

Ambidextrous Business Architecture Governance for Digital Government Transformation: A TOGAF 10-Based Case Study

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Abstract. Digital government transformation (DGT) through the electronic-based government system (SPBE) requires government organizations to maintain compliance while responding to emerging digital needs. In GovOrg, architecture governance remains documentation and approval-driven, whereas cross-unit process integration, AI-supported analysis, risk scoring, and business capability changes require a more adaptive governance approach. This study proposed an ambidextrous business architecture (BA) governance approach using TOGAF 10 to balance compliance and controlled adaptiveness in SPBE-based DGT. A qualitative single-case study was conducted using design science research methodology (DSRM), with selected TOGAF ADM phases guiding artifact development. Data was collected through semi-structured interviews with three GovOrg stakeholders and document triangulation. The proposed artifacts include BA requirements, requirement impact assessment, governance decision model, governance guardrails, and governance processes aligned with selected TOGAF ADM phases. The proposed artifacts were preliminarily evaluated by three GovOrg stakeholders and an external IT governance and enterprise architecture expert, indicating their utility, feasibility, consistency, and contextual fit, while the findings remain preliminary and limited to the GovOrg case, requiring further evaluation across multiple public-sector organizations.

Keywords: Ambidextrous Business Architecture Governance, Business Architecture, Digital Government Transformation, SPBE Governance, TOGAF 10

1. INTRODUCTION

Government organizations (GovOrg) are increasingly required to maintain public accountability, compliance, and continuity while responding to rapid technological change and digital innovation demands through digital government (DG) [1], [2], [3]. DG reshapes governance structures, business processes, digital capabilities, and cross-institutional collaboration to deliver integrated, data-driven, and user-centric public services [3], [4], [5], [6], [7]. In Indonesia, DGT is implemented through the Electronic-Based Government System (SPBE), established under Presidential Regulation No. 95 of 2018 to integrate government processes, services, data, applications, infrastructure, and information security across public institutions [4], [6], [8]. This direction is reinforced by Minister of Administrative and Bureaucratic Reform Regulation No. 8 of 2026, which evaluates DG maturity and performance [9]. However, the 2024 national SPBE evaluation reported an overall maturity index of 3.12, while the governance and management domains scored only 2.62 and 1.86, respectively [10]. These findings indicate that although SPBE implementation continues to advance, governance capabilities remain insufficient to coordinate business capability changes and architectural adaptation for sustainable DGT [11], [12], [13], [14].

GovOrg, a pseudonym for a financial sector government organization, operates under the SPBE framework and is responsible for financial transaction reporting, evaluation, and analysis to support regulatory compliance and organizational decision-making [13], [14]. The cross-unit nature of financial transaction reporting spanning reporting, supervision and compliance, analysis and evaluation, and partner coordination means that a change in business capability can affect processes, responsibilities, information, and supporting architecture. GovOrg has formal architecture management mechanisms supported by strategic planning documents, IT master plan, formal approval processes, and the architecture information system (SIA), ensuring compliance, documentation, accountability, and strategic alignment [6], [8]. However, emerging needs such as cross-unit process integration and business capability change management may arise outside formal planning cycles and require more adaptive yet controlled governance mechanisms [13], [15], [16], [17].

To support this governance approach, business architecture (BA) is the focus of this study because the governance challenges in GovOrg primarily concern business capability changes, cross-unit business processes, and organizational coordination rather than technology architecture alone. As a core domain of enterprise architecture (EA), BA translates strategic objectives into business capabilities, business processes, business services, and organizational structures, providing the foundation for subsequent data, application, and technology architecture development [18], [19]. Accordingly, this study focuses on BA governance, while other architecture domains are considered only as downstream impacts of business capability changes. Empirical studies further show that BA strengthens strategic alignment and supports digital transformation (DT) by aligning business capabilities with organizational objectives and improving their performance [20]. The effectiveness of BA governance is closely influenced by the EA approach adopted within an organization. Traditional EA governance provides structured planning, documented artifacts, and long-term strategic alignment, but may be less responsive to rapidly evolving business capabilities during DT [21], [22], [23]. Agile EA governance addresses this limitation through adaptive architectural practices and iterative mechanisms [18], [24], [25]. However, unrestricted agility may conflict with governance, compliance, and accountability requirements in regulated public organizations. Therefore, a controlled approach is needed to combine the governance discipline of traditional EA with the adaptive responsiveness of agile EA [26]. At the BA governance level, this approach is reflected in two governance paths: traditional BA governance, which follows established planning and approval mechanisms, and hybrid BA governance, which combines these formal controls with adaptive assessment for emerging business capability changes.

This two-path approach reflects the ambidextrous IT governance (ITG) perspective, which enables organizations to simultaneously pursue exploitation and exploration while maintaining governance effectiveness during DGT [26], [27], [28], [29]. In GovOrg, ambidextrous ITG becomes increasingly important as business capabilities evolve through digital innovations such as AI-supported analysis and decision-support processes, requiring innovation to remain aligned with governance, compliance, and organizational accountability [15], [16], [30], [31], [32]. Accordingly, these principles provide the conceptual foundation for operationalizing ambidextrous governance within BA to govern business capability changes in GovOrg.

Previous studies demonstrate that TOGAF ADM supports DT through structured EA development, migration planning, and business IT alignment [33], [34], [35]. Other studies extend EA with agile principles to improve responsiveness through iterative architecture practices and adaptive governance mechanisms [22], [36], [37]. Meanwhile, research on ambidextrous EA and ambidextrous ITG emphasizes the need to reconcile governance stability with organizational adaptability [26], [27], [28], [30], [32], [38], [39]. However, despite these advances, existing studies provide limited guidance on how ambidextrous governance can be operationalized within BA to govern business capability changes in highly regulated public-sector organizations such as GovOrg. To address this gap, this study proposes an ambidextrous BA governance approach that operationalizes ambidextrous governance through BA requirements, business capability change assessment, governance decision paths, governance guardrails, and SIA synchronization to support controlled adaptiveness while maintaining compliance [19], [40]. Accordingly, this study addresses the following research question: How can an ambidextrous BA governance approach be designed to balance compliance and controlled adaptiveness for DGT in GovOrg?

2. METHODS

2.1. Conceptual Method

The conceptual model of this study presented in Figure 1 is adapted from the design science research (DSR) framework to illustrate the relationship between the GovOrg context, the development and evaluation of the ambidextrous BA governance artifact, and the theoretical foundation that supports the research [41]. Figure 1 illustrates how the model integrates the organizational environment with the information systems research process and the underlying knowledge base. The environment represents the GovOrg conditions, including stakeholders, organizational structures, governance processes, business capabilities, and DGT-related requirements. The information systems research process follows DSRM to guide the development and preliminary evaluation of the proposed ambidextrous BA governance artifact. Within this process, TOGAF ADM provides architectural guidance for artifact design, while qualitative interviews and document analysis provide evidence for requirements elicitation, validation, and refinement. The knowledge base integrates the theoretical foundations of DGT, BA,

ambidextrous ITG, agile EA, and TOGAF ADM with DSRM and qualitative case study methods to support proposed artifact's design and evaluation.

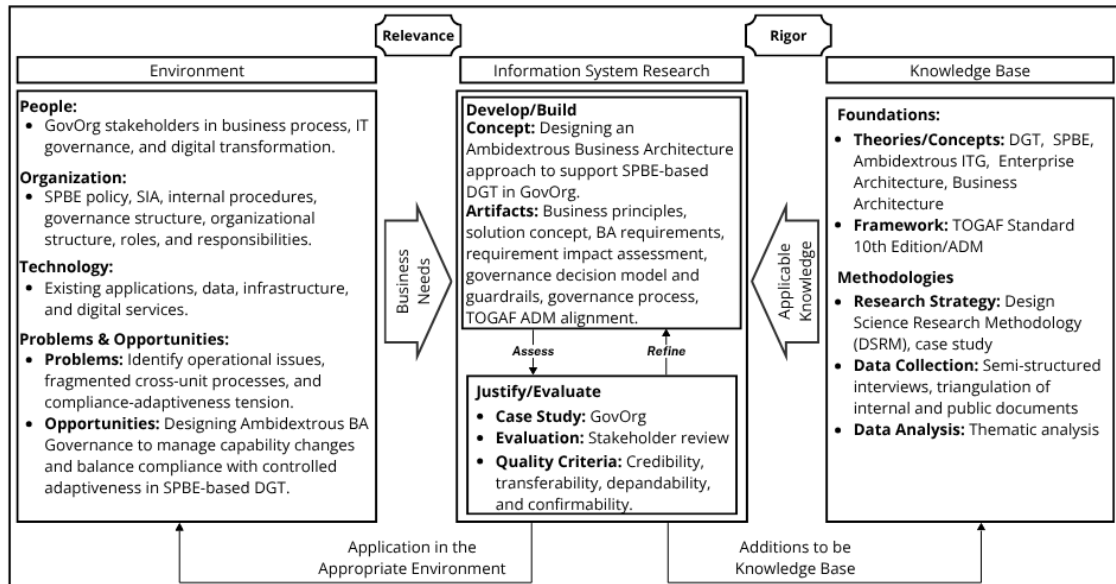


Figure 1. Conceptual model (adapted from DSR Hevner [41])

2.2. Research Scope

This study is limited to BA domain as business capability governance is the primary unit of analysis. Although governance decisions consider inputs from the data, application, and technology architecture domains, these are treated as supporting rather than independent domains. Accordingly, artifact development is limited to the TOGAF ADM preliminary phase, architecture vision, business architecture, and architecture change management, as these phases directly support business capability governance. Other ADM phases and organization-wide EA implementation are beyond the scope of this study.

2.3. Research Stages

The research stages follow the six stages of design science research methodology (DSRM) to develop and preliminarily evaluate the proposed ambidextrous BA governance artifact [42]. Figure 2 summarizes the research stages and illustrates how the study addresses GovOrg's problems while maintaining methodological rigor. The DSRM stages in Figure 2 integrate empirical evidence from interviews and document analysis with TOGAF ADM-guided artifact development, demonstration, and preliminary evaluation. Table 1

summarizes the data sources, analysis techniques, and artifact outputs associated with each stage.

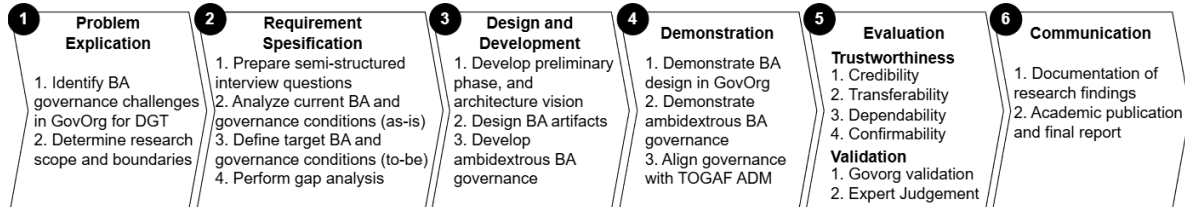


Figure 2. Research stage (adapted from DSRM Peffers [42])

Table 1. Mapping of DSRM stages

DSRM Stage	Data Source	Analysis Technique	Artifact Output
Problem Explication	GovOrg stakeholders and organizational documents	Problem analysis and document analysis	Problem definition and research scope
Requirement Specification	Semi-structured interviews, organizational and SPBE documents	Thematic analysis, document triangulation, and gap analysis	BA requirements and as-is/to-be conditions
Design and Development	BA requirements, TOGAF ADM and research literature	Requirements mapping and architecture design	RIA, governance decision model, guardrails, governance process, RACI, and SIA synchronization mechanisms
Demonstration	Proposed artifacts and change scenario	Scenario-based demonstration and TOGAF ADM alignment	Demonstrated ambidextrous BA governance process
Evaluation	GovOrg stakeholder and external expert review of proposed artifacts	Artifact evaluation and trustworthiness assessment	Evaluation findings and design refinements
Communication	Research findings, final artifact	Synthesis and documentation	Final research manuscript and proposed approach

Overall, the stages form a traceable flow from problem identification and requirements elicitation to artifact development, demonstration, and evaluation. Empirical findings define BA governance requirements, while TOGAF ADM translates them into governance artifacts and mechanisms. The artifact is then demonstrated and assessed to ensure relevance to GovOrg and support refinement.

2.4. Data Collection and Analysis

2.4.1. Data Collection

Primary and secondary data were gathered to support the elicitation and development of the proposed ambidextrous BA governance artifact. Primary data were obtained through semi-structured interviews with three stakeholders from GovOrg who were purposively selected based on their direct involvement in architecture management through SIA, IT governance, SPBE implementation, digital transformation, and business capability management, enabling them to provide information-rich perspectives relevant to the research objectives [43]. Secondary data were obtained through document triangulation using internal and public documents to support and validate the interview findings [44]. The types, sources, and purposes of the collected data are summarized in Table 2.

Table 2. Primary and secondary data

Topic	Data Range	Respondent	Position
Primary Data			
Understanding GovOrg existing business processes, future targets, strategies and DT challenges	April – May 2026	Respondent 1 (R1)	Head of digital and technology unit (Architecture governance, digital strategy)
Observing BA conditions, SPBE artifacts, architecture and governance management		Respondent 2 (R2)	Staff of digital and technology unit (Architecture management, SPBE implementation)
Identifying and validating BA requirements, capability change needs, and AI related initiatives		Respondent 3 (R3)	Staff of digital and technology unit (Business capability management, business process governance)

Topic	Data Range	Respondent	Position
Secondary Data			
GovOrg Strategic Plan 2025 – 2029, SPBE Evaluation Report 2024, GovOrg Annual Report, organizational structure, policy and procedure document, and SPBE architecture artifacts.			

Data saturation was assessed during thematic analysis of the interview transcripts and was considered achieved when no new meaningful codes emerged and the identified themes were consistently confirmed across interview, internal, and public documents [45].

2.4.2. Data Analysis

The collected data were examined through document and thematic analysis [46]. Interview transcripts were coded, grouped and refined into themes through comparison across respondents and organizational documents. The researcher conducted the analysis, while document triangulation was used to confirm findings or identify discrepancies [47], [48]. Where discrepancies occurred, findings were reviewed against relevant organizational documents and cross-respondent evidence before the themes and their BA governance implications were finalized. The refined themes were translated into BA requirements and mapped to selected TOGAF ADM activities to develop the proposed ambidextrous BA governance artifacts. The resulting thematic findings are presented in Table 3.

Table 3. Thematic analysis

Theme	Code	Representative Interview Excerpt	BA Governance Implication
Business capability integration	P1 – Key Process	<i>"The process starts when reporting entities submit reports... followed by validation and analysis across multiple organizational units."</i> (R2)	Supports BA requirements for governing cross-unit business capabilities.
AI-enabled business capability	P2 – Key Process	<i>"Currently, reports are still processed using a first-in-first-out approach and cannot yet be analyzed rapidly."</i> (R3)	Indicates the need for adaptive governance of AI-enabled business capability changes.

Theme	Code	Representative Interview Excerpt	BA Governance Implication
Adaptive BA governance	A2 – Key Application	<i>"AI can be introduced as an enhancement to the analysis and examination services."</i> (R3)	Supports governance of capability enhancement through digital innovation.
	G1 – Key Governance	<i>"Even with agile practices, government organizations must still comply with formal governance."</i> (R1)	Highlights the need to balance controlled adaptiveness with compliance.
	P3 – Key Process	<i>"Changes may be triggered by new projects, application changes, leadership directives, data requirements, or integration needs."</i> (R2)	Supports governance decision paths for managing business capability changes.

The interview protocol was organized around business capability governance, governance mechanisms, business capability changes, and digital innovation. Key questions addressed how business capability changes are identified and governed, how such changes are assessed and approved, how cross-unit impacts are managed, and how digital innovations such as AI-related initiatives are considered in business capability development. The questions were intentionally open-ended to allow respondents to describe existing practices and emerging needs without being constrained by the governance model.

2.4.3. Artifact Evaluation and Validation Procedure

The proposed artifacts were preliminarily evaluated by three GovOrg stakeholders (R1-R3) together with an external IT governance and EA expert with CISA, TOGAF, and COBIT certifications and over 25 years of IT planning and architecting consulting experience in Indonesian organizations. Evaluators reviewed the artifacts against GovOrg's governance practices, relevant documents, the demonstrated business capability change scenario, and established EA and governance practices, considering utility, completeness, consistency, feasibility, and contextual fit. These criteria were mapped to Shenton's [48] trustworthiness criteria of credibility, transferability, dependability, and confirmability. Evaluation feedback and identified shortcomings were documented and translated into design refinements, as summarized in Section 3.6.

3. RESULTS AND DISCUSSION

The results present the proposed ambidextrous BA governance design artifacts developed from the refined themes in Table 3, ensuring traceability between empirical findings, BA requirements, and governance design.

3.1. Preliminary Phase

The preliminary phase establishes the governance baseline and business principles guiding the proposed ambidextrous BA governance artifact. GovOrg maintains formal architecture governance through strategic planning documents, an IT master plan, formal approval structures, and the SIA repository, supported by interview evidence (codes G1 and P3 in Table 3). While this governance supports compliance and accountability, it is less responsive to emerging business capability changes. From a BA perspective, such changes require careful governance because they may affect core business processes, organizational responsibilities, sensitive information, public accountability, and cross-unit coordination. Accordingly, the business principles were translated into the proposed principle-based governance guardrails that define the operational decision criteria for the governance model in section 3.5.2, as shown in Table 4.

Table 4. GovOrg business principles catalog

Principle	Statement	Principle-Based Governance Guardrail
Business Continuity	Core business processes must continue to operate during architecture changes and DT initiatives.	Capability changes must not disrupt critical business processes.
Comply with Laws & Regulations	Architecture development and management must comply with applicable regulations, DGT policies, and internal governance mechanisms.	Changes affecting sensitive data, compliance, approvals, or public accountability require risk-based review and authorized approval.
Maximize Benefit to the Enterprise	Architecture initiatives must provide value to GovOrg as a whole, not only to a specific unit or function.	Capability changes must be assessed based on enterprise value, cross-unit alignment, and contribution to integrated financial transaction reporting and evaluation.

The principles in Table 4 translate the governance baseline into decision guardrails for business capability changes and provide the foundation for the governance decision model in Table 7. However, GovOrg remains largely documentation- and approval-driven, limiting responsiveness to changes outside formal planning cycles. These principles therefore guide the proposed BA artifact across subsequent TOGAF ADM phases, balancing governance compliance with controlled adaptiveness in DGT.

3.2. Architecture Vision

The architecture vision defines the target business scope and strategic direction of the proposed ambidextrous BA governance artifact that guided by the preliminary phase. Derived from the refined themes in Table 2, it identifies the organizational capabilities required to support controlled business capability changes. As financial transaction reporting and evaluation span multiple organizational units, the target BA requires alignment across business capabilities, organizational actors, supporting applications, data, and governance mechanisms. Figure 3 presents the business-focused solution concept, positioning BA as the primary architectural layer, while data, application, integration, and technology architecture are included only as supporting enablers.

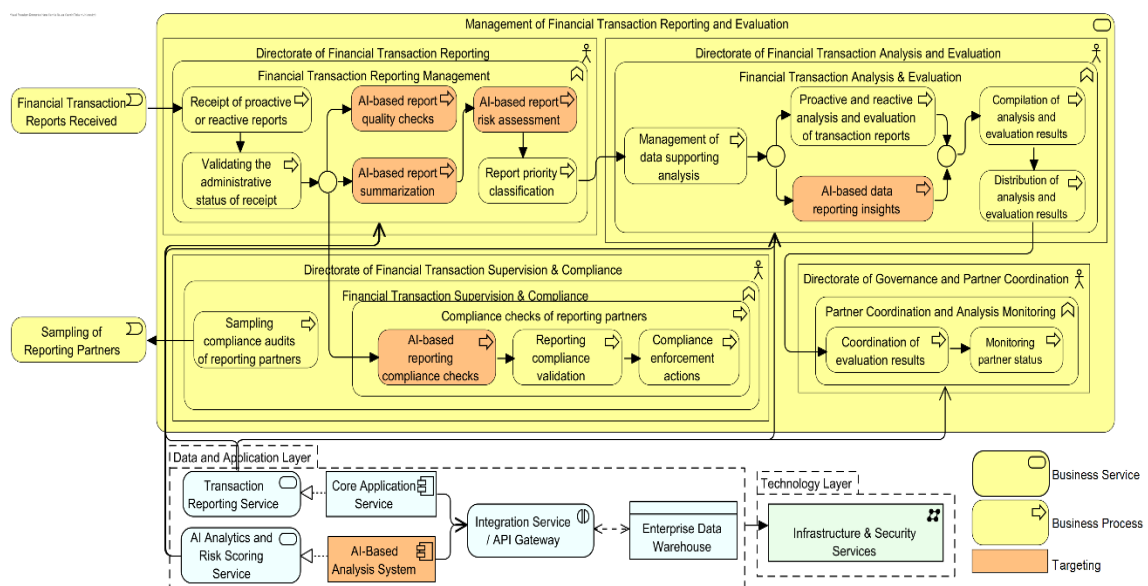


Figure 3. GovOrg solution concept diagram

The solution concept in Figure 3, derived from the business capability integration theme (P1), organizes GovOrg's target BA into four business areas which are financial transaction reporting management, financial transaction supervision and compliance, financial transaction analysis and evaluation, and governance and partner coordination. These areas represent the end-to-end flow from report submission, validation, quality checking, risk assessment, priority classification, compliance checking, analysis, evaluation, result distribution, and follow-up monitoring. These areas define the required business capabilities that drive the supporting data, application, and technology architecture.

Figure 3 illustrates the relationship among EA domains, with BA defining the target business capabilities, processes, actors, services, and governance requirements that guide DGT. Although this study focuses on BA governance, supporting data, application, and technology architectures are included to illustrate how the target BA is realized across the enterprise. These business requirements are supported by data architecture through information management and traceability, application architecture through business applications and workflow automation, and technology architecture through infrastructure, platforms, networks, and security capabilities. This relationship ensures that business capability changes remain traceable from business requirements to data, application, and technology impacts before being governed and synchronized through SIA.

Consistent with the AI-enabled business capability theme (P2 and A2), Figure 3 includes AI as a proposed decision-support capability for report quality checking, summarization, risk assessment, compliance checking, and reporting insights. AI supports prioritization, quality assessment, risk identification, and insight generation, while validation, evaluation, and follow-up decisions remain the responsibility of authorized actors. Outputs involving sensitive data, compliance actions, or high-risk cases require review by the process owner and, where necessary, escalation to the appropriate governance authority. Accordingly, the proposed vision strengthens report quality, AI-assisted analytics, data traceability, and cross-unit integration while ensuring that business capability changes remain auditable, accountable, and synchronized through formal governance mechanisms and SIA.

3.3. Business Architecture

The BA requirements were derived from the refined themes in Table 3 to support DGT through integrated, traceable, and governed business capabilities. Rather than focusing solely on business process design, the proposed BA incorporates governance mechanisms to ensure capability changes remain controlled, documented, and aligned with formal architecture artifacts. Table 5 presents the proposed BA requirements used as the basis for developing the proposed ambidextrous BA governance artifact.

Table 5. GovOrg BA requirements

Business Architecture Requirements	Code theme	Governance Implication
Integrate proactive and reactive reporting and evaluation across units	P1	Requires cross-unit process governance
Align business processes, applications, and data	P1, P3	Require architecture traceability
Enable analytics and AI support	P2, A2	Requires AI governance, and validation mechanism
Maintain human validation in AI-supported processes	P2, A2, G1	Requires accountability and role clarity
Manage business capability changes through SIA and formal approval	G1, P3	Requires ambidextrous BA governance

Table 5 shows that the proposed BA requirements integrate governance requirements for both compliance and controlled adaptiveness. Requirements related to cross-unit process integration, architecture traceability, and human validation represent the exploitation perspective because they emphasize control, accountability, and operational consistency. Meanwhile, requirements related to AI-enabled capabilities, analytics, and capability change management represent the exploration perspective because they support innovation and responsiveness to emerging needs.

To operationalize these requirements, each BA requirement is translated into a business capability change and assessed through a requirement impact assessment (RIA). The assessment classifies each proposed capability change into the appropriate governance

path before it is validated, approved, and synchronization through SIA. The resulting capability changes are documented through BA artifacts, including capability maps, process architecture updates, architecture decision records, and architecture roadmaps, ensuring traceability, consistency, and repository alignment.

3.4. Requirement Impact Assessment for Business Capability Changes

Following the BA requirements derived from the refined themes in Table 3 and summarized in Table 5, RIA identifies the business capability changes required to support the BA. This assessment translates BA requirements into capability-level changes and evaluates their impact on business processes, actors, data, applications, and governance artifacts. It follows the sequence of requirement, capability change, governance path, and SIA synchronization, ensuring BA requirements are managed as governed capability changes rather than only as design statements. Table 6 presents the proposed RIA artifact that translates BA requirements into governed business capability changes.

Table 6. GovOrg RIA for business capability changes

Business Process / Capability	Change Category	Required Impact on Target BA	Governance Implication
Financial transaction reporting management	Improve	Improve reporting through better status tracking, document management, and integration with supervision and analysis activities	Update reporting capability records, process architecture, and related decision records in SIA.
Financial transaction supervision and compliance	Improve	Strengthening supervision through report quality checks, compliance validation, and structured follow-up of findings	Update supervision process architecture, compliance review records, validation outcomes, and follow-up documentation in SIA.
Financial transaction	Improve	Enhance analysis with AI-supported extraction, summarization, risk scoring,	Update analytical capability records, AI validation rules, escalation records, and

Business Process / Capability	Change Category	Required Impact on Target BA	Governance Implication
analysis and evaluation		insight generation, and human validation	decision authority documentation in SIA.
Partner coordination and analysis and monitoring	Improve	Improve coordination through clearer result sharing, clarification mechanisms, and follow-up monitoring	Update coordination process architecture, follow-up records, and partner interaction documentation in SIA.
Reporting data insight discovery	Add	Require a new capability for AI-enabled insight discovery and data-driven analysis from reporting data	Record the new capability and its relationship with reporting data sources, analytical processes, and supporting application/data implications in SIA.
Business capability change management	Add	Require a governance capability to capture, assess, classify, approve, monitor, and synchronize business capability changes. Validated changes in the current period become input for roadmap adjustment and IT master plan update in the next planning cycle.	Record the architecture change backlog, governance path classification, architecture decision records, approval status, capability map updates, process architecture updates, and roadmap-related inputs in SIA.

Table 6 shows that the proposed BA primarily enhances existing business processes and introduces two new capabilities, including reporting data insight discovery and business capability change management. Reporting data insight discovery enables AI-supported analysis, evaluation, prioritization, and risk assessment, whereas business capability change management governs the recording, assessment, classification, approval,

monitoring, and synchronization of capability changes with SIA. Unlike the current governance, which mainly records changes after formal approval, the proposed RIA evaluates capability changes before implementation, classifies the appropriate governance path, and synchronizes approved changes into SIA. For example, introducing AI-supported report summarization requires analytical capability records, process architecture, architecture decision records, and AI validation rules to be synchronized in SIA before the capability becomes operational. Validated changes subsequently become inputs for roadmap and IT master plan updates when they have broader architectural, resource, or strategic impacts.

3.5. Ambidextrous BA Governance Model

3.5.1. Rationale and Scope of Ambidextrous BA Governance

The proposed ambidextrous BA governance model explains how GovOrg can manage business capability changes in an adaptive yet controlled manner, consistent with the adaptive BA governance theme (G1 and P3) identified in Table 3. The need for this model arises because the target BA introduces cross-unit process integration, AI-enabled analytical support, improved data utilization, and new capability change requirements that cannot be managed solely through BA design. In GovOrg, architecture governance operates within public-sector environment characterized by formal hierarchy, DGT compliance, layered approval, sensitive data, low risk appetite, and reliance on strategic plan, IT master plan, and SIA. Therefore, adaptive changes must remain governed through established governance guardrails, risk-based review, formal approvals, and SIA synchronization.

The proposed model focuses on BA governance rather than system implementation, application development, technical deployment, or project delivery. BA is used to identify business capability changes, assess their organizational impact, and determine implications for other EA domains. Capability changes requiring new data, application, integration, security, or technology services, these become inputs for the corresponding EA domains through their respective governance and delivery processes.

Accordingly, the proposed model balances compliance with controlled adaptiveness. Traditional BA remains the compliance backbone for maintaining stability, documentation, formal approval, and alignment with strategic plan, IT master plan, and SIA. Meanwhile,

the hybrid BA governance (controlled adaptiveness) provides a limited space for managing emerging capability changes through architecture change backlog, risk-based review, limited architecture validation, feedback, and synchronization with formal architecture artifacts. As a result, capability changes remain governed, traceable, and aligned with GovOrg's architectural direction rather than being implemented as ad hoc initiatives.

3.5.2. Governance Decision Model and Guardrails

Derived from refined adaptive BA governance themes in Table 3 and RIA in Table 6, the proposed governance decision model determines how business capability changes are managed through two governance paths: traditional BA governance and hybrid BA governance. Rather than introducing unrestricted agility, the model determines when changes follow formal architecture cycles or adaptive mechanisms while maintaining compliance, accountability, and traceability. Changes involving data, application, or technology requirements are assessed as inputs to corresponding EA domains.

Business capability changes are classified according to their originating triggers. Changes initiated through strategic planning, IT master plan updates, SPBE evaluation, or formal architecture review follow the traditional BA governance path because they are managed through established planning and approval mechanisms. In contrast, changes triggered by leadership directives, organizational discretion, urgent operational needs, or rapid technology evolution follow the hybrid BA governance path, where adaptive mechanisms are applied within predefined governance boundaries. Table 7 summarizes the proposed governance decision model based on their change's triggers.

Table 7. GovOrg governance decision model

Change Trigger	Governance Path	Governance Mechanism
Strategic plan, IT master plan, SPBE evaluation, and formal architecture review.	Traditional BA governance	Managed through formal planning cycles, architecture review, approval processes, and SIA synchronization.
Leadership directives, organizational discretion,	Hybrid BA governance	Managed through controlled change evaluation, architecture

Change Trigger	Governance Path	Governance Mechanism
urgent operational needs, and rapid technology evolution.	(controlled adaptiveness)	validation, authorized approval, and SIA synchronization.

Table 7 shows that the governance path is determined by the trigger of a business capability change, while both paths are guided by the principle-based governance guardrails derived from the business principles in Table 4. This approach aligns with interview findings (G1 and P3), which indicate that capability changes may originate from various sources, including leadership directives, application changes, integration requirements, and emerging digital needs, while remaining subject to formal governance. For example, introducing AI-supported report summarization in response to rapid technology evolution follows the hybrid BA Governance path, whereas capability changes originating from the IT master plan follow the traditional BA governance path. Regardless of the selected path, changes must satisfy the guardrails defined in Table 8 before implementation and SIA synchronization.

Table 8. Ambidextrous BA governance guardrails

Governance Guardrail	Control Objective	BA Implication
Strategic alignment	Align capability changes with the Strategic Plan, IT Master Plan, SPBE, and target BA.	Changes inconsistent with strategic objectives must be revised before implementation.
Approval & accountability	Ensure capability changes receive authorized approval.	Maintains formal governance and decision accountability.
Cross-domain impact	Assess impacts on business, data, application, and technology architecture.	Preserves consistency across EA domains.
Documentation & traceability	Record approved capability changes in SIA.	Maintains architecture traceability and auditability.

Governance Guardrail	Control Objective	BA Implication
Architecture consistency	Keep capability changes aligned with the baseline architecture and roadmap.	Prevents architectural fragmentation.
AI, data & security governance	Ensure AI-enabled capability changes comply with security, privacy, and human validation requirements.	AI supports decision making but does not replace authorized decision makers.

The guardrails in Table 8 operationalize the business principles presented into decision controls for business capability changes. Consequently, both governance paths apply the same boundaries while differing only their initiation and management mechanism. This enables GovOrg to achieve ambidextrous BA governance by maintaining architectural control while allowing controlled adaptation to support DGT needs.

3.5.3. Ambidextrous BA Governance Process

The proposed ambidextrous BA governance process was developed based on the adaptive BA governance themes (G1 and P3) identified in Table 3. It explains how business capability changes are proposed, assessed, classified, approved, synchronized, and monitored throughout their lifecycle. The process begins when a capability change is triggered by formal planning activities, leadership directives, organizational discretion, urgent operational needs, or rapid technology evolution. The requesting unit submits the change, after which the digital and technology unit assesses its business and cross-domain impacts and determines the appropriate governance path based on the decision model. The change is then validated and approved, synchronized into the SIA repository, and monitored to support subsequent roadmap refinement and IT master plan updates. For AI-enabled capability changes, AI functions only as a decision-support capability. AI-generated outputs support report quality checking, prioritization, risk assessment, and insight generation, while validation and business decisions remain under human responsibility. Capability changes involving sensitive data, regulatory compliance, or significant organizational impacts require review and approval before implementation. Table 9 presents the proposed RACI matrix, describing which governance stakeholders

are responsible, accountable, consulted, or informed during change management activities.

Table 9. RACI matrix for business capability change management

Activity	Requesting Unit	Digital & Technology Unit	Architecture Steering Board
Propose business capability change	R	C	I
Assess business capability change and cross-domain impact	C	R	C
Classify governance path based on decision criteria	C	R	A
Validate capability change and business implications	R	C	C
Escalate strategic, urgent, or cross-organizational changes	C	C	R, A
Approve capability change and governance decision	C	C	R, A
Synchronize approved BA artifacts in SIA	I	A, R	C
Monitor implementation and prepare roadmap / IT master plan inputs	C	R	C

Table 9 defines responsibilities for managing business capability changes in GovOrg. The requesting unit initiates and validates changes, the digital and technology unit coordinates assessment, governance-path classification, and SIA synchronization, while the architecture steering board approves and oversees escalated changes, ensuring accountability throughout the lifecycle. For example, introducing AI-supported report summarization in response to technology evolution would follow the hybrid BA governance path. The requester submits the change, and the digital and technology unit

assesses impacts on analysis capability, processes, data, applications, and governance requirements. Based on the governance criteria, the change is classified into the hybrid path and approved by the architecture steering board. Following approval, affected BA artifacts in SIA, including the analytical capability record, process architecture, AI validation requirements, and decision record, are updated. Validated results then inform roadmap refinement and IT master plan updates when broader architectural or strategic implications arise.

3.5.4. Alignment with TOGAF ADM

The proposed ambidextrous BA governance model complements the TOGAF ADM lifecycle by operationalizing governance mechanisms for business capability changes across the selected ADM phases. The preliminary phase establishes governance principles, the architecture vision and BA define the target capabilities, while the RIA and governance model support capability change assessment, approval, and SIA synchronization. Rather than replacing existing governance, the proposed model introduces controlled adaptiveness while preserving compliance, accountability, traceability, and architecture consistency. Table 10 provides a before and after comparison between GovOrg's current BA governance and the proposed ambidextrous BA governance, highlighting how capability changes are handled before and after the proposed approach.

Table 10. Comparison of current and proposed BA governance

Aspect	Current BA Governance	Proposed Ambidextrous BA Governance
Governance approach	Formal planning and approval cycles.	Traditional or hybrid governance is based on change triggers.
Capability change	Capability changes are mainly documented after formal approval.	Assessed, classified, and governed before implementation.
Decision mechanism	Administrative review and approval.	Guardrails and risk-based assessment.

Aspect	Current BA Governance	Proposed Ambidextrous BA Governance
Architecture traceability	Architecture changes are recorded in SIA after approval.	Decisions and approved changes synchronized in SIA.
Adaptiveness	Limited outside planning cycles.	Controlled adaptiveness with compliance and accountability.

Table 10 provides a researcher-developed comparison between GovOrg's documented current BA governance and the proposed ambidextrous BA governance model. The comparison shows that, in the current practice, capability changes are primarily handled through established planning and approval mechanisms before being recorded in SIA, whereas the proposed model introduces assessment and governance-path classification before implementation. This shifts capability change management from primarily post-approval documentation toward earlier, structured governance while retaining GovOrg's existing formal approval mechanisms. The proposed model therefore extends the current governance arrangement by providing a structured mechanism for addressing capability changes that emerge outside established planning cycles.

3.6. Artifact Evaluation

Following the evaluation procedure described in Section 2.4.3, the proposed artifacts were preliminarily assessed against utility, completeness, consistency, feasibility, and contextual fit. Table 11 summarizes the evaluation evidence, key findings, and resulting design refinements using Shenton's trustworthiness criteria [48].

Table 11. Artifact evaluation and design refinement

Shenton Trustworthiness Criterion [48]	Artifact Evaluation Criterion	Evaluator	Evidence Reviewed	Feedback / Finding	Design Refinement
Credibility	Utility, consistency	External IT governance and EA expert; digital and	Governance process, RIA, decision model, TOGAF ADM, principles	Relevant and aligned, but decision boundaries needed clarity.	Refined decision model, guardrails, and governance paths.

Shenton Trustworthiness Criterion [48]	Artifact Evaluation Criterion	Evaluator	Evidence Reviewed	Feedback / Finding	Design Refinement
	Completeness	technology unit (R1–R3)	BA requirements, RIA, RACI, governance elements	Core elements covered, but traceability needed strengthening.	Strengthened traceability across requirements and artifacts.
			TOGAF ADM, principles, RACI, process, SIA	Consistent with EA practices, but some roles needed clarification.	Refined governance alignment, roles, and RACI.
Dependability	Consistency, feasibility				
Transferability	Context Fit	External IT governance and EA expert	GovOrg context and change scenarios	Controlled adaptability was appropriate, but triggers needed clearer classification.	Consolidated triggers into traditional and hybrid pathways.
Confirmability	Utility, completeness, consistency	External IT governance and EA expert; digital and technology unit (R1–R3)	Decision model, process, RIA, requirements, principles, RACI	Findings were traceable to evidence and evaluator feedback.	Maintained evidence– feedback– refinement traceability.

Table 11 shows that the proposed artifacts were considered relevant, sufficiently complete, consistent with established EA practices, and applicable to the GovOrg context. The feedback resulted in refinements to the governance decision model, guardrails, governance paths, artifact traceability, role allocation, and RACI. The evaluation provides preliminary contextual evidence of the proposed artifacts rather than organizational validation.

3.7. Discussion

The findings demonstrate that BA can serve as a governance foundation for managing business capability changes in DGT. By integrating business principles, BA requirements,

RIA, governance decision paths, guardrails, governance processes, RACI responsibilities, and TOGAF ADM alignment, the proposed approach enables capability changes before they affect data, application, and technology architectures supporting EA's role in DGT, strategic alignment, interoperability, and organizational coordination[4], [23], [49], [50]. From a TOGAF perspective, it complements architecture change management through BA-level impact assessment, governance-path classification, guardrails, validation, approval, and SIA synchronization, thereby extending change management with a capability-oriented mechanism for business-level changes.

From a theoretical perspective, this study extends agile EA and ambidextrous governance by operationalizing stability and adaptability within BA governance. While previous studies discuss this balance conceptually [22], [26], [27], [28], [29], [30], [37], [40], the proposed model introduces traditional and hybrid BA governance paths based on business capability change triggers. Hybrid BA governance is not intended to bypass formal bureaucracy but to provide a controlled mechanism for emerging changes within predefined approval, accountability, and architectural boundaries. By limiting controlled adaptiveness to business capability governance rather than the broader EA lifecycle, the approach is suitable for regulated SPBE environments. This complements the adaptive EA perspectives of Jöhnk et al. [26], Singh et al. [29], and Rolland et al. [30], while extending the ambidextrous EA governance concept of Mulyana et al. [27], [39], to the business capability governance level in SPBE.

From a practical perspective, implementation may encounter stakeholder resistance, role ambiguity, approval delays, SIA readiness constraints, audit requirements, and unclear change-backlog ownership. These risks can be mitigated through RACI responsibilities, approval boundaries, backlog ownership, SIA readiness, and periodic governance review. For AI-enabled changes, AI-supported validation and risk scoring are conceptual decision-support capabilities rather than implemented operational capabilities, requiring human validation to address bias, explainability, auditability, and accountability. Although the artifacts were positively evaluated by three GovOrg stakeholders and an external IT governance and EA expert, the evaluation remains preliminary and limited in organizational coverage. Further evaluation across multiple organizational units and public-sector contexts is needed to assess broader applicability and alignment with SPBE governance.

4. CONCLUSION

This study proposes and preliminarily evaluates an ambidextrous BA governance model for managing business capability changes in DGT within a regulated public-sector environment. The proposed artifacts include BA requirements, RIA, governance decision model, governance guardrails, governance process, RACI responsibilities, SIA synchronization, and alignment with TOGAF ADM phases. The findings indicate that these artifacts provide a mechanism for classifying and governing capability changes through traditional or hybrid BA governance while maintaining compliance, accountability, traceability, and architecture consistency. This study extends BA from an architecture modeling perspective toward a governance mechanism by operationalizing ambidextrous governance at the BA level. The approach complements TOGAF architecture change management by introducing capability-level impact assessment, governance-path classification, and predefined guardrails before validation, approval, and SIA synchronization. The proposed model is therefore contextually transferable rather than generally validated.

This study is limited to a single financial-sector GovOrg, three internal stakeholders and one external expert for artifact evaluation, and the BA governance domain, with all evaluators from the digital and technology unit. Therefore, the proposed model should be regarded as proposed and preliminarily evaluated, with contextual transferability rather than general validation. Furthermore, the study does not evaluate governance implementation for the data, application, and technology architecture domains. Future research should validate the proposed model across multiple public-sector organizations with different DGT/SPBE maturity levels, pilot the proposed governance process, test SIA integration and synchronization in operational settings, and extend the governance approach to the data, application, and technology architecture domains.

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CONFLICT OF INTEREST

The authors declare no conflict of interest regarding the publication of this article.

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