A TOGAF 10-Based Enterprise Architecture Framework for Digital Transformation in SME Banks

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Abstract

The banking sector faces significant challenges in implementing Digital Transformation (DT), particularly among Bank Perekonomian Rakyat (BPR), which serves as SME banks in Indonesia. These institutions often struggle with infrastructure limitations, technological adoption, and regulatory compliance. While existing research extensively examines DT strategies and Enterprise Architecture (EA) frameworks in large-scale banking institutions, their application to smaller banks like BPR remains underexplored. This study addresses this gap by developing an EA-based solution tailored to BPRDCo, a representative SME bank. Using the Design Science Research (DSR) methodology, the study follows five structured stages: problem explication, requirement specification, design and development, demonstration, and evaluation. The framework leverages the TOGAF Standard 10th Edition, integrating best practices across business, information systems, and technology architectures. The resulting EA blueprint provides a structured guide for DT implementation, aligning business and IT strategies while ensuring regulatory compliance. This study contributes to the EA knowledge base and offers practical implications for SME banks to enhance operational efficiency, optimize resource utilization, and strengthen competitiveness in the evolving financial landscape. By offering a systematic approach DT, this research advances knowledge in IT governance, architecture modeling, and system integration. Moreover, it provides a replicable framework that can inform future developments in digital banking solutions, reinforcing the importance of EA as a strategic tool for sustainable technological innovation.

Keywords : BPR, Digital Transformation, Enterprise Architecture, SME Bank, TOGAF 10.

1. INTRODUCTION

Digital Transformation (DT) has become essential for organizations to stay competitive amidst rapid technological advancements, innovation, and changing consumer behavior [1], [2]. While DT offers opportunities for innovation and efficiency, many efforts fall short due to a lack of structured approaches [3]. Studies have emphasized the significance of DT strategies and Enterprise Architecture (EA) in large financial institutions, yet their application in smaller-scale banks remains underexplored [4], [5]. This research addresses this gap by focusing on BPRDCo, a Bank Perekonomian Rakyat (BPR) with relatively advanced IT implementation. Despite progress, challenges persist, particularly in aligning IT strategy with organizational goals and overcoming regulatory and operational constraints [6].

BPRDCo faces difficulties in adapting to digital trends, particularly due to shifting customer preferences for smartphone transactions and regulatory limitations. These constraints hinder the bank's ability to innovate as freely as commercial banks, delaying the development of digital services. With evolving customer behavior, the need for IT development becomes urgent. Without a clear strategy and systematic implementation, BPRDCo risks falling behind more agile competitors [7]. BPRDCo,

operating under the supervision of Otoritas Jasa Keuangan (OJK), is subject to financial regulations that impact IT implementation [8]. The OJK Master Plan for 2021-2025 emphasizes resilience, competitiveness, and accelerated DT in the financial sector. This aligns with POJK No.75/POJK.03/2016 and SEOJK No.15/SEOJK.03/2017, which set IT standards for BPR [9], [10]. Additionally, Law No. 4 of 2023 supports DT in BPR/Bank Perekonomian Rakyat Syariah (BPRS), allowing collaborations with commercial banks or financial institutions [11]. Consequently, BPRDCo must design IT architecture solutions to improve efficiency and ensure effective DT.

DT enables the innovative use of digital technology, supported by strategic resource utilization and key capabilities. It integrates digital technology across business functions to enhance efficiency, innovation, and connectivity [12]. To remain competitive amidst technological disruptions, organizations must rethink their vision, strategy, and processes [13]. EA plays a crucial role in aligning business processes, systems, and technologies with organizational objectives [14]. TOGAF 10's modular, agile approach makes it suitable for rapid technological change, particularly in environments with resource constraints like SMEs [15]. SMEs are key drivers of economic growth but often struggle with limited resources and cybersecurity challenges [16], [17]. EA can enhance efficiency and customer engagement, making it a viable strategy for SME banks navigating DT.

The Open Group Architecture Framework (TOGAF), a comprehensive EA framework, emphasizing agility and iterative development [18]. While DT adoption in SMEs using TOGAF has been explored, its specific application in small-scale banking, particularly BPRs, remains understudied [19], [20], [21]. This study addresses that gap by focusing on TOGAF 10, which enhances adaptability and modernizes architectural methodologies [22], [23]. The study configures specific delimitations, including the use of TOGAF 10 in an SME-scale bank from the preliminary vision to the migration planning phases. By doing so, it provides an actionable EA blueprint and DT strategy for BPRDCo. The research addresses the following question: "How can an Enterprise Architecture blueprint and a Digital Transformation strategy be developed using TOGAF 10 for an SME bank in Indonesia?"

A comparison of TOGAF versions highlights the advantages of TOGAF 10, which simplifies structure, updates terminology, and expands guidance on data architecture, security, and reference models, including AI and analytics. Unlike TOGAF 9.2, which primarily focused on improving document structure and Business Architecture, TOGAF 10 emphasizes business outcomes and continuous performance evaluation [24]. This study contributes by demonstrating how SMEs, particularly BPRs, can leverage TOGAF 10 to navigate digital challenges effectively [25]. The objective is to provide a structured approach that SME banks like BPRDCo can utilize to achieve successful DT, ensuring sustained competitiveness in an evolving financial landscape [26].

2. THEORETICAL FOUNDATION

DT involves integrating digital technology into all aspects of life and business to enhance efficiency, innovation, and connectivity [12]. DT encompasses the renewal of an organization's vision, strategy, processes, and culture to leverage digital technologies in developing products and services more efficiently for customers [13]. Companies facing disruptions from emerging digital technologies and shifting consumer behaviors must adopt new IT governance mechanisms to remain competitive. EA, on the other hand, provides a framework to align an organization's business processes, systems, and technologies with its objectives [14]. EA integrates organizational structures, business processes, and IT infrastructures to create alignment and efficiency [15]. TOGAF 10's modular and agile approach makes it particularly suitable for organizations navigating rapid technological changes. Meanwhile, SMEs are recognized as essential drivers of economic growth and innovation [16]. However, SMEs often face challenges like resource constraints and cybersecurity vulnerabilities [17]. Despite these challenges, adopting EA can provide SMEs with a structured approach to implement digital solutions

effectively, enabling improved operational efficiency and customer engagement. TOGAF is a comprehensive framework that provides methods and tools to support the acceptance, production, use, and maintenance of Enterprise Architecture. TOGAF 10's that recently published in 2022 has a modular structure and emphasis on agility make it particularly suitable for addressing the dynamic needs of SMEs and the banking sector. Its iterative Architecture Development Method (ADM) facilitates continuous alignment with evolving organizational goals, ensuring its practicality in guiding DT efforts [18]. This study uniquely focuses on the implementation of the latest TOGAF Standard 10th Edition, rather than the widely used TOGAF 9 [22]. This version introduces enhanced adaptability and modernizes architectural methodologies that better align with contemporary technological advancements. Furthermore, unlike earlier studies that also examined DT in small-scale banking institutions [23], this research object—focused on a specific institution—demonstrates a more significant advantage in its DT implementation. The institution shows a clear motivation and commitment to continuously optimize its capabilities, addressing existing gaps and leveraging DT more effectively [24]. This distinction highlights not only the organization's proactive stance but also the strategic relevance of adopting the latest TOGAF framework in guiding and sustaining digital innovation initiatives [25].

3. RESEARCH METHODOLOGY

3.1. Conceptual Model

This study adopts a conceptual model grounded in the Design Science Research (DSR) framework, a well-established methodology in the field of information systems that combines theoretical development with practical problem-solving [27].
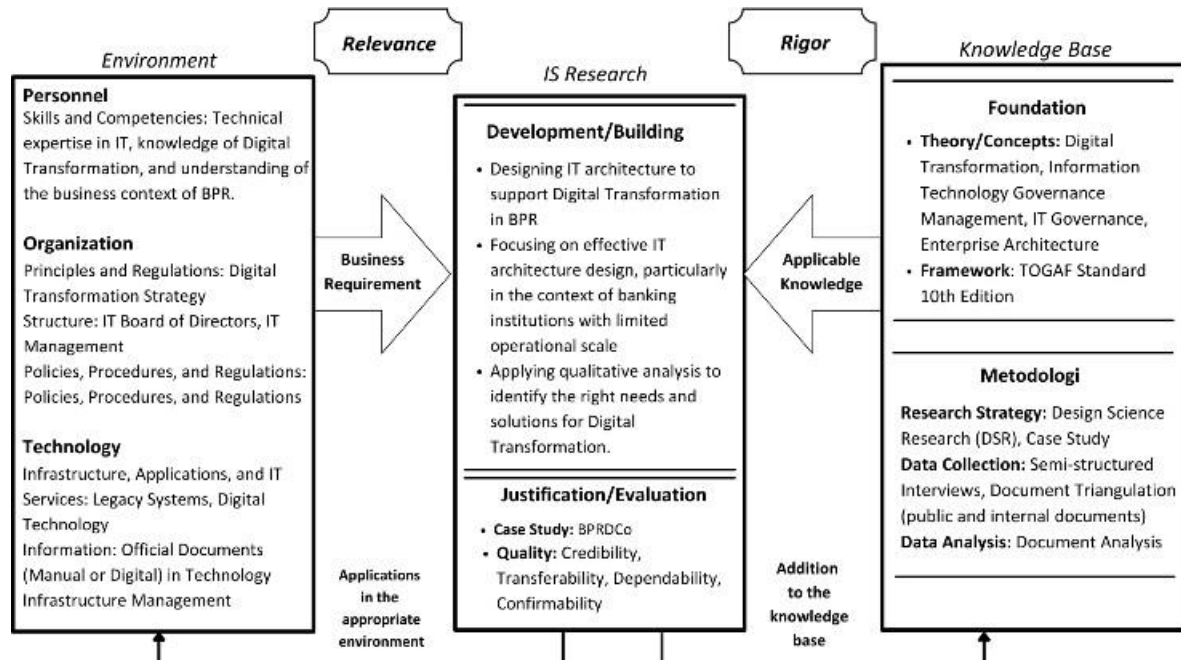

Figure 1. Conceptual Model (Adapted from DSR Hevner [27])

The conceptual model depicted in Figure 1 consists of three main components: Environment, IS Research, and Knowledge Base [27]. In the Environment (Relevance) phase, the research begins by identifying business requirements, analyzing organizational strategies, and assessing the available technological infrastructure. The IS Research (Development & Evaluation) phase focuses on designing and implementing IT architecture solutions. The Development stage includes designing IT architecture based on frameworks like TOGAF 10, analyzing business needs, and identifying suitable solutions

through qualitative methods. The Justification/Evaluation stage involves testing the proposed solutions in a real-world setting (e.g., the BPRDCo case study) and evaluating their credibility, transferability, dependability, and confirmability to ensure reliability and effectiveness. The Knowledge Base (Rigor) phase ensures that the research is grounded in established theories and methodologies. The Foundation component includes concepts such as DT, IT Governance, and EA, while frameworks like TOGAF 10 provide structured guidelines. The Methodology component adopts a DSR approach, employing case studies, semi-structured interviews, document triangulation, and document analysis to validate findings. By integrating these phases, DSR ensures that IT architecture solutions are relevant to business needs, rigorously developed using proven methodologies, and contribute valuable knowledge to the field of IT governance and DT.

3.2.   Research Process

The research process followed five structured steps depicted in Figure 2. First, Problem Explication defined the research problem and objectives, focusing on challenges in DT and EA for SMEs and the banking sector. Second, Requirement Specification used semi-structured interviews to gather insights and refine the research scope. Third, Design and Development prioritized artefacts based on TOGAF 10. Fourth, Demonstration developed a migration plan and IT roadmap for strategic DT adoption. Lastly, Evaluation assessed outcomes using credibility, transferability, dependability, and confirmability to ensure reliability and practical applicability. This structured approach effectively addressed the research objectives.
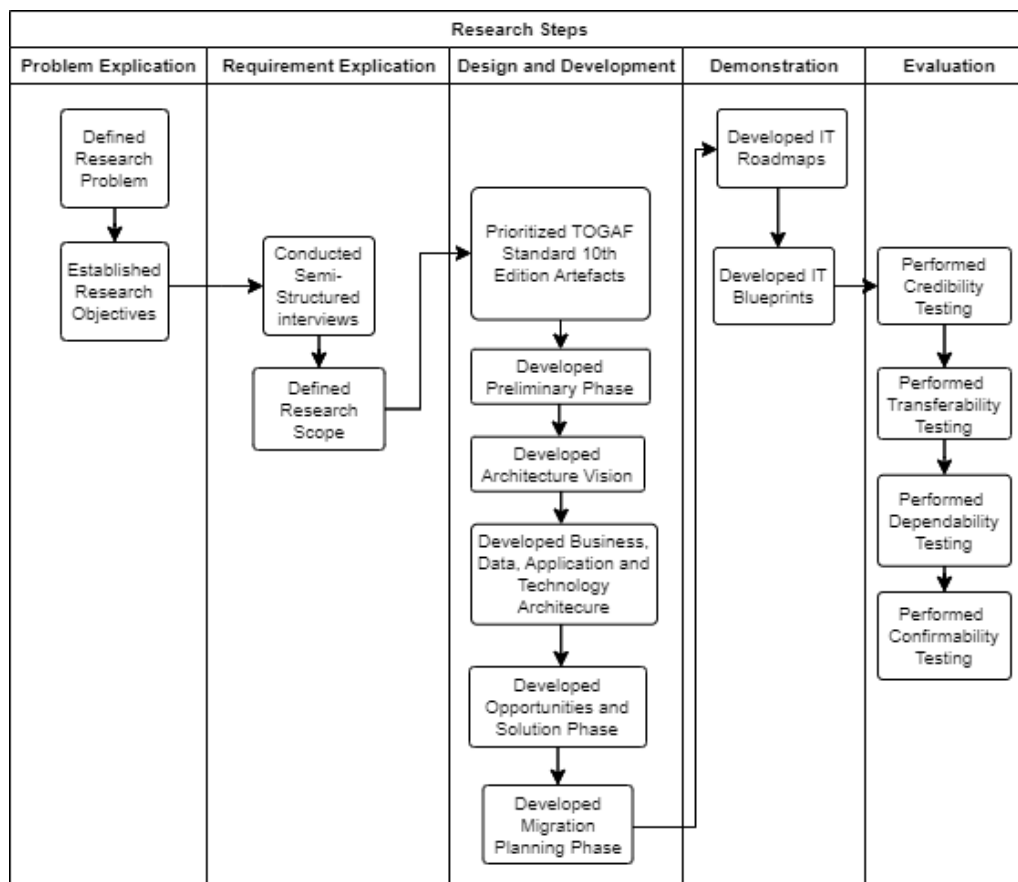

Figure 2. Research Process

The evaluation stage is performed according to the guideline from Shenton [28] and explained as follows: The credibility test ensures the accuracy and reliability of the data used in the study. A

validation letter from BPRDCo confirms that the analysis results align with the company's current conditions. Additionally, data collection, verification, and analysis were conducted systematically through structured interviews and document reviews to enhance transparency and consistency. The transferability test evaluates the applicability of the TOGAF 10 framework in developing BPRDCo's EA blueprint and TD strategy. Experts assessed the research findings using a relevance assessment form, with results indicating a consensus of "Agree" and "Strongly Agree," confirming the framework's effectiveness and alignment with implementation expectations. The dependability test involved a structured review by an academic supervisor, focusing on consistency, information alignment, and adherence to TOGAF standards. The research underwent five revision cycles, ensuring logical organization and feasibility. Upon final approval, the supervisor signed the endorsement sheet, validating the study's dependability and academic integrity. The confirmability test ensures objectivity by gathering feedback from examiners. The evaluators reviewed the EA design and provided input for further refinement before granting final approval, confirming the research's validity from an external perspective.

Data collection in this study aims to obtain comprehensive information as a basis for research, divided into primary and secondary data. Semi-structured interviews were conducted to gather primary data, allowing for an in-depth exploration of organizational needs and digital transformation challenges. This approach was chosen because, according to Denscombe [29], semi-structured interviews provide flexibility while maintaining a structured framework, enabling researchers to probe deeper into key issues while allowing respondents to elaborate on their experiences and perspectives. This method is particularly useful in exploratory research, where complex and context-dependent phenomena such as digital transformation need to be understood from multiple viewpoints. Four respondents were selected based on their expertise, roles, and direct involvement in IT governance and development at BPRDCo, ensuring a diverse yet relevant perspective. These include the Deputy Head of IT Division, the Head of IT Operations and Security, the Head of IT Development, and an external BPRDCo Consultant. Multiple interview rounds were conducted to validate findings and capture evolving insights. Secondary data was collected through internal and public document triangulation, including strategic plans, process mapping, IT development plans, and implementation SOPs, providing additional validation and contextual depth. This multi-source approach enhances credibility and ensures a holistic understanding of the research subject. Table 1 shows the primary and secondary data obtained.

Table 1. Primary and Secondary Data

Topic	Date Range	Respondent	Position
Primary Data			
Discussing BPRDCo existing condition and future targets: strategies and challenges	March-April 2024	Respondent 1 (R1) Respondent 2 (R2) Respondent 3 (R3) Respondent 4 (R4)	Deputy Head of IT Division (R1)
			Head of IT Operations and Security Department (R2)
Discussing and observing BPRDCo business processes and triangulating interviews while exploring internal documents			Head of IT Development Department (R3)
			BPRDCo Consultant (R4)
Secondary Data			
Organizational Structure Document			
Strategic Plan Document			
Process Business Mapping Document			
IT Development Planning Document			

Topic	Date Range	Respondent	Position
Hardware and Software Document			
IT Implementation SOP			

The meaning or impact of the collected data is crucial in understanding the enterprise's needs, specifically in identifying enterprise's behavior. The company is actively implementing innovative behaviors, as seen in their efforts to develop digital services such as online account-opening applications. Their purpose is clear: to create a robust DT strategy that aligns with shifting customer needs, adapts to emerging trends, and overcomes regulatory constraints, ensuring the organization remains competitive in the evolving digital landscape. For instance, BPRDCo faces challenges in adapting to digital trends. R1 stated, "We actually have business discussions... usually based on trends" and "Nowadays, it's very rare... they mostly conduct transactions directly from their phones." These statements highlight the importance of understanding customer needs and the shift in behavior toward mobile transactions, which reflects broader industry trends. With shifting customer behavior and internal constraints, the urgency for IT development is very high. Without a clear strategy and systematic implementation, BPRDCo risks falling behind competitors that adapt more quickly.

The analysis and design phase were carried out through a case study utilizing the TOGAF Standard 10th Edition, tailored specifically for SMEs at BPRDCo. This study applied the Architecture Development Method (ADM) and was delimited to phases up to Phase F (Migration Planning, ensuring alignment with the project scope. Artifact prioritization was conducted through a gap analysis based on prior research.

This research identifies 11 out of 70 prioritized artifacts in the EA design phase, from the preliminary phase to the migration planning phase. These prioritized artifacts consist of 1 preliminary artifact, 2 architecture vision artifacts, 1 business artifacts, 2 data artifacts, 1 application artifacts, 1 technology artifacts, 1 artifact in the opportunities and solutions phase, and 2 artifacts in the migration planning phase. This study focuses on the prioritized artifacts, which are tailored to the provisions of OJK Circular Letter Number 15/SEOJK.03/2017 and OJK Regulation Number 75/POJK.03/2016 regarding information technology standards for BPR and BPRS (Bank Perekonomian Rakyat Syariah) and is supported by ten related journal references, [7], [21], [30], [31], [32], [33], [34], [35], [19], [36].

The prioritization process mechanism involves assigning weight scores based on the provisions of the regulations and the support from previous research. The POJK provisions are given a weight of 50%, while the contribution from each previous study is calculated at 5% per study. With support from ten previous studies, each prioritized artifact must have a minimum total score of 50% to qualify as a priority artifact. This mechanism ensures that the selected artifacts are not only practically relevant to the regulations but also valid based on academic literature and prior research.

4. ANALYSIS AND RESULTS

This design involves activities such as defining the scope and boundaries of the architecture work, identifying stakeholders, defining architecture principles and methodologies to be used, as well as establishing the governance structure for the architecture project.

4.1. Preliminary Phase

The Preliminary Phase in this research is a necessary stage for implementing a new EA, encompassing the process of outlining the definitions of business and architecture principles. The Principles Catalog is one of the artifacts from the preliminary phase, it contains business and architecture principles that describe what a "good" solution or architecture should look like [18]. These principles provide a structured foundation to ensure alignment between business objectives and IT strategies. In

the context of BPRDCo, the architecture principles outlined in Table 2 serve as a strategic reference for optimizing business processes, improving operational efficiency, and ensuring a scalable and adaptable IT environment. By adhering to these principles, BPRDCo can establish a well-governed EA framework that supports DT, enhances agility, and strengthens regulatory compliance. Table 2 presents the architecture principles of BPRDCo, which serve as a benchmark for SME Bank's EA implementation.

Table 2. Principles Catalog

Architecture	Principles
Business Architecture	Business Enabler
	Business Continuity
	Quality Product
	Compliance with Law
	Service Orientation
	Business/IT Alignment
	Open New Markets
Data Architecture	Data is Integrated
	Data is easy to read, manage, and understand
Application Architecture	Application Usability
	Technology Independent
Technology Architecture	Technology Aligned with Business
	Interoperability
	Adaptability to Change

As shown in Table 2, the Business Architecture Principles focus on supporting business goals as enablers, ensuring continuity of operations, delivering high-quality products, complying with laws and regulations, prioritizing excellent service delivery, aligning IT with business objectives, and enabling expansion into new markets. The Data Architecture Principles emphasize integrating data across systems and making it easy to read, manage, and understand. The Application Architecture Principles highlight the importance of creating user-friendly applications that remain independent of specific technologies. Lastly, the Technology Architecture Principles underline aligning technology with business strategies, ensuring seamless interoperability among systems, and maintaining adaptability to future changes.
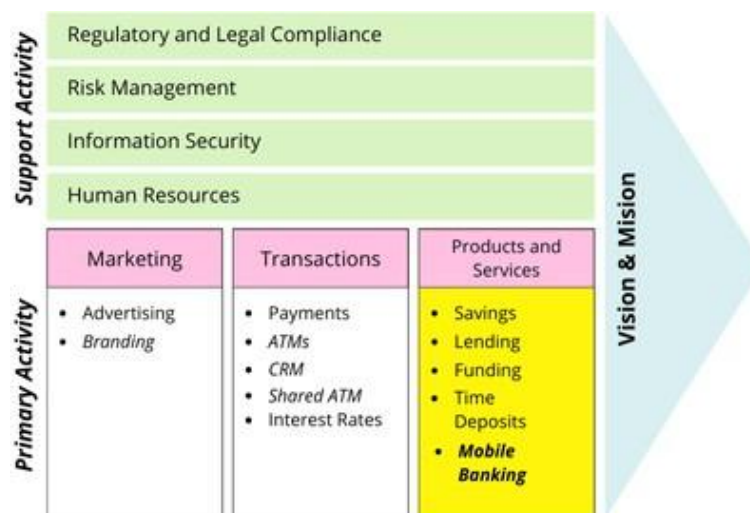
4.2. Architecture Vision

Figure 3. Value Chain Diagram

The Architecture Vision is a phase that defines the scope of the architecture development initiative by identifying stakeholders and outlining the architectural framework solution [18]. The Value Chain Diagram represents an artifact within this phase is a high-level orientation of a company's business process activities [18].

As shown in Figure 3, the core business activities of the BPR align with its vision and mission. The highlighted yellow and bold section indicates the core business targeting DT through *Mobile Banking*. The primary activities focus on Marketing, Transactions, and Products and Services, while support activities like Risk Management and Information Security ensure operational excellence and regulatory compliance. By visualizing this focus, stakeholders are better able to grasp how the architectural changes will directly influence core business functions, improving alignment with organizational goals and driving DT in key service areas. Figure 3 presents Value Chain Diagram Targeting Architecture. The Solution Concept Diagram as shown in Figure 4, is also a part of this phase, this artifact illustrates a solution that encompasses actors, business processes, applications, and technologies related to the architecture development process [37].
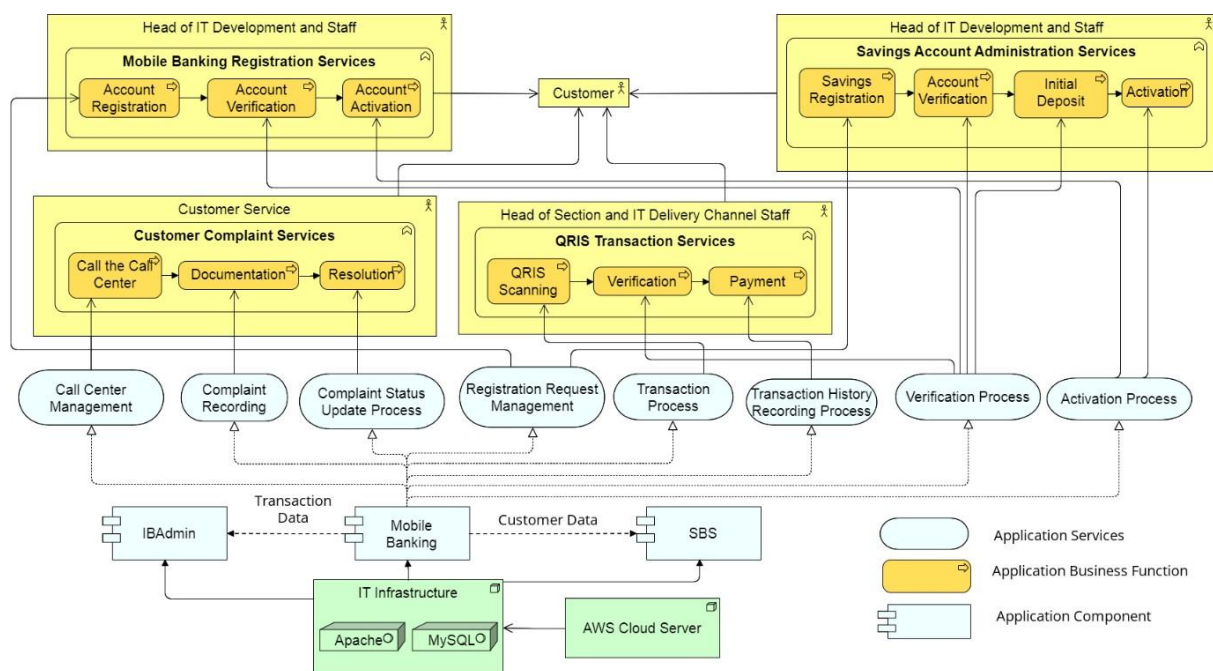

Figure 4. Solution Concept Diagram

As shown in Figure 4, in the context of BPRDCo, four primary business processes have been identified for digitalization. These processes are strategically selected to address key operational inefficiencies and enhance value delivery to stakeholders. For SME Bank, this approach aligns with Enterprise Architecture principles by ensuring that digitalization efforts are systematically planned and integrated within the overall IT strategy. The diagram highlights the involvement of four critical stakeholders: IT Department, Customers, and Customer Service, whose interactions are essential for operational success. These applications are interconnected via a central server, forming a cohesive architecture that enables seamless data exchange and process automation. This interconnected structure supports SME Bank's transition from its baseline architecture to the target architecture, ensuring alignment with business goals, improved service delivery, and a scalable digital ecosystem.

4.3. Business Architecture

Business Architecture is a phase that describes the development of business architecture to support the agreed-upon Architecture Vision [18]. Business Service/Function Catalog as one of its artifacts, is a tool used to identify an organization's capabilities and assess the extent to which governance is applied to its functions. The business processes of BPRDCo involved in this research are described in the Table 3.

Table 3. Business Service/Function Catalog

Services	Business Process/Function
Mobile Banking Operational Services	Savings account administration services
	Customer complaint services
	QRIS transaction services
	Mobile Banking registration services

One key finding conducted through the research process and data collection is that the mobile banking registration process is still performed manually. To address this, digitalization of the relevant business processes/functions, as outlined in Table 3, is necessary. These business processes are the targeted functions for digitalization, referred to in this study as the Target Architecture, Work Package, Solutions, or IT Initiatives. This approach supports BPRDCo in achieving greater operational efficiency, enhancing customer experience, and ensuring scalability for future digital initiatives.

4.4. Data Architecture

The Data Architecture phase outlines a draft solution or target for the data architecture [37]. The Application/Data Matrix provides an overview of how applications interact with various types of required data. Each application performs CRUD (Create, Read, Update, Delete) operations on relevant data entities, enabling the organization to efficiently manage information flow. Table 4 presents the application/data matrix.

Table 4. Application/Data Matrix

Entity	Logical Application Component		
	SBS	IBAdmin	Mobile Banking
Savings account	C, R, U	C, R, U	C
Customer Management	C, R, U	C, R, U	C
Account Management	C, R	R	C, R
Transaction Management	C, R	C, R	C, R
Complaint Records	R	C, R, U	R
Complaint Status	R	R	C
Agent Interaction Logs	C, R	C, R	C, R
QRIS Transaction Management	R	R	-
Merchant Data	R	C, R	C, R
Registration Requests	C, R, U	C, R, U	C, R
User Management	R	R	C, R
Verification Logs	C, R, U	C, R, U	C

The Application/Data Matrix in Table 4 provides an overview of how various logical application components interact with key data entities through CRUD operations. Important aspects include the comprehensive role of applications like SBS, IBAdmin, and Mobile Banking in managing customer and transaction data, supporting complaint handling, and enabling account and user management. This matrix is vital for identifying data dependencies, optimizing application performance, and ensuring data

consistency across platforms. The Conceptual Data Diagram artifact serves to facilitate stakeholders in processing and managing data entities within the architecture development.
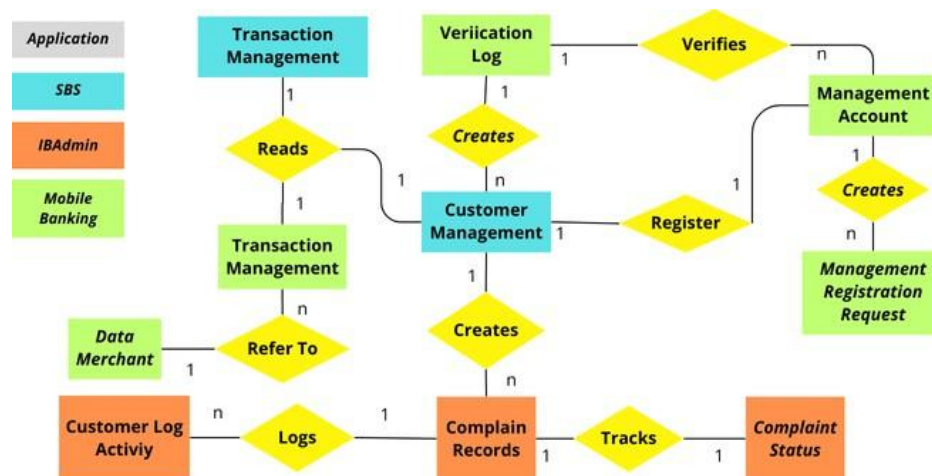

Figure 5. Conceptual Data Diagram

By illustrating the relationships between data entities through an Entity Relationship Diagram (ERD), this artifact simplifies the understanding of how various applications interact. Figure 5 presents a conceptual data diagram of various applications, including the core banking system (SBS), BPRDCo Mobile Banking and IBAdmin BPRDCo. The Conceptual Data Diagram artifact also highlights the relationships between data entities, specifically depicting whether they are one-to-one or one-to-many relationships. By clearly representing these relationships, the diagram ensures that stakeholders can better manage, process, and integrate data entities in the architecture development, optimizing system interoperability and supporting informed decision-making.

4.5. Application Architecture

The Application Architecture is a blueprint that outlines the structure of individual applications to be deployed [37]. Application Interface Catalog can be regarded as the artifact of this phase. The mapping integration of technology through APIs for data processes between mobile banking applications, SBS, and IBAdmin is essential as it shown in Table 5.

Table 5. Application Interface Catalog

Physical Application Component	Relationship		Physical Application Affected
	Interface	Technology	
Mobile Banking	Database	API, MySQL	SBS
	Database	API, MySQL	IBAdmin

As shown in Table 5, prioritizing API development in BPRDCo's mobile banking development will facilitate future integration with other systems. The success of this solution relies on support from three key aspects: the business aspect, which prioritizes the API development process; the data aspect, which ensures standardized formats; and the technology aspect, which focuses on standardized tools. By incorporating these elements into its EA, BPRDCo can build a robust digital ecosystem that supports future innovation and operational efficiency.

4.6. Technology Architecture

Technology Architecture phase outlines EA practices can facilitate the adoption of new technology trends by evaluating whether the organization possesses the necessary capabilities to support

the integration of these technologies [37]. The Technology Standards Catalog shown in Table 6 represents an artifact within the phase, is a repository that documents the enterprise-wide agreed-upon technology standards, including details such as technologies, versions, technology lifecycles, and refresh cycles [37].

Table 6. Technology Standards Catalog

Logical Technology Component	Physical Technology Component	
Platform	Technology Component	Standard
	Database Server	MySQL 8.0, MariaDB 10.6
	Server OS	Ubuntu 24.04 LTS
Application Server	Web Server	NGINX 1.22
	Application Server	Apache Tomcat 10.1
Data Distribution	Router	Cisco Catalyst 9000 Series
	Network Protocol	HTTP/3, IPv6
Client Platform	Mobile Devices	Android 14, iOS 17
	Mobile App Framework	Flutter 3.10 (for cross-platform apps)
Cloud Platform	Cloud Service Provider	AWS (Amazon Web Services)
	Cloud Storage	Amazon S3, Google Cloud Storage
Security Layer	Firewall	Palo Alto Networks Next-Gen Firewall
	Encryption	TLS 1.3, AES-256 Encryption

Table 6 presents the Technology Standard Catalog, highlighting existing technologies in BPRDCo. Items highlighted in green indicate potential technologies that could be standardized by updating to the latest version as part of the targeted technology architecture. This standardization process enhances system compatibility, security, and scalability, enabling BPRDCo to build a resilient and future-proof IT infrastructure.

4.7. Opportunities and Solution

This phase centers on identifying and planning delivery mechanisms that outlines the overall Solution Building Blocks (SBBs) needed to finalize the Target Architecture based on the Architecture Building Blocks (ABBs) [37]. The Project Context Diagram shown in Figure 6 can be considered to illustrates the scope of the work packages to be implemented as part of a larger transformation roadmap.
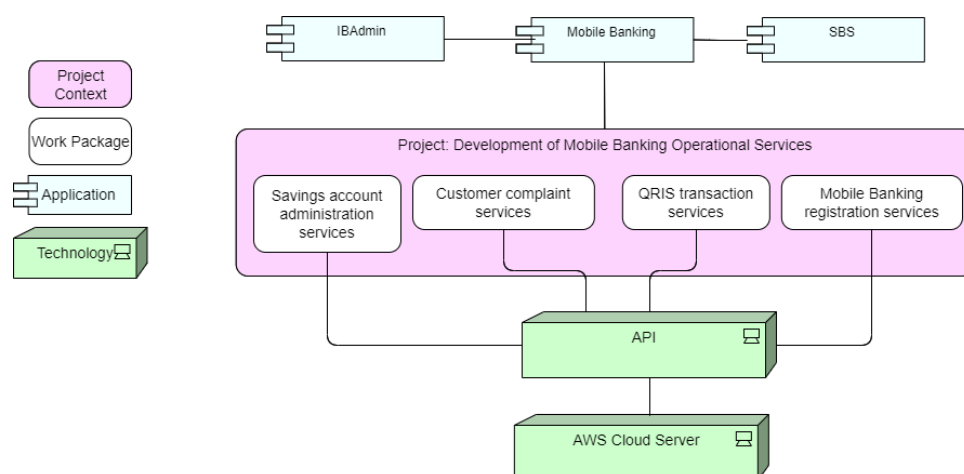

Figure 6. Project Context Diagram

As shown in Figure 6, this diagram connects the work packages with various elements, such as applications and technology services. By visualizing these relationships, stakeholders can better understand how work packages contribute to the overall EA framework, ensuring a cohesive and strategic approach to DT. This alignment supports informed decision-making, resource allocation, and the seamless integration of technology solutions within BPRDCo's operational landscape.

4.8. Migration Planning

Migration Planning aims to finalize the Architecture Roadmap and the supporting Implementation and Migration Plan [37]. Business Value Assessment belongs to the set of artifacts in the phase, is the process of evaluating the value and risks associated that can be done by creating a matrix that combines two dimensions which a value index and a risk index [37]. In this research, the business value is determined based on a comparison of risk, value, and NPV (Net Present Value), which represents the value expected after the investment is implemented, for each business function proposed as a solution. Based on investment evaluation analysis, as outlined in Figure 7, the mobile banking registration digitization work package ranks as the top priority due to its high risk-value estimation and the indicated highest investment value.
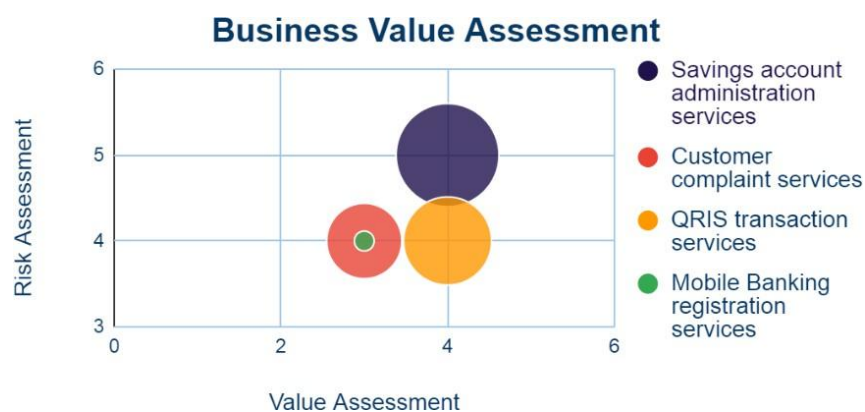

Figure 7. Business Value Assessment

Based on the investment evaluation analysis, the results presented in Figure 7 indicate that the digitalization of mobile banking registration holds the highest priority. This prioritization is determined by assessing risk, value estimation, and investment levels, where this initiative shows the most significant potential impact. The visualization of business value is represented in the matrix diagram in Figure 7, providing stakeholders with a clear perspective on strategic investments. By integrating this assessment into BPRDCo's EA framework, the bank can ensure optimal resource allocation, risk management, and alignment with long-term DT goals. In this DT strategy, The Architecture Roadmap is a critical output resulting from the phase. It serves as a detailed plan outlining individual work packages required to achieve the Target Architecture. Table 7 BPRDCo's DT Strategy to implement their IT initiatives.

Table 7. IT Implementation Roadmap

Work Packages	Period									
	2025				2026				2027	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Mobile Banking Registration Services	▓	▓								
QRIS Transaction Services			▓	▓						

Work Packages	Period									
	2025				2026				2027	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Savings Account Administration Services						▊	▊	▊		
Customer Complaint Services									▊	

As shown in Table 7, the IT Implementation Roadmap highlights the planned work packages and their respective execution periods. The plan is based on the prioritization of business value identified earlier, ensuring that high-impact initiatives like Mobile Banking Registration and QRIS Transactions are implemented first to maximize benefits and align with the Target Architecture. This approach, facilitates a seamless and efficient implementation process, helping the bank achieve its long-term strategic goals while improving customer experience and operational efficiency.

5.   DISCUSSIONS

To meet business requirements based on Business Architecture principles, which enhance product quality aligned with strategic goals and market needs, ensuring relevance and customer satisfaction, BPRDCo has not fully achieved this objective, as existing gaps and potentials remain, particularly in improving operational services for mobile banking. These gaps highlight the need for targeted development efforts to address specific areas of weakness. This study establishes clear delimitations at the outset, limiting the scope to the migration planning phase. It does not extend to implementation governance and change management phases, nor does it measure the maturity of the EA or design its governance.

To evaluate the effectiveness of using the TOGAF 10 framework in developing an Enterprise Architecture blueprint and DT strategy for BPRDCo, this research employs various validation methods as part of the evaluation phase. These include credibility testing through approval and acceptance letters from BPRDCo, transferability testing by providing design results and relevance evaluation forms to experts for assessment, dependability testing through reviews and feedback from the academic advisor, and confirmability testing via input and final approval from examiners regarding the EA design. Additionally, the validation process involves aligning research steps with the TOGAF 10 framework, triangulating data between interviews and internal documents, and obtaining evaluations from research subjects and external experts. The validation results, reflected in the validation form, indicate an average score falling into the "Agree" and "Strongly Agree" categories. This demonstrates that the research approach aligns with expectations and is considered effective in the context of implementing EA for BPRDCo.

To measure the effectiveness of the EA blueprint in supporting DT strategies, multiple quantitative metrics are considered. One key metric is average service completion time, which reflects improvements in business process efficiency. Before EA adoption, the account creation process for mobile banking took an average of two business days, whereas after integrating digitalized automated workflows and standardized data models, it was reduced to just a few hours, marking a significant improvement. Similarly, the process of issuing a customer's physical savings book, which previously required one business day, was streamlined to be completed within the same day. Another critical metric is transaction volume, which assesses the scalability of operations. Prior to EA implementation, the system handled an average of 12,000 transactions per day. After implementation, with optimized IT infrastructure and process automation, this capacity increased to 30,000 transactions daily. Additionally, mobile banking user growth is used to measure digital adoption. Before the EA transformation, active mobile banking users accounted for only 30% of total customers, whereas after implementing mobile-first strategies and API-driven integrations, this number rose to 55%, demonstrating a significant shift toward digital

services. These findings align with research, which indicates that structured EA frameworks contribute to increase IT-business alignment within organizations [12].

The comparison with other studies reveals some important distinctions. While other studies utilize TOGAF 9 as a framework for DT, this research employs TOGAF 10, which offers several advantages over TOGAF 9.2. One key improvement is its stronger emphasis on Agile methodology, which has become increasingly relevant in modern enterprise environments. Furthermore, TOGAF 10 introduces a two-part delivery structure consisting of TOGAF Fundamentals and TOGAF Series Guides. TOGAF Fundamentals provide the core framework principles, while the Series Guides offer practical guidance on specific topics, making TOGAF 10 more navigable, expandable, and adaptable. These enhancements enable a more flexible and business-oriented approach to enterprise architecture, making TOGAF 10 a more effective tool for modernization and transformation. Therefore, this study's use of TOGAF 10 provides a more contemporary and adaptive approach compared to previous research that relied on TOGAF 9.2 [19], [22], [30].

Additionally, while previous studies focus on large-scale banks, this research specifically targets small-scale banks, such as SME Bank [5], [38], [7]. The studies cited do not explicitly target BPRDCo, which is central to this research. This focus on small-scale banks is significant, as the dynamics and resource limitations in SMEs present unique challenges and opportunities for DT that larger organizations may not face. The implications of using the framework for SME Bank are considerable. By tailoring DT strategies to the needs of smaller financial institutions, the framework can guide SMEs in overcoming resource constraints and implementing cost-effective technological solutions. This research, therefore, provides critical insights that are more directly applicable to SME Bank's specific context compared to broader studies on larger organizations.

DT can provide numerous benefits to SMEs, enhancing productivity and efficiency by utilizing digital tools for better data management, automating business procedures, and improving teamwork [39]. The results of this study align with the theoretical underpinnings discussed in prior research, particularly the integration of ambidextrous ITG mechanisms, such as innovation and operational stability, for driving successful DT. This aligns with the works of R. Mulyana, L. Rusu, and E. Perjons [5] and A. G. C. Mudia, A. A. Z. Ussu, and A. Mitzalina [40], where the importance of managing both exploration (innovation) and exploitation (IT operational) initiatives is highlighted as a key factor for successful DT.

This study strengthens the theoretical foundation by demonstrating how such mechanisms can be effectively applied to a smaller-scale institution like BPRDCo, providing further evidence of the relevance of these ITG principles across different organizational sizes. Therefore, this study strengthens rigor by adhering to established theories in ITG, DT, and EA, ensuring a robust analysis. By implementing TOGAF and considering the balance between exploration and exploitation in managing DT initiatives, the study provides a comprehensive and structured approach to DT in small-scale organizations.

The findings of this study not only strengthen the theoretical foundations but also enhance its relevance by highlighting BPRDCo's ability to harmonize data, applications, and technology, which aligns with the broader principles of EA in supporting business strategies. While previous research has emphasized EA as a crucial enabler of DT [25], this study expands the discussion by demonstrating how TOGAF Standard 10th Edition can be applied in a smaller institution. The adoption of TOGAF in BPRDCo's DT efforts is a pivotal factor in ensuring the study's relevance, offering a practical roadmap for other organizations with similar capabilities to embark on their own DT journeys.

6.   CONCLUSION

This research answers the question, "How can an Enterprise Architecture blueprint and a Digital Transformation strategy be developed using TOGAF 10 for an SME bank in Indonesia?" by mapping the existing conditions and operational service targets of BPRDCo, as well as designing an EA blueprint that covers phases from the Preliminary Phase to Migration Planning. This blueprint, complemented by implementation guide artifacts such as risk estimations, investment value, and development roadmap, provides a guide for the company's digital transformation process. Evaluation through layered criteria indicate that the TOGAF 10-based approach is effective in developing the EA blueprint and digital transformation strategy for BPRDCo.

This study has limitations, including potential bias due to reliance on a single case study, limited applicability to the broader banking context, the influence of researcher subjectivity, and findings that may only be generalizable to similar industries. The main contribution of this study is its focus on the practical application of advanced DT technologies within BPRDCo, which has a relatively lower technological capability compared to larger institutions. By leveraging TOGAF and focusing on the institution's specific needs and capabilities, this study offers valuable insights into how small-scale banks can successfully integrate DT strategies.

While this study reinforces existing theoretical concepts regarding the role of IT governance and enterprise architecture in DT, it also presents a unique contribution by applying these principles to a smaller-scale organization. It highlights the adaptability of these frameworks to different organizational contexts, offering valuable insights for similar institutions looking to enhance their digital capabilities. Future studies could explore multiple case studies and long-term impacts of TOGAF-based DT strategies across different small-scale financial institutions.

The findings of this research have significant implications for both academia and industry. For small financial institutions, the study provides a structured approach to DT, demonstrating how TOGAF 10 can be adapted to their specific constraints and opportunities. For researchers, it reinforces the adaptability of enterprise architecture frameworks in different organizational contexts, offering empirical evidence on their effectiveness beyond large enterprises. Future research could expand on these findings by conducting multi-case studies across various small-scale financial institutions to enhance generalizability. Additionally, longitudinal studies could examine the long-term impact of TOGAF-based DT strategies, evaluating how they influence business performance, customer experience, and regulatory compliance over time. Further exploration into the integration of emerging technologies, such as AI-driven automation and blockchain, within the TOGAF framework could also provide valuable insights into the next stage of digital transformation for SME banks.

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