previous research by Mulyana et al. [6] [7] has shown that ITG mechanisms impact DT and organizational performance. This is also emphasized by Harguem [8], who stated that the alignment between IT strategy and business strategy will lead to improved organizational performance in line with the organization's main objectives. As explained above, IT implementation is also regulated by the Financial Services Authority Regulation Number 11/POJK.03/2022 regarding the Implementation of Information Technology by Commercial Banks, which mandates that banking companies must implement ITG in their IT management [9]. Additionally, the Ministry of State-Owned Enterprises Regulation Number PER-2/MBU/03/2023 on Guidelines

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

for BUMN [10], explains that ITG implementation must consider aspects of strategic alignment, value-added from IT implementation, risk and resource management, and performance measurement. However, organizations or companies must also consider the level of success in ITG implementation to achieve DT. Failures in DT often occur due to poor ITG implementation [11]. This issue is also experienced by Microfinance Institutions (MFI) in Indonesia [12]. Based on UU No.21 of 2011 concerning the Financial Services Authority, MFI are institutions supervised by the Financial Services Authority and play a role in providing business development services through loans and funding for small businesses, startups, and growing enterprises. BPRBCo, or Rural Banks, are one of the MFIs with limited fundraising capabilities, as they still rely on traditional methods and manual processes in their business operations [12]. The classification of SME for a bank is not based on the size of its assets but can be seen through indicators such as whether the rules or regulations referred to by the bank are in the context of rural banks or conventional banks and the target market of rural banks' customers.

Previous research has explored how IT Management and Governance (ITMG) mechanisms affect DT [2] and has demonstrated the impact of ITMG mechanisms on DT. This study also found the existence of hybrid ITMG mechanisms that influence DT in Indonesia's banking and insurance sectors [6] [13]. Based on these findings, further research is needed to better understand the influence of hybrid ITMG mechanisms on DT and organizational performance, particularly focusing on exploring BPRBCo in identifying governance that can effectively support the DT process. In previous research by Mulyana et al. [6] new ITG mechanisms were identified as factors influencing DT, expanding the scope of mechanisms to include agile-adaptive and traditional approaches, as well as considering perceptions of effectiveness and ease of implementation. Mulyana et al. [7] also measured how both mechanisms impact DT and found that both moderately influence DT, while DT itself has a significant impact on organizational performance. In the latest study by Mulyana et al. [14], [15], further discoveries were made regarding the main ITG mechanisms influencing DT success and their impact on organizational performance in a prominent Indonesian bank. In this research, ambidextrous ITG is defined as "the synergistic integration of agile-adaptive ITG mechanisms and traditional mechanisms, creating a balance between exploration processes with flexibility in innovation and adaptability, and exploitation processes with stability in controlling efficiency. This allows organizations to optimally manage risks and utilize their digital resources, including IT, to achieve maximum value." ITG mechanisms are key to the success of DT and achieving organizational performance, forming the ambidextrous governance model foundation, enabling organizations to quickly adapt to the dynamic digital environment while maintaining stability and control. Previous studies in the banking context have employed various approaches from COBIT 2019. For example, in general, by using the governance and management objective (GMO) approach, as previously studied [16], [17]. There are also other latest approaches by using the focus areas on IT services [18], IT risks [19], information security [20], and DevOps [21]. However, none have focused on SME or micro-enterprises. BPRBCo needs to design ITG using an appropriate framework to address the DT process. Therefore, a new framework aligned with BPRBCo's ITG implementation, namely COBIT 2019, is required because it is the latest version of the COBIT framework and has design factors that allow for more accurate alignment of ITG mechanisms with the company's business goals, especially in the SME context [22]. This research will thus employ the latest approach using the COBIT 2019 SME Focus Area, which focuses on designing ITG in the SME context to achieve DT [23], [24].

2. RESEARCH METHODOLOGY

The framework of thought used in this study was adopted from the Design Science Research (DSR) conceptual model from Hevner [25] which has the concept of understanding and applying research paradigms in information systems, namely behavioral science and design science. This methodology emphasizes the creation and evaluation of artifacts to address specific problems in a systematic and rigorous manner [25].

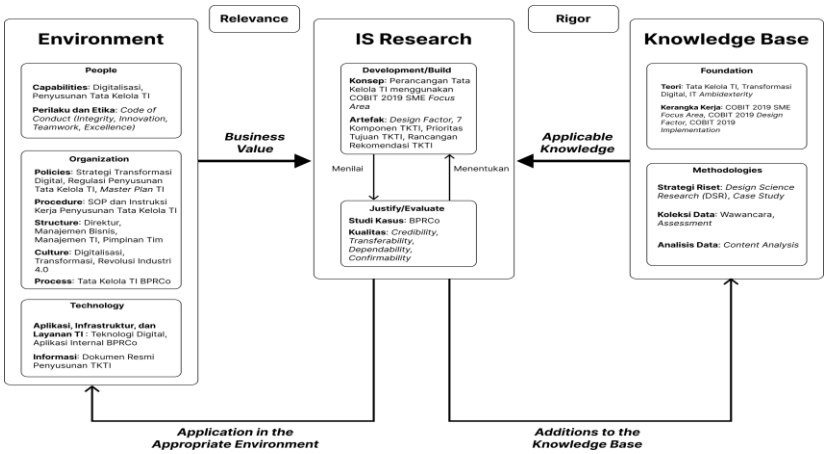

Figure 1. Research Method adapted from Hevner

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

Figure 1 is an adapted model of the conceptual framework developed by Hevner et al. [25] which includes three (3) main parts, environment, knowledge base, and information system research. The knowledge base, information systems research, and environment are the three primary areas covered by the research framework. People, organizations, and technology are further subdivided into the environment. Foundations and methods compose the sections in the knowledge base. Information systems research therefore takes on the emphasis, with components from the environment and knowledge base integrated into two connected parts: development/building and justification/evaluation [25].

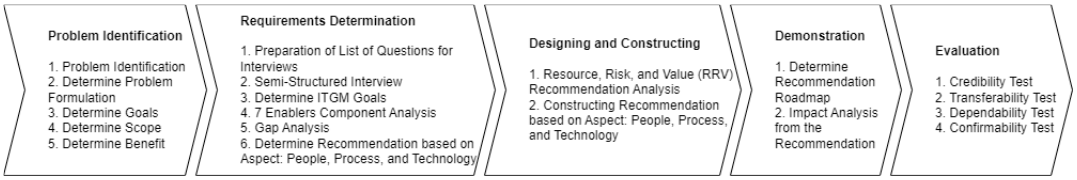

Figure 2. Research Method adapted from Hevner

The sequential method of study is depicted in Figure 2. Initial steps in the problem identification phase include identifying problems associated with the creation of ITG by reviewing the literature to define the issue, establish goals, demarcate the boundaries of the research, and ascertain possible advantages. Further, a set of questions for semi-structured interviews is created during the decision-making stage. Achieving data saturation is essential for ensuring the quality of qualitative research; this may be done with techniques like interviews and further confirmed by data triangulation [26]. Moreover, with data saturation, this research issues were thoroughly explored through in-depth interviews conducted with a suitably diversified sample. Through employing the constant comparative technique to make sure no new themes developed, we adopted an iterative process whereby early analysis of interviews guided future ones. Until no new information was forthcoming, we improved dependability by triangulating our data and using many sources [27]. The specifics of the interviews are shown in Table 1.

Table 1. Primary Data

Respondent	Position	Discussion
Respondent 1 (R1)	Head of Operations and IT	IT Availability, IT management and development, IT service policies and procedures, compliance policies and procedures, risk management, socialization and training related to IT resources.
Respondent 2 (R2)	Head of Operational Headquarters	BPRBCo profile, general business background of BPRBCo.
Respondent 3 (R3)	Head of Business Development	Business background, business process, enterprise architecture.

Data was collected through two sessions of offline interviews and two sessions of online interviews with three respondents in March-July timeline. Table 2 shows the secondary data that were utilized to assist the primary data in analyzing the status of BPRBCo to identify improvement recommendations.

Table 2. Secondary Data

Secondary Data	Description
BPRBCo Profile	The overview of the company
BPRBCo Organizational Structure	The hierarchy and organizational structure of BPRBCo
Corporate Governance Implementation Report 2023	The results of implementation of IT governance at BPRBCo
IT Audit Report 2023	The results of audit related to IT management at BPRBCo
ISO 27001 Compliance Report	The results of compliance audits at BPRBCo

3. RESULT AND DISCUSSION

3.1 ITGM Objectives Prioritization Result

At this stage, as explained in Table 3, which shows the accumulation of weights as the final result of the ITGM objective priorities. The accumulated weighting value is calculated based on 3 other parameters besides design factors, including the focus on the SME area, the ITGM process mechanism that contributes to the success of DT which refers to previous research by Mulyana et al. [7], and regulations regulated by the Financial Services Authority [28] regarding the implementation of IT for BPRs which refers to POJK Number 75/POJK.03/2016 concerning Information Technology Implementation Standards for Rural Credit Banks and Sharia Rural Financing Agencies.

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

Table 3. ITGM Objectives Prioritization Result

ITGM Objectives	POJK and SEOJK No. 75 Regulation	COBIT 2019 Design Factor	COBIT 2019 SME Focus Area	Previous Research	Final Score
EDM03—Ensured Risk Optimization	100	80	80	100	93.3
MEA03—Managed Compliance with External Requirements	100	80	80	100	93.3
DSS01—Managed Operations	100	55	100	100	92.5

Based on the results of the accumulation of the ITGM objective priority weights, 3 ITGM objectives with the highest priority were obtained, namely EDM03 Ensured Risk Optimization with a final priority value of 93.3; MEA03 Managed Compliance with External Requirements with a final priority value of 93.3; and DSS01 Managed Operations with a final priority value of 92.5 [29].

3.2 Gap Analysis Result

3.2.1 Process Component

The process components' capabilities are evaluated in Table 4 below by assessing the level of achievement reached by each activity regarding ITGM objectives. The guidelines for SMEs in COBIT 2019 served as the foundation for this evaluation. For each activity, the percentage of achievement and associated capability levels are shown in Table 4.

Table 4. Process Component

Management Practice	Achievement	Capability Level
MEA03 Managed Compliance with External Requirement		
MEA03.01	83% L (Largely)	2
	0% N (None)	3
MEA03.02	75% L (Largely)	3
MEA03.03	100% F (Fully)	3
	100% F (Fully)	4
	50% P (Partially)	5
MEA03.04	33% P (Partially)	3
	0% N (None)	4
EDM03 Ensured Risk Optimization		
EDM03.01	100% F (Fully)	2
	75% L (Largely)	3
EDM03.02	75% L (Largely)	2
	0% N (None)	3
EDM03.03	100% F (Fully)	2
	100% F (Fully)	3
	50% P (Partially)	4
DSS01 Managed Operations		
DSS01.01	100% F (Fully)	2
	100% F (Fully)	3
	100% F (Fully)	4
	100% F (Fully)	5
DSS01.02	100% F (Fully)	3
	100% F (Fully)	4
DSS01.03	100% F (Fully)	2
	100% F (Fully)	3
	100% F (Fully)	4
DSS01.04	100% F (Fully)	2
	100% F (Fully)	3
	0% N (None)	4
DSS01.05	92% F (Fully)	2
	100% F (Fully)	3
	100% F (Fully)	4

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

The findings show that various areas have different levels of capacity, with some completely meeting the targets and others requiring further development to reach greater levels.

3.2.2 Organizational Structure Component

Table 5 below shows the roles in the organizational structure components that BPRBCo must have to achieve ITGM objectives, especially in the MEA03, EDM03, and DSS01 domains.

Table 5. Organizational Structure Component

COBIT Organization Structure	Management Objective	Current State
Audit	MEA03	Internal Audit Work Unit
Board	EDM03	The members of the Board of Directors led by the President Director are fully responsible for the implementation of BPRBCo management.
Business Process Owners	MEA03	Each service has a field led by a head of field who also acts as a business process owner in accordance with his field.
Chief Information Officer	DSS01	The Board of Directors is responsible for providing accurate and relevant data and information.
Chief Operating Officer	DSS01	The Board of Directors is responsible for optimizing business activities at BPRBCo, including making breakthroughs in developing human resources.
Chief Technology Officer	DSS01	The Board of Directors is responsible for determining development plans and monitoring IT implementation.
Compliance or Quality	MEA03	The Compliance Function Leading Director who is responsible for optimizing resources to achieve BPRBCo's goals and implementing compliance and risk management optimally. In addition, there is also an Executive Officer/Compliance Work Unit who is responsible for ensuring the implementation of compliance at BPRBCo
Executive Committee	EDM03	President Director works together with The Compliance Function Leading Director within the board of directors.
Financial Manager	MEA03	There is no specific role for the financial manager. At BPRBCo, the administration, accounting and finance division is led by the Head of Operations.
Financial Operations Manager	EDM03	There is no specific role of manager related to financial risk. At BPRBCo, the administration, accounting and finance division is led by the Head of Operations
General Manager	MEA03, EDM03	The hierarchy of the BPRBCo organizational structure is that the Board of Directors directly supervises the Head of Division as General Manager, who then supervises the Manager or Head of Division for each division.
Head IT Operations	DSS01	Operations and activities in the IT sector are coordinated by the Head of Operations who oversees the Head of IT Division.
Head of IT	MEA03, EDM03	Operations and activities in the IT sector are coordinated by the Head of Operations who oversees the Head of IT Division.
Information Security Manager	DSS01	Information Security Management System Team Coordinator
IT Development Coordinator	MEA03	Operations and activities in the IT sector, especially IT development, are coordinated by the Head of IT Division, who is under the Head of Operations.
IT Operations Coordinator	MEA03	Operations and activities in the IT sector are coordinated by the Head of IT Division who is under the Head of Operations.

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

COBIT Organization Structure	Management Objective	Current State
Legal Department	MEA03	Head of Compliance, Risk Management, and Anti-Money Laundering-Prevention of Terrorism Financing-Prevention of Proliferation of Weapons of Mass Destruction Funding coordinates directly with the Director in Charge of Compliance
Operations Manager	MEA03, EDM03	Operations and business activities at BPRBCo include credit services, marketing, and bank operations. Each service has its own division head, namely the Head of Operations, Head of Marketing, Head of Credit, and Head of Credit Development and Settlement.
Privacy Officer	MEA03, DSS01	Head of Compliance, Risk Management, and Anti-Money Laundering-Prevention of Terrorism Financing-Prevention of Proliferation of Weapons of Mass Destruction Funding is responsible for overseeing privacy or regulations at BPRBCo
Security Manager	EDM03	Head of HR and General Affairs who leads HR and General Staff who oversees the security, driver, and office boy positions. At the BPRBCo Cash Office, there is a Head of Cash Office who leads the tellers and security

In Table 5, a gap is found in the roles of the organizational structure components in the three ITGM objectives, namely there is no role for Financial Manager and Financial Operations Manager.

3.2.3 Information Component

The following Table 6 shows the information output of each management practice that must be met to achieve the ITGM objective.

Table 6. Information Component

Management Practice	Information Output	Current State
MEA03 Managed Compliance with External Requirement		
MEA03.01	Log of required compliance actions	Compliance report according to the ISO 27001:2022 standard
	Compliance requirements register	Compliance report according to the ISO 27001:2022 standard
MEA03.02	Communications of changed compliance requirements	If there are changes in compliance requirements, they will be announced to all company staff through the division heads and directors.
	Updated IT policies and procedures	Based on the results of the compliance report according to the ISO 27001:2022 standard, BPRBCo carries out training on security policies as well as regular updates to the regulation of information security management system.
MEA03.03	Compliance confirmations	Compliance report according to the ISO 27001:2022 standard
	Identified compliance gaps	ISO 27001 Management Review Report
MEA03.04	There are no small and medium enterprise specific outputs for this practice.	No assessment was conducted at this time as there is no specific SME output for this practice.
EDM03 Ensured Risk Optimization		
EDM03.01	Risk appetite guidance	BPRBCo has a risk management policy and risk management procedures which is an evaluation of the previous Risk Management regulation and has evaluated and set risk limits in 2023.
	Evaluation of risk management activities	
	Approved risk tolerance levels	

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

Management Practice	Information Output	Current State
EDM03.02	Approved process for measuring risk management	The Board of Directors participated in preparing and approving written risk management policies and guidelines. The Board of Commissioners has also approved and evaluated the risk management policy and evaluated the Board of Directors' accountability for implementing BPRBCo's risk management policy quite well as found by OJK in 2023.
	Key objectives to be monitored for risk management	
	Risk management policies	BPRBCo has a risk management policy and risk management procedures which is an evaluation of the previous Risk Management regulation and has evaluated and set risk limits in 2023.
EDM03.03	Remedial actions to address risk management deviations	BPRBCo has a risk management policy and risk management procedures which is an evaluation of the previous Risk Management regulation and has evaluated and set risk limits in 2023.
	Risk management issues for the board	The Board of Commissioners has approved and evaluated the Board of Directors' accountability for the implementation of risk management policies. The Internal Audit Work Unit has also submitted a written internal audit implementation report to the President Commissioner and the Director in charge of the compliance function. This shows that there is a reporting process related to risk management issues and audit results to the board and company executives.
DSS01 Managed Operations		
DSS01.01	Backup Log	The Digital Monitoring application, in addition to its function to monitor customer service activities, is also used to monitor work reports for Account Officer, Funding Officer, Credit Development and Settlement, Legal, Desk Call, Admin, Customer Service, and Teller employees.
	Operational Schedule	There is an internal application in the field of compliance which is used to view regulations and employee job descriptions according to their job position in the BPRBCo environment.
DSS01.02	Independent assurance plans	If there are changes to the requirements in the Cooperation Agreement Contract, an Addendum Letter will be issued as an adjustment to the agreement regarding operations.
DSS01.03	Asset monitoring rules and event conditions	Information Asset Management Procedure
	Incident tickets	In the Incident Management Procedure, there is a log form. BPRBCo also has a support ticket for reporting incidents found during monitoring for internal BPRBCo and vendors.
	Event logs	There are activity logs at each level of BPRBCo internal users.
DSS01.04	Environmental policies	There is no specific document containing environmental policies.
	Insurance policy reports	BPRBCo has building insurance
DSS01.05	Health and safety awareness	There is no specific document containing procedural information regarding health and safety.
	Facilities assessment reports	In the audit checklist document, there is an assessment of the facilities available at BPRBCo

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

The gap analysis identified at BPRBCo includes the absence of a specific document containing environmental policies and the absence of a specific document containing information on procedures related to health and safety.

3.2.4 People, Skills, and Competencies Component

Based on COBIT 2019 SME Focus Area, BPRBCo must have several skills shown in Table 7.

Table 7. People, Skills, and Competencies Component

Skills	Current State
MEA03 Managed Compliance with External Requirement	
Information security	BPRBCo has formed an Information Security Management System (ISMS) team which plays a role in monitoring, recording, describing and following up on information security disturbances.
EDM03 Ensured Risk Optimization	
Business risk management	BPRBCo has a Compliance Director that coordinates directly with the Compliance, Risk Management, and APU-PPT-PPPSPM Divisions. The risk register document also contains risk categories and scenarios in the operational and project development sectors which are part of BPRBCo's business operations.
Risk management	BPRBCo has a Compliance Director that coordinates directly with the Compliance, Risk Management, and APU-PPT-PPPSPM Divisions. In addition, there is a risk register document which includes determining the level of risk and its handling. BPRBCo also has an activity log that is evaluated periodically every semester for risk analysis.
DSS01 Managed Operations	
Database administration	IT Division
Facilities management	HR and General Division
IT infrastructure	IT Division
Methods and tools	In addition to the IT sector, there are user admins for each internal and external BPRBCo application.
Service delivery	Customer service staff under the Operational Division. There is also a Credit Division, Marketing Division, and Credit Development and Settlement Division which are responsible for the management and delivery of services to customers.
Storage management	The HR and General Affairs Division

Based on Table 7, no gaps were found in the skills of MEA03 Managed Compliance with External Requirement, EDM03 Ensured Risk Optimization, and DSS01 Managed Operations objective.

3.2.5 Principles, Policies, and Procedures Component

The following Table 8 shows the relevant policies of each management practice that must be met to achieve the ITGM objective.

Table 8. Principles, Policies, and Procedures Component

Policy	Current State
MEA03 Managed Compliance with External Requirement	
Compliance policy	BPRBCo has several written policies and procedures including SOPs that oversee various services at the bank.
EDM03 Ensured Risk Optimization	
Enterprise risk policy	Company risk policy
DSS01 Managed Operations	
Service management policy	Policies and procedures including regulations that oversee several services owned by BPRBCo, such as E-Cash services, virtual accounts, credit, deposits, transactions, and slip supervision

Based on Table 8, no gaps were found in the policies of MEA03 Managed Compliance with External Requirement, EDM03 Ensured Risk Optimization, and DSS01 Managed Operations objective.

3.2.6 Culture, Ethics, and Behavior Component

The following

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

Table 9 shows the key culture elements of each management practice that must be met to achieve the ITGM objective.

Table 9. Culture, Ethics, and Behavior Component

Key Culture Elements	Current State
MEA03 Managed Compliance with External Requirement	
Promote a compliance-aware culture, including zero tolerance of noncompliance with legal and regulatory requirements.	The Board of Directors in charge of the compliance function in the 2023 period has made efforts to encourage the creation of a culture of compliance at BPRBCo, including creating a digital application as a means of conveying the latest and applicable internal and external provisions that can be accessed by all employees and conducting socialization of the latest training.
EDM03 Ensured Risk Optimization	
Promote an IT risk-aware culture at all levels of the organization and empower the enterprise proactively to identify, report and escalate IT risk, opportunity and potential business impacts. Senior management sets direction and demonstrates visible and genuine support for risk practices. Additionally, management must clearly define risk appetite and ensure an appropriate level of debate as part of business as-usual activities. Desirable behaviors include encouraging employees to raise issues or negative outcomes and show transparency regarding IT risk. Business owners should accept ownership of IT risk when applicable and demonstrate genuine commitment to IT risk management by providing adequate resource levels.	BPRBCo has a written policy on risk management policies, risk management procedures and has evaluated the determination of risk limits. BPRBCo has implemented risk management on all risk factors required by the Financial Services Authority.
DSS01 Managed Operations	
Create a culture of habitual excellence throughout the organization. Encourage employees to excel. Create an environment in which operational procedures deliver (more than) the necessary services while also allowing employees to question the status quo and try new ideas. Manage operational excellence through employee engagement and continuous improvement. Apply a customer-centric approach (for both internal and external customers).	BPRBCo emphasizes the importance of good corporate governance by implementing the principles of GCG (Good Corporate Governance). BPRBCo carries out employee training and development. BPRBCo carries out periodic and continuous improvement of human resource skills related to the implementation of the internal audit function.

Based on

Table 9, no gaps were found in the key culture elements of MEA03 Managed Compliance with External Requirement, EDM03 Ensured Risk Optimization, and DSS01 Managed Operations objective.

3.2.7 Service, Infrastructure, and Application Component

The following Table 10 shows the services, infrastructures, and applications of each management practice that must be met to achieve the ITGM objective.

Table 10. Service, Infrastructure, and Application Component

Service, Infrastructure, and Application	Current State
MEA03 Managed Compliance with External Requirement	
Regulatory watch services	routine monitoring service for changes in banking company regulations by the Board of Directors in charge of Compliance and the Head of Compliance, Risk Management, and APU-PPT-PPPSPM.
Third-party compliance assessment services	BPRBCo has conducted an ISO:27001 assessment on SOPs related to the management of vendor/third party services which includes compliance from third parties.
EDM03 Ensured Risk Optimization	

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

Service, Infrastructure, and Application	Current State
Risk management system	BPRBCo tracks internal activity logs and analyzes risks from tracking results. Then, as a risk management system, BPRBCo uses Microsoft Excel which stores data from activity log tracking analysis results for further handling if necessary.
DSS01 Managed Operations	
Cloud hosting services	Cooperate with third parties as hosting service providers
Infrastructure monitoring tools	There is no specific application for IT infrastructure data collection and monitoring. BPRBCo only performs data collection using Microsoft Excel
Service level monitoring tools	Internal application to monitor service level standards.

Based on Table 10, a gap was found in the services, infrastructure and applications of DSS01 Managed Operations, there is no specific application for data collection and monitoring of IT infrastructure.

3.3 Potential Improvement

Based on the results of the gap analysis in the previous stage, an analysis of potential improvements was carried out covering 3 aspects, namely people, process, and technology. The following are the results of the gaps from each ITGM objective that have been analyzed along with the components, types, and potential improvements from the people, process, and technology aspects explained in Table 11.

Table 11. Potential Improvement

Component	Gap	Type	Potential Improvement
People Aspect			
EDM03 Ensured Risk Optimization			
Organizational Structure	There is no specific role for financial manager and financial risk. The administration, accounting and finance division is led by the Head of Operations	Roles, Responsibility	Added financial operations manager role
Process Aspect			
MEA03 Managed Compliance with External Requirement			
Process	BPRBCo has collaborated with a third party as an IT service provider vendor and has created a Cooperation Agreement Contract but has not received a specific statement from the vendor as a third party regarding their level of compliance with applicable laws and regulations relating to electronic transactions between companies.	Policy	Added policies regarding third party compliance assurance with applicable laws and regulations relating to inter-company electronic transactions.
DSS01 Managed Operations			
Process	BPRBCo does not yet have a tool to detect environmental threats, such as a smoke detector.	Policy	Adding policies on BPRBCo environmental management
Information	There is no specific document containing environmental policies.	Policy	
	There is no specific document containing procedural information regarding health and safety.	Procedure	Added procedures that includes directions on health and safety awareness
Technology Aspect			
DSS01 Managed Operations			
Service, Infrastructure, and Application	There is no specific application for IT infrastructure data collection and monitoring. BPRBCo only performs data collection using Microsoft Excel	Tools	Implementing IT infrastructure monitoring tools applications

3.4 Resource, Risk, Value (RRV) Analysis

Priorities have been determined by collecting an overall score of all recommended improvements. The highest priority score is used to categorize recommendations, which are then grouped based on people, process, and

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

technology aspects. BPRBCo may apply this classification as a guide while implementing the recommendations. **Error! Reference source not found.** provides detail of the recommendation priorities.

Table 12. RRV Analysis

Potential Improvement	Final Score	Priority
People Aspect		
Added financial operations manager role	18	1
Process Aspect		
Adding policies on BPRBCo environmental management	18	1
Added policies regarding third party compliance assurance with applicable laws and regulations relating to inter-company electronic transactions.	12	2
Added procedures that includes directions on health and safety awareness	9	3
Technology Aspect		
Implementing IT infrastructure monitoring tools applications	12	1

3.5 Implementation Roadmap

Based on Table 13, the potential improvements are grouped into people, process, and technology aspects. The improvement design on the people aspect can be realized in the 4th quarter of 2024. The improvement design on the process aspect can be realized in the 4th quarter of 2024 to the 2nd quarter of 2025. The improvement design on the technology aspect can be realized in the 1st quarter of 2025.

Table 13. Implementation Roadmap

Initiatives	2024				2025			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
People Aspect								
Added financial operations manager role								
Process Aspect								
Adding policies on BPRBCo environmental management								
Added policies regarding third party compliance assurance with applicable laws and regulations relating to inter-company electronic transactions.								
Added procedures that includes directions on health and safety awareness								
Technology Aspect								
Implementing IT infrastructure monitoring tools applications								

3.6 Impact of Recommendations Implementation

Table 14 shows the impact of the improvement implementation on BPRBCo through a comparison of capability levels before and after the improvement was implemented.

Table 14. Impact Estimation on Process Component

ITGM Objectives	Previous Capability Level	Estimated Capability Level
EDM03 Ensured Risk Optimization	8	8
MEA03 Managed Compliance with External Requirements	12	13
DSS01 Managed Operations	20	21
Total Amount	**40**	**42**
Total Score	**3.3**	**3.5**

Based on COBIT 2019 SME Focus Area on Organizational Structure, Information, People, Skills, and Competencies, Principles, Policies, and Procedures, Culture, Ethics, and Behavior, Service, Infrastructure, and Application Component, the estimated implementation impact results based on BPRBCo's recommendations are shown in Table 15 below.

Table 15. Impact Estimation of Other Governance Component

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

Pre-implementation State	Post-implementation State
Organizational Structure Component	
Financial Manager Financial Operations Manager	Financial Operations Manager
Information Component	
There is no specific document containing environmental policies.	Adding policies on BPRBCo environmental management
There is no specific document containing procedural information regarding health and safety.	Added procedures that includes directions on health and safety awareness
Service, Infrastructure, and Application Component	
There is no specific application for IT infrastructure data collection and monitoring.	Implementing IT infrastructure monitoring tools applications

Based on Table 15 above, the comparison of organizational structure components was found, BPRBCo does not have a special role of financial manager and financial operations manager, then after being given an improvement, BPRBCo has a role of financial operations manager who is responsible for financial affairs and management related to financial risks. Comparison of information components was also found, BPRBCo does not yet have a special document containing environmental policies and special documents containing information on procedures related to health and safety, after being given an improvement, BPRBCo has a Policy on BPRBCo Environmental Management and Procedures on Health and Safety Awareness. Lastly, a comparison of service, infrastructure, and application components was found, BPRBCo does not yet have a special application for IT infrastructure data collection and monitoring, but only conducts data collection with Microsoft Excel, then after being given an increase, BPRBCo has an infrastructure monitoring tools application.

3.7 Research Quality Evaluation

To evaluate the efficacy of the proposed solutions as described in, the research was put through four stages of quality assessment. Data from surveys, interviews, and document analysis were used to verify the credibility, which validated IT by IT governance professionals. Delivering detailed justifications of the BPR organization strengthened transferability and made it possible to assess adaptation in similar circumstances. Dependability and confirmability were ensured through the utilization of many data sources to enhance objectivity and reduce bias, as well as by following uniform methodologies and documentation. Experts along with relevant stakeholders confirmed all the findings [30].

3.8 Research Discussion

This research highlights the importance of effective ITG mechanisms for the digital transformation (DT) of small and medium enterprises (SME) like rural banks (BPR). Previous studies emphasize that ITG plays a crucial role in aligning technology investments with business goals, contributing to competitiveness and operational success. Despite challenges such as limited human and financial resources, BPRBCo can enhance efficiency and responsiveness by adopting a hybrid or ambidextrous ITG approach, combining agile methodologies with traditional governance strategies. These findings demonstrate the need for flexibility and customization in IT policies to suit organizations of different scales. By implementing tailored ITG strategies, BPRBCo can optimize existing resources, improve their capability levels, and successfully navigate the DT journey, thereby strengthening their competitiveness in a rapidly evolving digital landscape.

4. CONCLUSION

The conclusions of this study may be influenced by biases in data interpretation and analysis. The narrow focus on the banking industry limits its applicability to other sectors, and the design is specific to this organization. Researcher subjectivity also affects the results, so future research should consider the organizational context and potential bias. The analysis using the COBIT 2019 Design Toolkit, SME focus areas, OJK regulations, and ITGM processes has identified key ITGM objectives for BPRBCo's digital transformation. These include EDM03 Ensured Risk Optimization and MEA03 Managed Compliance scoring 93.3, and DSS01 Managed Operations scoring 92.5. The gap assessment of the seven capability components in the prioritized ITGM objectives led to several improvement recommendations. These include clarifying roles and responsibilities for organizational structure, policy updates for processes, procedure enhancements for information, and tool improvements for services, infrastructure, and applications. The implementation recommendations cover people, process, and technology aspect. In people aspect, additional roles are suggested for the Financial Operations Manager. In process aspect, new policies on environmental management and external compliance are recommended. In technology aspect, infrastructure monitoring tools are advised. The proposed improvements raised the average IT governance capability level from 3.3 to 3.5, indicating a 6.06% increase. The research results and recommendations for BPRBCo are intended to guide the company's implementation of IT governance, particularly

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

using COBIT 2019 for SMEs. These insights aim to assist practitioners and contribute to further research, enhancing IT governance knowledge. Additionally, the findings may help SMEs in banking sector adapt to digital transformation, enabling development and innovation by improving IT services in a dynamic digital environment.

REFERENCES

[1] C. Gong and V. Ribiere, "Developing a unified definition of digital transformation," Technovation, vol. 102, Apr. 2021, doi: 10.1016/j.technovation.2020.102217.
[2] R. Mulyana, L. Rusu, and E. Perjons, "IT Governance Mechanisms Influence on Digital Transformation: A Systematic Literature Review," in AMCIS 2021 Proceedings, Virtual, 2021, pp. 1–11. Accessed: Sep. 09, 2024. [Online]. Available: https://aisel.aisnet.org/amcis2021/adv_info_systems_general_track/adv_info_systems_general_track/19/
[3] V. Gurbaxani and D. Dunkle, "Gearing up for successful digital transformation," MIS Quarterly Executive, vol. 18, no. 3, pp. 209–220, 2019, doi: 10.17705/2msqe.00017.
[4] Jason Bloomberg, "Digitization, Digitalization, And Digital Transformation: Confuse Them At Your Peril." Accessed: Sep. 07, 2024. [Online]. Available: https://www.forbes.com/sites/jasonbloomberg/2018/04/29/digitization-digitalization-and-digital-transformation-confuse-them-at-your-peril/
[5] B. P. W. Nirmala and S. Lavianto, "Pemanfaatan Digital Enabler dalam Transformasi Pemasaran Desa Wisata Berbasis Kerakyatan di Bali," JUTIK, no. Vol. 5 No. 1 (2019): Jurnal Teknologi Informasi dan Komputer, pp. 1–10, 2019.
[6] R. Mulyana, L. Rusu, and E. Perjons, "Association for Information Systems AIS Electronic Library (AISeL) IT Governance Mechanisms that Influence Digital Transformation: A Delphi Study in Indonesian Banking and Insurance Industry," in Pacific Asia Conference on Information Systems (PACIS), AI-IS-ASIA (Artificial Intelligence, Information Systems, in Pacific Asia), Virtual Conference, July 5-9, 2022, Association for Information Systems (AIS), 2022, pp. 1–17. [Online]. Available: https://aisel.aisnet.org/pacis2022
[7] R. Mulyana, L. Rusu, and E. Perjons, "How Hybrid IT Governance Mechanisms Influence Digital Transformation and Organizational Performance in the Banking and Insurance Industry of Indonesia," in A. R. da Silva, M. M. da Silva, J. Estima, C. Barry, M. Lang, H. Linger, & C. Schneider (Eds.), Information Systems Development, Organizational Aspects and Societal Trends, Lisbon, Portugal, Oct. 2023, pp. 1–12.
[8] S. Harguem, "A Conceptual Framework on IT Governance Impact on Organizational Performance: A Dynamic Capability Perspective A Conceptual Framework on IT Governance Impact on Organizational Performance: A Dynamic Capability Perspective Saida Harguem," Academic Journal of Interdisciplinary Studies www.richtmann.org, vol. 10, no. 1, 2021, doi: 10.36941/ajis-2021-0012.
[9] Otoritas Jasa Keuangan, "Peraturan Otoritas Jasa Keuangan Republik Indonesia Nomor 11/POJK.03/2022 Tentang Penyelenggaraan Teknologi Informasi oleh Bank Umum," 2022. Accessed: Jan. 07, 2024. [Online]. Available: https://ojk.go.id/id/regulasi/Pages/Penyelenggaraan-Teknologi-Informasi-Oleh-Bank-Umum.aspx
[10] Badan Usaha Milik Negara, "Peraturan Menteri Badan Usaha Milik Negara Nomor PER-2/MBU/03/2023 Tahun 2023 tentang Pedoman Tata Kelola dan Kegiatan Korporasi Signifikan Badan Usaha Milik Negara," 2023. Accessed: Dec. 20, 2024. [Online]. Available: https://peraturan.bpk.go.id/Details/264291/permen-bumn-no-per-2mbu032023-tahun-2023
[11] N. Obwegeser, T. Yokoi, M. Wade, and T. Voskes, "7 Key Principles to Govern Digital Initiatives." Accessed: Sep. 09, 2024. [Online]. Available: https://sloanreview.mit.edu/article/7-key-principles-to-govern-digital-initiatives/
[12] F. Jonathan, R. Mulyana, and Y. A. Prasetyo, "IT Governance Analysis and Design of Microfinance Institution Using COBIT 5 Framework Evaluate, Direct, Monitor (EDM) and Align, Plan, and Organize (APO) Domains (Case Study: PT Sarana Jabar Ventura)," International Journal of Innovation in Enterprise System (IJIES), vol. 01, no. 01, pp. 1–6, Jul. 2017.
[13] T. Z. Nurafifah, R. Mulyana, and L. Abdurrahman, "Pengujian Model Pengaruh Tata Kelola TI Terhadap Transformasi Digital dan Kinerja Bank A," Journal of Information System Research (JOSH), vol. 4, no. 1, pp. 73–82, Oct. 2022, doi: 10.47065/josh.v4i1.2257.
[14] R. Mulyana, L. Rusu, and E. Perjons, "Key Ambidextrous IT Governance Mechanisms for Successful Digital Transformation: A Case Study of Bank Rakyat Indonesia (BRI)," Digital Business, vol. 4, no. 2, pp. 1–19, Dec. 2024, doi: 10.1016/j.digbus.2024.100083.
[15] R. Mulyana, L. Rusu, and E. Perjons, "Key Ambidextrous IT Governance Mechanisms Influence on Digital Transformation and Organizational Performance in Indonesian Banking and Insurance," in PACIS 2024 Proceedings, 2024, pp. 1–17. Accessed: Sep. 09, 2024. [Online]. Available: https://aisel.aisnet.org/pacis2024/track15_govce/track15_govce/7
[16] D. A. Permana, R. Fauzi, and R. Mulyana, "Perancangan Tata Kelola Teknologi Informasi Untuk Transformasi Digital di Industri Perbankan Menggunakan Framework Cobit 2019 Domain Align, Plan, And Organise : Studi Kasus Di Bank XYZ," e-Proceeding of Engineering, vol. 8, no. 5, pp. 1–8, Oct. 2021.
[17] O. Poetry, R. Fauzi, and R. Mulyana, "Perancangan Tata Kelola Teknologi Informasi untuk Transformasi Digital di Industri Perbankan Menggunakan Framework COBIT 2019 dengan Doman Deliver, Service and Support: Studi Kasus Bank XYZ," e-Proceeding of Engineering, vol. 8, no. 5, pp. 1–9, Oct. 2021.
[18] Bq. D. Tarbiyatuzzahrah, R. Mulyana, and A. F. Santoso, "Penggunaan COBIT 2019 GMO dalam Menyusun Pengelolaan Layanan TI Prioritas pada Transformasi Digital BankCo," JTIM : Jurnal Teknologi Informasi dan Multimedia, vol. 5, no. 3, pp. 218–238, Oct. 2023, doi: 10.35746/jtim.v5i3.400.
[19] Y. W. Dwi, M. Dewi, R. Mulyana, and A. F. Santoso, "Penggunaan COBIT 2019 I&T Risk Management untuk Pengelolaan Risiko Transformasi Digital BankCo," JUTISI: Jurnal Ilmiah Teknik Informatika Dan Sistem Informasi, no. Vol 12, No 3, 2023, Accessed: Sep. 09, 2024. [Online]. Available: http://ojs.stmik-banjarbaru.ac.id/index.php/jutisi/article/view/1488
[20] A. Rahmadana, R. Mulyana, and A. F. Santoso, "Pemanfaatan COBIT 2019 Information Security Dalam Merancang Manajemen Keamanan Informasi Pada Transformasi BankCo," JUTISI: Jurnal Ilmiah Teknik Informatika Dan Sistem Informasi, no. Vol 12, No 3, pp. 1–14, 2023.

Journal of Information System Research (JOSH)
Volume 6, No. 1, Oktober 2024, pp 205−218
ISSN 2686-228X (media online)
https://ejurnal.seminar-id.com/index.php/josh/
DOI 10.47065/josh.v6i1.5905

[21] N. Riznawati, R. Mulyana, and A. F. Santoso, "SEIKO : Journal of Management & Business Pendayagunaan COBIT 2019 DevOps dalam Merancang Manajemen Pengembangan TI Agile pada Transformasi Digital BankCo," SEIKO : Journal of Management & Business, vol. 6, no. 2, pp. 2023–223, 2023.
[22] D. Utomo, M. Wijaya, and N. Tri Maretta Sagala, "Leveraging COBIT 2019 to Implement IT Governance in SME Context: A Case Study of Higher Education in Campus A," CommIT Journal, no. Vol. 16 No. 2, pp. 1–13, 2022.
[23] ISACA, COBIT® 2019 Framework : Introduction and Methodology. 2018. Accessed: Sep. 09, 2024. [Online]. Available: https://store.isaca.org/s/store?_gl=1*eo8ugc*_gcl_au*MTIzMzczNTg3MS4xNzI1ODgzNDE5#/store/browse/detail/a2S4w000004Ko9cEAC
[24] ISACA, COBIT for Small and Medium Enterprises. 2021. Accessed: Sep. 09, 2024. [Online]. Available: https://store.isaca.org/s/store?_gl=1*1fg2nym*_gcl_au*MTIzMzczNTg3MS4xNzI1ODgzNDE5#/store/browse/detail/a2S4w000004L2noEAC
[25] A. R. Hevner, S. T. March, J. Park, and S. Ram, "Design Science in Information Systems Research," MIS Quarterly, vol. 28, no. 1, pp. 75–105, Mar. 2004, Accessed: Sep. 09, 2024. [Online]. Available: https://doi.org/10.2307/25148625
[26] M. Baslyman, "Digital Transformation from the Industry Perspective: Definitions, Goals, Conceptual Model, and Processes," IEEE Access, vol. 10, pp. 42961–42970, 2022, doi: 10.1109/ACCESS.2022.3166937.
[27] P. I. Fusch and L. R. Ness, "Are We There Yet? Data Saturation in Qualitative Research," Qualitative Report, vol. 20, no. 9, pp. 1408–1416, Sep. 2015, doi: 10.46743/2160-3715/2015.2281.
[28] Otoritas Jasa Keuangan, "POJK Nomor 75/POJK.03/2016 tentang Standar Penyelenggaraan Teknologi Informasi bagi Bank Perkreditan Rakyat dan Badan Pembiayaan Rakyat Syariah," pp. 1–26, 2016, [Online]. Available: https://ojk.go.id/id/kanal/perbankan/regulasi/peraturan-ojk/Pages/POJK-tentang-Standar-Penyelenggaraan-Teknologi-Informasi-bagi-Bank-Perkreditan-Rakyat-dan-Badan-Pembiayaan-Rakyat-Syariah.aspx
[29] ISACA, COBIT 2019 Framework Governance and Management Objectives. 2018. Accessed: Sep. 09, 2024. [Online]. Available: https://store.isaca.org/s/store?_gl=1*eo8ugc*_gcl_au*MTIzMzczNTg3MS4xNzI1ODgzNDE5#/store/browse/detail/a2S4w000004Ko5aEAC
[30] A. K. Shenton, "Strategies for ensuring trustworthiness in qualitative research projects," Education for Information, vol. 22, no. 2, pp. 63–75, 2004, doi: 10.3233/EFI-2004-22201.