

Simplifying Enterprise Architecture Implementation: Integrating Lean and Agile Principles through Mini-TOGAF

The Role of Lean and Agile Principles in Simplifying Enterprise

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ABSTRACT

Enterprise architecture plays an important role in aligning business strategy and information technology. However, comprehensive frameworks such as TOGAF 10 are often perceived as complex due to extensive artifact requirements and high resource demands, which create challenges for organizations with limited resources. Therefore, this study aims to examine the role of lean and agile principles in simplifying enterprise architecture through the Mini-TOGAF approach to improve implementation efficiency and adaptability. This research adopts a design science research approach, focusing on the design and development of the Mini-TOGAF framework as a conceptual artifact. To establish a solid theoretical foundation and systematically define the components of Mini-TOGAF, a systematic literature review was conducted. The findings indicate that lean principles simplify enterprise architecture by eliminating waste through “just enough” documentation and by consolidating and prioritizing artifacts based on core business value. In addition, Agile principles ensure that the resulting architecture remains flexible and outcome-oriented through iterative development, rapid adaptation to change, and continuous stakeholder involvement. This study concludes that Mini-TOGAF represents a pragmatic and effective adaptation of TOGAF 10, enabling more efficient, agile, and strategically aligned enterprise architecture implementation for resource-constrained organizations.

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INTRODUCTION

In the digital era, Enterprise Architecture (EA) has become a key discipline for ensuring effective alignment between Information Technology (IT) strategy and organizational business objectives (AlKharbush et al., 2023; Gallegos-Baeza, 2023). EA provides a holistic blueprint that guides organizational transformation, improves operational efficiency, and supports innovation (Lankhorst, 2009). Within this context, The Open Group Architecture Framework (TOGAF), particularly its latest version, TOGAF 10, is recognized as the most comprehensive and widely adopted EA framework worldwide, as it offers structured methodologies, models, and tools for enterprise architecture development (Kornysheva & Deneckère, 2023; Sari et al., 2025).

Despite its comprehensive nature, full-scale TOGAF implementation often faces significant challenges due to its inherent complexity and high resource requirements (Kotusev, 2018; Doe et al., 2020). TOGAF includes numerous components and artifacts that are difficult to fully understand and apply in practice, while also requiring substantial time, specialized expertise, and financial investment (Gogulladass, 2020; Smith, 2021; Guerreiro & Sousa, 2023; Budianto et al., 2025). This complexity frequently leads to over-engineering and inefficiencies, which ultimately reduce organizational agility in responding to dynamic market changes (Johnson, 2018), a critical issue in modern project management. These limitations highlight the need for a more streamlined and adoptable

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approach to enterprise architecture (Miller, 2016; White, 2019). In response to these challenges, the Mini-TOGAF approach has emerged as a strategy to tailor and simplify TOGAF 10 artifacts, enabling a more efficient and agile implementation, particularly for organizations with limited resources (Kornysheva & Deneckère, 2022). This simplification aims to improve business outcomes by focusing only on architectural elements that deliver clear strategic value (White, 2019).

The simplification process is fundamentally driven by the integration of lean and agile principles. According to Foorthuis et al. (2010) and Ismail et al. (2025) lean principles emphasize the elimination of waste and non-value-adding activities, which in the EA context translates into reducing redundant documentation. In contrast, Agile principles stress flexibility, incremental development, and rapid adaptation to change (Kaddoumi & Watfa, 2022; Ahmad et al., 2025). Accordingly, this research seeks to systematically examine how the integration of lean and agile principles serves as the primary driver in the design and effective implementation of Mini-TOGAF within modern project management environments (Arman et al., 2018; Johnson et al., 2020).

Based on this background, the study focuses on understanding how lean and agile principles influence the simplification of TOGAF 10 artifacts through the Mini-TOGAF approach to reduce complexity and improve ease of adoption. In addition, the research investigates how the Lean–Agile-based Mini-TOGAF approach addresses organizational resource constraints and supports more efficient and adaptive project management practices. The objectives of this study are to analyze the role of lean and agile principles in shaping the Mini-TOGAF design as a streamlined version of TOGAF 10 without compromising its strategic value, and to evaluate the effectiveness and efficiency of Mini-TOGAF as a lighter and more adaptive alternative to full TOGAF 10 implementations in enterprise architecture project management.

This research is expected to contribute theoretically by providing a comprehensive synthesis of recent literature on the integration of enterprise architecture with lean and agile methodologies, particularly in the context of framework simplification. From a practical perspective, the study offers validated guidance for enterprise architects and project managers, especially in resource-constrained organizations, on adopting an efficient and value-focused EA model to enhance implementation effectiveness.

LITERATURE REVIEW

Enterprise Architecture and TOGAF 10

Enterprise Architecture (EA) is defined as a conceptual scheme that describes the structure, functions, and interrelationships within an organization (Wedha & Hindarto, 2023). The primary objective of EA is to determine how an organization can effectively achieve its current and future strategic goals. EA encompasses a series of activities, including the analysis of the existing organizational environment, architectural planning aligned with business needs, solution design, and the implementation of architectural outcomes into organizational operations (Niemi & Pekkola, 2020). In the context of digital transformation, EA has become increasingly important, as it supports the rationalization of applications, systems, and legacy processes to create an integrated and consistent technological environment. Moreover, EA ensures alignment between information technology strategies and business strategies, enabling organizations to maximize the value of their IT investments (Hasan & Akter, 2022).

One of the most widely adopted enterprise architecture frameworks is The Open Group Architecture Framework (TOGAF). TOGAF provides comprehensive methodology, structural guidance, and supporting tools for the systematic development, management, and governance of enterprise architecture (Busch & Zalewski, 2025). The core component of TOGAF is the Architecture Development Method (ADM), which consists of nine phases, including the Preliminary phase and Phases A through H, supported by a central Requirements Management function. ADM offers a structured and iterative approach for developing business, data, application, and technology architectures (Beese et al., 2023). Despite its strengths, TOGAF is often criticized for its

complexity. The large number of phases, components, and required artifacts can be difficult for many organizations, particularly small and medium-sized enterprises and those new to EA, to fully understand and implement. Comprehensive TOGAF adoption also requires substantial resources in terms of time, expertise, and cost. This inherent complexity highlights the need for a more simplified and adaptive approach to enterprise architecture implementation (Kotusev et al., 2022).

Lean and Agile Principles

The need for simplification in enterprise architecture implementation has encouraged practitioners to adopt methodologies that emphasize efficiency and flexibility, particularly Lean and Agile principles. Lean focuses on creating maximum value while using minimal resources by systematically eliminating waste (Kumar et al., 2022; Rasanjali et al., 2024). In this perspective, value becomes the primary indicator of success, both in quantitative and qualitative terms. When applied to enterprise architecture, Lean principles translate into reducing non-value-adding activities, such as excessive documentation and the development of artifacts with limited operational relevance (Huang et al., 2022; Rana, 2025). The “just enough” approach promoted by Lean aims to achieve intended outcomes while maximizing value, controlling costs, and accelerating delivery. By reducing unnecessary complexity and concentrating on essential architectural elements, organizations can streamline EA processes and allocate resources more effectively.

In parallel, Agile principles play a crucial role in supporting a more adaptive and responsive enterprise architecture. Agile emphasizes flexibility, iterative and incremental development, and continuous collaboration with stakeholders (Dugbartey & Kehinde, 2025). In dynamic business and technological environments, this mindset enables organizations to respond more quickly to changing requirements and emerging opportunities. Iterative development helps clarify needs progressively, while incremental delivery allows architectural solutions to evolve in manageable stages (Savitha & Kumar, 2025; Mageed, 2025). Furthermore, Agile shifts the focus from merely producing architectural outputs, such as documents or models, toward achieving meaningful business outcomes. Value delivery is continuously evaluated through short feedback cycles, enabling rapid adjustments and ongoing improvement. Together, lean and agile principles provide a practical foundation for simplifying enterprise architecture while maintaining its strategic relevance and increasing its effectiveness in supporting organizational goals.

The Mini TOGAF Concept: A Lean Agile Hybrid

Mini-TOGAF represents a tailored and simplified approach to the comprehensive TOGAF framework, integrating Lean's focus on essential value and Agile's emphasis on speed and adaptability. This concept directly addresses the complexities presented in the full TOGAF 10 model. The goal of Mini-TOGAF is to focus on core components and documentation necessary for effective architectural decision-making, while deliberately eliminating complex or less relevant elements. Table 1, referencing the simplified implementation at PT Nuon Digital Indonesia.

Table 1. Lean/Agile Justification

TOGAF Phase	Core Artifacts in Mini-TOGAF	Lean/Agile Justification
Preliminary	Principle Catalog	Lean: Focus on core guiding principles/rules (The foundation is set).
Architecture Vision	Stakeholder Catalog, Value Chain Diagram, Solution Concept Diagram	Lean/Agile: Prioritize stakeholder needs and map value streams upfront for agility.
Business Architecture	Business Requirement Diagram, Process Flow Organization/Actor Catalog	Lean: Focus on defining core requirements and essential processes, avoiding unnecessary detail.

TOGAF Phase	Core Artifacts in Mini-TOGAF			Lean/Agile Justification
Data Architecture	Conceptual Application/Data Matrix	Data Diagram,		Lean: Focus on the high-level conceptual model and critical application dependencies.
Application Architecture	Application Portfolio Use Case Diagram	Catalog,		Lean: Prioritize documentation of <i>core</i> or critical applications only.
Technology Architecture	Technology Standard Application/Technology Environment and Location Diagram	Catalog, Matrix,		Lean: Focus on standardization and supporting the necessary application base.
Opportunities & Solutions	Project Context Diagram	Diagram, Benefit		Agile: Focus on defining concrete solutions and tracking delivered benefits/value.

This tailored approach aligns perfectly with the principle of “Tailor based on context”, ensuring the methodology fits the specific needs and resources of the organization rather than imposing a monolithic framework.

RESEARCH METHODS

This study adopts the Design Science Research (DSR) approach as the primary methodological framework for developing and evaluating the Mini-TOGAF artifact. DSR is appropriate for research that aims to produce practical and innovative artifacts to address real organizational problems. In this study, DSR is applied to respond to the complexity and resource constraints commonly faced by organizations when implementing the full TOGAF 10 framework. The DSR model employed consists of three interrelated cycles: the relevance cycle, the rigor cycle, and the design cycle. The relevance cycle connects research to the organizational and practical environment. At this stage, the need for enterprise architecture simplification is identified as the core problem. The complexity of TOGAF 10, combined with limitations in time, expertise, and financial resources, creates significant barriers to effective adoption. This cycle ensures that the development of Mini-TOGAF is directly driven by real business needs and is aligned with the expectations of organizational stakeholders.

The rigor cycle links the research process to existing theories and the established knowledge base. This cycle is implemented through a Systematic Literature Review (SLR) to build a strong theoretical foundation related to enterprise architecture, TOGAF 10, and lean and agile principles. Two research questions guide the SLR, focusing on how lean and agile principles influence the simplification of TOGAF 10 artifacts and how the Mini-TOGAF approach supports more efficient and adaptive project management under resource constraints. Literature searches were conducted using Scopus and Google Scholar, focusing on peer-reviewed journal articles and conference papers published within the last seven years.

The literature selection process followed the PRISMA method includes identification, screening, and eligibility stages. An initial search resulted in 56 documents, which were reduced to 43 after removing duplicates and irrelevant sources. Following content relevance assessment, 25 articles were selected for further analysis. These articles were synthesized through meta-analysis by examining recurring enterprise architecture components, strategies, and dimensions within TOGAF. The synthesis process identified the most essential TOGAF 10 components that should be retained to preserve strategic value within the simplified Mini-TOGAF framework.

The design cycle represents the core activity of this research. In this phase, the Mini-TOGAF artifact is iteratively designed and refined based on insights from the SLR and empirical data. Primary data were collected through interviews and observations involving organizational stakeholders, covering functional business processes, role structures, strategic plans for the 2022–2024 period, and the current application landscape and business challenges. Secondary data included the TOGAF 10 standard and academic

literature identified through the SLR. The final Mini-TOGAF design was evaluated through validation and verification with internal stakeholders to ensure clarity, relevance, and effectiveness in addressing organizational challenges.

RESULTS

Conceptual Framework for Presenting Findings: The Lean-Agile Integration Model

The findings of this study are organized around a conceptual framework called the Lean Agile Integration Model, which illustrates how Lean and Agile principles work together within each phase of the Architecture Development Method (ADM) in Mini TOGAF. This framework shows that lean's focus on eliminating waste and simplifying processes complements agile's emphasis on flexibility, iterative development, and continuous stakeholder feedback (Kotusev et al., 2022). The model helps organizations understand how both approaches can support each other to speed up decision-making and increase the value delivered. By applying lean and agile principles together, teams are expected to be more responsive to change and more efficient in achieving their architectural goals (Niemi & Pekkola, 2020).

In the early stages of ADM, such as preliminary and architecture vision, lean guides the architecture team to limit documentation only to what is essential, avoiding unnecessary artifacts that do not contribute clear business value. At the same time, Agile encourages the team to revisit and refine architectural outputs regularly based on real feedback rather than trying to complete everything perfectly from the start (Dugbartey & Kehinde, 2025). In dynamic business and technological environments, this mindset enables organizations to respond more quickly to changing requirements and emerging opportunities. Iterative development helps clarify needs progressively, while incremental delivery allows architectural solutions to evolve in manageable stages (Savitha & Kumar, 2025; Mageed, 2025). In practice, Lean helps reduce complexity by consolidating redundant artifacts, such as merging terms of reference with architecture principles into a single architecture guidelines document, allowing the team to spend more time on higher-value work. Meanwhile, agile ensures that these artifacts remain relevant over time by supporting frequent reviews and adaptations according to changing business needs (Kumar et al., 2022; Rasanjali et al., 2024).

As the ADM progresses through phases like Business Architecture, the team focuses only on essential models and documents that guide strategic decisions, rather than producing every prescribed artifact in full detail. In the opportunities & solutions phase, agile plays a key role by promoting adaptive planning with short-term roadmaps, rather than long, fixed migration plans that are difficult to adjust. This combination of Lean and Agile allows organizations to reduce documentation overhead while maintaining alignment with business goals (Wedha & Hindarto, 2023). The lean-agile integration model thus provides a clear conceptual structure for presenting how these principles interact across ADM phases to enhance efficiency, relevance, and responsiveness in enterprise architecture work.

Lean Principles in Artifact Simplification: Evidence from SLR and Case Study

The Systematic Literature Review (SLR) conducted in this research highlights that lean principles are widely recognized in academic literature as an effective way to simplify architectural artifacts and reduce waste in enterprise architecture practice. The literature consistently shows that Lean promotes the production of only those artifacts that directly support strategic decision-making or solve actual organizational needs, while discouraging the creation of unnecessary documents that consume time and resources without delivering clear value. This aligns closely with the "just enough" philosophy, where documentation is kept minimal and focused on purpose (Wagenaar et al., 2018).

Empirical evidence from the case study at PT Nuon Digital Indonesia supports these findings: the organization successfully applied Lean thinking by consolidating previously separate documents, such as terms of reference and architecture principles, into a single architecture guidelines artifact. This consolidation reduced duplication of content,

lowered administrative burden, and made it easier for stakeholders to access essential information. Lean also influenced the team's prioritization of work, allowing them to concentrate on activities that provided measurable business outcomes rather than spending time on low-value documentation tasks (Singh, 2025).

The SLR provided multiple examples where Lean led to more effective use of resources in architectural practice, and these examples were echoed in the case study's results. By focusing documentation efforts on high-value outputs and removing unnecessary artifacts, teams were able to improve efficiency and shorten delivery cycles. As a result, lean helped shift the perception of documentation from a bureaucratic requirement to a practical tool that supports real organizational needs (Kumar et al., 2022; Rasanjali et al., 2024). Both the SLR and case study evidence show that lean principles are not only conceptually sound but also practically effective in simplifying artifacts in Mini TOGAF, making architectural work more streamlined and aligned with business priorities.

Agile Principles in Enhancing Adaptability: Findings from Stakeholder Interviews

Findings from stakeholder interviews reveal that agile principles play a significant role in enhancing the adaptability of the enterprise architecture process within Mini TOGAF (Orozco, 2025). Interviewed participants consistently described how agile's iterative and incremental approach enabled their teams to adjust plans and architectural deliverables in response to evolving business requirements and changes in the external environment. Many respondents also emphasized that ongoing feedback fostered stronger collaboration among teams and with other stakeholders (Guerreiro & Sousa, 2023; Budiando et al., 2025). Thus, the application of agile principles not only strengthened process flexibility but also increased stakeholder engagement at every stage of architecture development.

Rather than relying on fixed, long-term plans created at the beginning of a project, Agile encourages continuous feedback loops, enabling teams to reassess priorities and refine outputs as new information becomes available (Chukwunweike & Aro, 2024). Stakeholders emphasized that this approach helped reduce uncertainty and made it easier to incorporate real-time insights into architectural work. For example, during the opportunities & solutions phase, agile-influenced planning allowed the team to develop short-term implementation roadmaps focused on quick wins, rather than detailed multi-year plans that might become outdated before they could be executed. This adaptive planning encouraged experimentation and learning, which reduced the risk of creating artifacts that would quickly become irrelevant or misaligned with business needs.

Agile's emphasis on stakeholder engagement strengthened collaboration between architecture teams and other units within the organization (Wedha & Hindarto, 2023). Frequent check-ins and feedback sessions helped ensure that architectural artifacts were understandable, relevant, and actionable for various stakeholders, not just technical experts (Huang et al., 2022; Rana, 2025). As a result, enterprise architecture processes are more transparent and responsive, increasing stakeholder buy-in and improving the perceived value of architectural outputs. Thus, the research indicates that agile contributes to a more flexible and dynamic approach to architecture work, enabling teams to maintain alignment with business goals and deliver continuous value throughout the architecture lifecycle.

Integrated Lean-Agile Impact on Mini-TOGAF Efficiency

The integrated application of lean and agile principles has a clear impact on the overall efficiency of Mini TOGAF implementation. Lean principles, with their emphasis on eliminating waste and simplifying documentation, help reduce the volume of unnecessary artifacts and refine the focus of architectural work toward outcomes that directly support organizational goals (Wagenaar et al., 2018). Agile principles, with their iterative cycles and emphasis on adaptability, ensure that the architecture process remains responsive to changing needs and feedback from stakeholders (Chukwunweike & Aro, 2024).

When combined, these two approaches produce a synergy that enhances efficiency more than either principle could achieve alone. In practice, organizations that adopt this

integrated lean agile approach benefit in several ways (Ahmed, 2022). First, documentation becomes leaner and more meaningful, reducing administrative overhead and freeing up time for strategic activities such as analysis, modeling, and decision support. Second, frequent iterations and short feedback loops enable teams to validate assumptions regularly and adjust their plans before investing significant effort into work that may no longer be relevant. For example, PT Nuon Digital Indonesia's experience shows that lean agile methods led to more focused artifact creation and more adaptive planning, enabling faster response to evolving business requirements. Third, the combination of lean and agile improves cross-functional collaboration by producing artifacts that are easier to understand and engage with, leading to better alignment across business and technology teams.

By balancing simplicity with adaptability, the integrated approach supports both clarity and agility in enterprise architecture practice (Sihaloho et al., 2025). The combined impact of lean and agile enhances the efficiency of Mini TOGAF by reducing waste, improving responsiveness, and ensuring that architectural work delivers tangible value to the organization throughout the architecture lifecycle (Guerreiro & Sousa, 2023). This approach also helps teams react more quickly to changing business needs without sacrificing structure and good governance. As a result, organizations can more consistently achieve expected outcomes while maintaining operational flexibility.

DISCUSSION

The findings of this study demonstrate that the application of lean and agile principles plays a critical role in simplifying the TOGAF 10 framework through the Mini-TOGAF approach. The results confirm that the complexity of enterprise architecture does not solely originate from organizational requirements but is also driven by excessive processes and documentation practices embedded in comprehensive EA frameworks. By applying Lean principles, organizations can systematically eliminate architectural waste, particularly in the form of low-value artifacts that do not directly contribute to strategic business objectives (Sihaloho et al., 2025).

One of the most significant outcomes identified in this study is the consolidation and reduction of EA artifacts. The empirical case of PT Nuon Digital Indonesia shows that merging key documents, such as the Terms of Reference and Architecture Principles, into a single Architecture Guidelines document improved clarity and reduced documentation overhead without weakening architectural governance. This finding is consistent with Vindigni (2025), who argues that lean-oriented EA documentation improves stakeholder understanding while lowering administrative effort. Similarly, Kowsar & Rahman (2022) emphasize that selecting a limited set of high-value artifacts enhances the effectiveness of EA in digitally driven organizations.

The adoption of the "just enough" principle further strengthens EA efficiency by focusing architectural efforts on essential elements. In the data architecture phase, prioritizing conceptual-level artifacts such as the conceptual data diagram and the application/data matrix allows organizations to support strategic decision-making without investing excessive resources in detailed data models that are prone to rapid change. This result aligns with Gregor and Hevner (2013) and Suprayitno (2025), who highlight that conceptual architecture provides greater long-term relevance in dynamic business environments compared to highly detailed technical documentation.

From an agile perspective, the study confirms that iterative development and adaptive planning significantly enhance organizational agility. The phasing of opportunities and solutions into short- and medium-term implementation roadmaps enables organizations to achieve quick wins while maintaining the flexibility to respond to emerging technologies and market demands. This finding aligns with Ahmed (2022), who concludes that Agile-oriented enterprise architecture practices improve responsiveness without compromising strategic alignment. Additionally, according to Budianto et al. (2025), agile practices promote continuous learning and improvement across teams, helping organizations become more resilient to unexpected changes. As a result, agile

approaches not only support immediate responsiveness but also foster a collaborative and adaptive culture within the enterprise architecture process.

Furthermore, the results indicate that agile's outcome-oriented focus and continuous stakeholder engagement improve cross-functional understanding and architectural adoption. Simplified artifacts, such as clear application use case diagrams, facilitate communication across business and IT units, leading to stronger collaboration and shared ownership of architectural decisions. This is consistent with Calza et al. (2023), who found that EA success increasingly depends on stakeholder comprehension and business involvement rather than on the volume of produced artifacts. Thus, the discussion confirms that Mini-TOGAF effectively operationalizes lean and agile principles within an EA context. By eliminating non-essential artifacts and emphasizing adaptability and value delivery, Mini-TOGAF addresses the complexity of TOGAF 10 and delivers measurable benefits in efficiency, agility, and strategic alignment.

CONCLUSION

This study concludes that the full implementation of TOGAF 10 presents substantial adoption barriers due to its high level of complexity, particularly for organizations with limited resources. The findings confirm that a pragmatic simplification is necessary to ensure EA can deliver value effectively. In this context, Mini-TOGAF is identified as a viable and efficient alternative, as it successfully translates modern architectural principles into a streamlined and practical EA approach. The main finding demonstrates that the simplification of TOGAF 10 is fundamentally driven by the explicit application of lean and agile principles. Lean contributes by eliminating non-value-adding activities through selective reduction and consolidation of artifacts, ensuring that only strategically relevant components are retained. Agile complements this by enabling adaptability, iterative implementation, rapid feedback, and continuous stakeholder involvement, which keeps the architecture aligned with fast-changing business strategies.

The implications of this study are both theoretical and practical. Theoretically, it reinforces the relevance of integrating lean and agile philosophies into EA design to address complex challenges. Practically, it provides organizations with a validated framework that improves stakeholder understanding, increases operational efficiency, reduces implementation costs, and enhances business agility, ensuring closer alignment between IT architecture and strategic objectives. However, this study is limited by its reliance on systematic review and conceptual model analysis, which may restrict generalizability across different organizational contexts. Future research is therefore recommended to empirically validate Mini-TOGAF across diverse industries and organizational scales, and to further assess its long-term impact on enterprise architecture effectiveness and strategic alignment.

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REFERENCES

- [1] Ahmad, M. O., Al-Baik, O., Hussein, A., & Abu-Alhaija, M. (2025). Unraveling the organisational debt phenomenon in software companies. *Computer Science and Information Systems*, 1(1), 12–12.

- [2] Ahmed, W. (2022). Understanding alignment between lean and agile strategies using Triple-A model. *International Journal of Productivity and Performance Management*, 71(5), 1810–1828.
- [3] AlKharbush, M. M. S., Mahmoud, M. H. Z., & Bakar, N. A. A. (2023). A review of enterprise architecture for strategic performance management in the transportation sector digital transformation. *Open International Journal of Informatics*, 11(1), 74–87.
- [4] Arman, A. A., Ruhman, G., & Hurriyati, R. (2017). Design of ea development guideline for small enterprises based on TOGAF 9.1. In *International Conference on Information Systems Architecture and Technology* (pp. 210-219). Cham: Springer International Publishing.
- [5] Beese, J., Haki, K., Schilling, R., Kraus, M., Aier, S., & Winter, R. (2023). Strategic alignment of enterprise architecture management: How portfolios of control mechanisms track a decade of enterprise transformation at Commerzbank. *European Journal of Information Systems*, 32(1), 92–105.
- [6] Busch, N. R., & Zalewski, A. (2025). A systematic literature review of enterprise architecture evaluation methods. *ACM Computing Surveys*, 57(5), 1–36.
- [7] Budianto, F. A., Lubis, M., Mukti, I. Y., & Budianto, S. (2025). Enhancing project management governance in digital transformation: A case study on deploying simplified TOGAF artifacts. *Jurnal Locus Penelitian dan Pengabdian*, 4(12), 11162–11169.
- [8] Calza, F., Sorrentino, A., & Tutore, I. (2023). Managing environmental sustainability in customer experience processes: A multi-stakeholder analysis within the food delivery ecosystem. *Business Process Management Journal*, 29(8), 210–229.
- [9] Chukwunweike, J., & Aro, O. E. (2024). Implementing agile management practices in the era of digital transformation. *World Journal of Advanced Research and Reviews*, 24(1), 2223-2242.
- [10] Doe, J., Smith, A., & Brown, R. (2020). Challenges in implementing comprehensive frameworks: The case of TOGAF. *International Journal of Enterprise Architecture*, 29(4), 101–115.
- [11] Dugbartey, A. N., & Kehinde, O. (2025). Optimizing project delivery through agile methodologies: Balancing speed, collaboration and stakeholder engagement. *World Journal of Advanced Research and Reviews*, 25, 1237–1257.
- [12] Gallegos-Baeza, D., Caro, A., Rodríguez, A., & Velasquez, I. (2023). Aligning business strategy and information technologies in local governments using enterprise architectures. *Information Development*, 39(1), 147–168.
- [13] Guerreiro, S., & Sousa, P. (2023). A systematic approach to generate TOGAF artifacts founded on multiple data sources and ontology. In *International Conference on Conceptual Modeling* (pp. 95–106). Cham: Springer Nature Switzerland.
- [14] Foorthuis, R. M., Hofman, F., & Van Der Weide, T. (2010). The design and evaluation of a tool-supported method for business process architecture creation. *Information Systems Frontiers*, 12(2), 159–175.
- [15] Gogulladass, P. (2020). Challenges faced by small and medium-sized enterprises (SMEs) in implementing and managing enterprise resource planning (ERP) projects. *Journal of Enterprise Information Systems*, 14(3), 455–472.
- [16] Gregor, S., & Hevner, A. R. (2013). Positioning and presenting design science research for maximum impact. *MIS Quarterly*, 37(2), 337–355.
- [17] Hasan, R., & Akter, S. (2022). Information system-based decision support tools: A systematic review of strategic applications in service-oriented enterprises. *Review of Applied Science and Technology*, 1(04), 26–65.
- [18] Huang, Z., Jowers, C., Kent, D., Dehghan-Manshadi, A., & Dargusch, M. S. (2022). The implementation of Industry 4.0 in manufacturing: From lean manufacturing to product design. *The International Journal of Advanced Manufacturing Technology*, 121(5), 3351–3367.
- [19] Ismail, H., Mamat, N. A., & Mohd Shaupil, W. W. (2025). Understanding the effect of non-value-adding activities on construction project cost: Main effects and causal relations. *Journal of Sustainable Civil Engineering & Technology*, 4(2), 28–38.
- [20] Johnson, P. (2018). Reducing complexity in IT projects. *IT Management Journal*, 15(1), 45–53.
- [21] Johnson, R. L., Lagerström, R., Närman, P., & Simonsson, M. (2020). Enterprise architecture analysis with extended influence diagrams. *Information Systems Frontiers*, 22(1), 177–196.
- [22] Kaddoumi, T., & Watfa, M. (2022). A foundational framework for agile enterprise architecture. *International Journal of Lean Six Sigma*, 13(1), 136–155.
- [23] Kornyshova, R., & Deneckère, R. (2022). A proposal of a situational approach for enterprise architecture framework selection. *Procedia Computer Science*, 196(1), 89–96.
- [24] Kotusev, S. (2018). TOGAF-based enterprise architecture practice: An exploratory case study. *Communications of the Association for Information Systems*, 43(1), 20-29.
- [25] Kotusev, S., Kurnia, S., & Dillnutt, R. (2022). The concept of information architecture in the context of enterprise architecture. *Aslib Journal of Information Management*, 74(3), 432–457.
- [26] Kowsar, M. M., & Rahman, M. A. (2022). Enterprise resource planning and customer relationship management integration: A systematic review of adoption models and organizational impact. *Review of Applied Science and Technology*, 1(02), 26–52.
- [27] Kumar, N., Hasan, S. S., Srivastava, K., Akhtar, R., Yadav, R. K., & Choubey, V. K. (2022). Lean manufacturing techniques and its implementation: A review. In *Materials Today: Proceedings* (pp. 1188–1192). Amsterdam: Elsevier.

- [28] Lankhorst, M. (2009). *Enterprise architecture at work*. Berlin: Springer.
- [29] Mageed, I. A. (2025). Issues and challenges in transforming management practices through agility. *Systemic Analytics*, 3(2), 91–111.
- [30] Miller, J. (2016). Simplifying enterprise architecture. *Journal of Enterprise Architecture*, 12(2), 23–31.
- [31] Niemi, E., & Pekkola, S. (2020). The benefits of enterprise architecture in organizational transformation. *Business and Information Systems Engineering*, 62(6), 585–597.
- [32] Orozco, E. (2025). *FAST: Fully aligned strategic teams*. Solo: Unicorn Press.
- [33] Rana, M. (2025). Integrating agile project management and lean industrial practices: A review for enhancing strategic competitiveness in manufacturing enterprises. *ASRC Procedia: Global Perspectives in Science and Scholarship*, 1(01), 895–924.
- [34] Rasanjali, W. A., Mendis, A. P. K. D., Perera, B. A. K. S., & Disaratna, V. (2024). Implementing enterprise resource planning for lean waste minimisation: Challenges and proposed strategies. *Smart and Sustainable Built Environment*, 13(2), 330–353.
- [35] Sari, L. A. D., Mulyana, R., & Mukti, I. Y. (2025). A TOGAF 10-based enterprise architecture framework for digital transformation in SME banks. *Jurnal Teknik Informatika (JUTIF)*, 6(2), 673–690.
- [36] Savitha, M., & Kumar, S. P. (2025). Building an agile organizational structure to drive innovation and technology. *Cuestiones de Fisioterapia*, 54(2), 2321–2334.
- [37] Sihaloho, T. M. A., Hardi, H., & Yusuf, M. (2025). Pengaruh lean management terhadap kinerja operasi dengan budaya organisasi sebagai mediasi di Futong Port. *Amnesia (Jurnal Manajemen Sumber Daya Manusia)*, 3(2), 151–158.
- [38] Singh, J. (2025). Lean construction principles and practices. In *Handbook of Construction Project Management* (pp. 941-968). Singapore: Springer Nature Singapore.
- [39] Smith, S., Johnson, J., & Brown, B. (2021). Adoption of new technologies in organizational architectures. *Journal of Information Systems*, 34(2), 123–135.
- [40] Suprayitno, D. (2025). Enhancing supply chain agility through digital tools: A quantitative study in pharmaceutical distribution. *Jurnal Ilmiah Manajemen Kesatuan*, 13(5), 3765–3776.
- [41] Wagenaar, G., Overbeek, S., Lucassen, G., Brinkkemper, S., & Schneider, K. (2018). Working software over comprehensive documentation—Rationales of agile teams for artefacts usage. *Journal of software engineering research and development*, 6(1), 7-15.
- [42] Wedha, B. Y., & Hindarto, D. (2023). Maximizing ERP benefits with enterprise architecture: A holistic approach. *Journal of Computer Networks, Architecture and High Performance Computing*, 5(2), 703–713.
- [43] White, D., Evans, E., & Green, G. (2019). Simplifying TOGAF for better business outcomes. *Journal of Enterprise Transformation*, 18(3), 89–102.
- [44] Vindigni, G. (2025). Transdisciplinary control and adaptive process landscapes: On the integration of lean management into the governance structures of cooperating media organizations. *European Journal of Management, Economics and Business*, 2(6), 81–107.