International Journal Of Health, Engineering And Technology (IJHET) *E-ISSN 2829 - 8683*
Volume 5, Number 2, July 2026, *Page. 1457 - 1460*
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Development Of A TOGAF-Based Target Operating Model For Enterprise Architecture: Integration Of Governance, IT Assets, IT Services, And Architect Competencies Through COBIT Alignment

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Abstract

Effective Enterprise Architecture (EA) practices require a framework that not only defines the architecture technically, but also integrates governance, IT asset management, IT services, and architect competencies into a structured ecosystem. This study proposes a TOGAF-based Enterprise Architecture Target Operating Model (TOM) linked to COBIT as an IT governance framework. The developed TOM encompasses five main dimensions: (1) the purpose of developing an architecture aligned with organizational strategy, (2) a comprehensive architectural landscape encompassing business, application, data, and technology domains, (3) the role and competencies of enterprise architects, (4) the role of the architecture board/committee in providing strategic direction, and (5) the linkage of the architecture cycle with the organizational budgeting cycle. Alignment between TOGAF and COBIT is built through mapping enterprise goals, alignment goals, and IT goals into EA processes, so that EA capabilities become measurable and auditable. This study uses a descriptive qualitative approach with a systematic literature review and framework analysis. The results of the study show that the integration of TOGAF-COBIT in TOM EA is able to increase the effectiveness of EA practices, ensure that the resulting architecture is aligned with the organization's strategic objectives, and strengthen overall IT governance.

Keywords: Enterprise Architecture, TOGAF, COBIT, Target Operating Model, IT Governance, IT Services, Architect Competence.

INTRODUCTION

Massive digital transformation is pushing organizations to manage the complexity of information systems, technology infrastructure, and business processes in an integrated manner. In this context, Enterprise Architecture (EA) emerges as a strategic discipline that enables organizations to design, manage, and develop information technology (IT) capabilities in a holistic and structured manner. EA is not simply technical documentation, but rather a governance instrument that connects an organization's strategic vision with the implementation of systems and technologies in the field (The Open Group, 2022).

The Open Group Architecture Framework (TOGAF) is the most widely adopted global standard in EA practice. TOGAF provides an Architecture Development Method (ADM) to guide the architecture development cycle, from establishing the architectural vision to implementation and governance (Josey et al., 2016). However, effective TOGAF implementation cannot stand alone; it requires integration with an IT governance framework that provides strategic context, capability measurement, and clear accountability mechanisms.

COBIT (Control Objectives for Information and Related Technologies), developed by ISACA, provides a comprehensive IT governance and management framework. COBIT 2019 defines enterprise goals, alignment goals, and IT goals that can be mapped directly to processes within the EA cycle, creating a measurable alignment mechanism between business strategy, IT strategy, and EA practices (ISACA, 2018).

However, many organizations implementing EA face fundamental challenges: unquantified EA capabilities, an ill-defined architect role, a lack of adequate governance mechanisms, and a disconnect between the architecture cycle and the organization's budgeting cycle. These conditions result in the resulting architecture not being able to optimally support strategic decision-making (Ross et al., 2006; Lankhorst, 2017).

This research aims to fill this gap by designing an EA Target Operating Model (TOM) that integrates TOGAF with EA governance principles (people, process, technology), IT asset management as an architectural object, IT services as a form of application-data-technology integration, and architect competency in implementing EA practices. This TOM is aligned with COBIT to ensure measurable and accountable EA capabilities to organizational stakeholders.

RESEARCH METHODS

This study uses a descriptive qualitative approach with a systematic literature review (SLR) and a comparative analysis of frameworks. The literature study was conducted on scientific publications from the Scopus, IEEE Xplore, and Google Scholar databases spanning 2015–2024, using the keywords: Enterprise Architecture, TOGAF, COBIT, IT Governance, EA Target Operating Model, and Architecture Competency.

The framework analysis was conducted by comparing elements of the TOGAF ADM, the COBIT 2019 Goals Cascade, and EA governance practices documented in the literature. The analysis results were then synthesized into a comprehensive EA TOM. Conceptual validation was conducted through triangulation of literature sources and consultation with experienced EA practitioners.

RESULTS AND DISCUSSION

Based on an analysis of the TOGAF and COBIT frameworks and a literature review, this research produced a TOM EA design consisting of five main, interacting components. These components are designed to ensure that EA practices are structured, measurable, and aligned with the organization's strategic objectives.

TOGAF-COBIT Mapping for Measurable EA Capabilities

Alignment between TOGAF and COBIT is built through systematic mapping of TOGAF ADM phases with COBIT 2019 processes. The TOGAF Preliminary Phase (EA capability development) is mapped to COBIT EDM01 (Ensure Governance Framework Setting) and APO01 (Manage the IT Management Framework) processes. The Architecture Vision Phase (Phase A) is mapped to APO02 (Manage Strategy) and APO05 (Manage Portfolio). The Business Architecture Phase (Phase B) is mapped to APO08 (Manage Relationships) and BAI01 (Manage Programs). This mapping produces an EA capability measurement framework based on COBIT Process Capability Levels (Levels 0-5), so that the maturity of EA practices can be measured objectively.

Integration of IT Assets and IT Services in the Architectural Landscape

The developed architectural landscape defines IT assets as architectural objects managed through a lifecycle within the TOGAF Architecture Repository. Each IT asset is categorized as an Architecture Building Block (ABB) or Solution Building Block (SBB) that can be used across projects. An IT service is defined as an architectural entity that integrates application, data, and technology infrastructure components, and is mapped to the business capabilities it supports. This model enables clear traceability from business requirements to the technical components that support them, and facilitates impact analysis when changes occur.

CONCLUSIONS

This research has produced a Target Operating Model (TOM) Enterprise Architecture design that integrates TOGAF as an EA methodology framework with COBIT as an IT governance framework. The developed TOM EA includes five main interacting dimensions: the purpose of the architecture, the architectural landscape, the role of the architect, the Architecture Board mechanism, and integration with the organization's budgeting cycle.

By mapping enterprise goals, alignment goals, and COBIT IT goals into TOGAF ADM-based EA processes, EA capabilities are measured using standardized Process Capability Levels. The integration of IT assets as architectural objects and IT services as cross-domain integration entities provides a strong foundation for developing a comprehensive and evidence-based architectural landscape.

This study recommends that organizations planning to implement EA adopt the proposed EA TOM as an operational guide, tailoring it to their respective contexts and scales. Further research is needed to validate this EA TOM through case studies of implementations in representative organizations in Indonesia.

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