JINAV: Journal of Information and Visualization *ISSN: 2746-1440 (online)*
Vol. 7 No. 2 (2026)
https://doi.org/10.35877/454RI.jinav

A Knowledge Management Integration Model within Enterprise Architecture to Improve the Competitiveness of Higher Education Institutions

Vensy Vydia[a,*], Rahmat Gernowo[a], & Aria Hendrawan[b]

[a]*Doctoral Program of Information Systems, School of Postgraduate, Universitas Diponegoro, Semarang, Indonesia*
[b]*Faculty of Information and Communication Technology, Universitas Semarang, Semarang, Indonesia*

Abstract

Higher education institutions are increasingly required to strengthen competitiveness through digital transformation, data-driven governance, knowledge-based decision-making, and sustainable innovation. Enterprise Architecture (EA) provides a strategic framework for aligning institutional objectives, business processes, data, applications, technology, and organizational capabilities. At the same time, Knowledge Management (KM) supports the creation, storage, sharing, utilization, and evaluation of institutional knowledge. However, existing EA practices are often fragmented and insufficiently integrated with organizational knowledge processes, particularly in higher education institutions. This study proposes a conceptual Knowledge Management–Enterprise Architecture (KM-EA) integration model to support the competitiveness of higher education. A Systematic Literature Review (SLR) combined with bibliometric analysis was conducted on scientific publications from 2021 to 2026, using Scopus as the primary database and VOSviewer for thematic and keyword analyses. The findings indicate that EA has evolved from a documentation-oriented approach to a strategic, knowledge-based infrastructure that integrates digital transformation, data integration, artificial intelligence, cybersecurity, sustainability, and stakeholder management. The proposed model consists of five interconnected layers: Strategic, Enterprise Architecture, Knowledge Management, Governance, and Competitiveness. The integration of these layers is expected to improve strategic alignment, organizational learning, decision-making, knowledge sharing, digital governance, and institutional performance. This study provides a conceptual foundation for developing and empirically validating an integrated KM-EA model specifically designed to enhance the competitiveness of higher education institutions.

Keywords: enterprise architecture; knowledge management; higher education; digital transformation; competitiveness.

Received: 17 February 2026 Revised: 30 June 2026 Published: 31 August 2026

1. Introduction

Higher education institutions in the digital era can no longer be understood merely as educational institutions that carry out teaching, research, and community service functions administratively (Liao & Wang, 2021). In the contemporary knowledge economy, these institutions operate in an increasingly complex, open, and performance-based competitive environment. The competitiveness of higher education institutions is determined by their capacity to manage knowledge resources, integrate information technology, accelerate decision-making, improve academic quality, strengthen research reputation, and build institutional governance that is adaptive to environmental change.

Digital transformation has become an unavoidable strategic agenda item because virtually all higher education business processes—from student admissions, learning management, research, publication, academic services, collaboration, and quality assurance to institutional performance reporting—increasingly depend on information systems and digital data. In this situation, higher education institutions require a governance model that connects institutional strategy to information systems, technology infrastructure, business processes, organizational actors, and institutional knowledge. Enterprise Architecture (EA) constitutes a relevant approach to address this need.

Enterprise Architecture is an approach employed to map, design, integrate, and manage relationships among business processes, data, applications, technology, and an organization's strategic objectives (Graves & Beard, 2025; Mikalef et

* Corresponding author.
E-mail address: vensyvydia@students.undip.ac.id

al., 2021). In modern organizations, EA is no longer understood merely as a collection of technical diagrams or information system documentation but has evolved into a strategic mechanism for driving digital transformation and creating organizational value. EA plays a critical role in orchestrating information technology and business resources to enable organizations to respond to turbulent market conditions (Pattij et al., 2022). This perspective demonstrates that EA is not only technological in nature but also encompasses strategic and organizational dimensions. EA assists organizations in understanding their current state, designing a desired future state, identifying gaps, and preparing a more directed transformation roadmap. In higher education, this approach is particularly important because the complexity of academic and administrative processes often causes information systems to develop in isolation, thereby failing to support integrated strategic decision-making.

In recent years, the EA literature has demonstrated a significant shift from a documentation-oriented approach toward one that is more adaptive, data-driven, and knowledge-based (Vandevenne et al., 2023; Ahmad et al., 2024). Scholars argue that EA needs to evolve from static documentation to an intelligent knowledge infrastructure by integrating artificial intelligence. AI-based observability can transform EA into a living knowledge infrastructure—one in which architecture not only represents the organizational condition but also detects deviations, monitors changes, and updates organizational understanding in near real time. This development is highly relevant for higher education institutions because they store various forms of knowledge, both explicit and tacit, including academic policies, curricula, learning outcomes, research data, collaboration networks, lecturer expertise, study program management experience, quality assurance practices, and institutional evaluation results. If such knowledge is not managed systematically, higher education institutions will struggle to build a sustainable competitive advantage.

Knowledge Management has emerged as a critical approach for addressing this challenge (Kotusev et al., 2023; Underwood, 2023). KM focuses on how knowledge is created, stored, shared, utilized, and renewed within an organization. In higher education institutions, KM occupies a highly strategic position because knowledge constitutes the core of all institutional activities. Higher education institutions are not only users of knowledge but also producers, managers, and disseminators of knowledge. However, the primary challenge that frequently arises is knowledge fragmentation. Institutional knowledge is dispersed across academic units, administrative units, information systems, quality documents, research reports, student databases, cooperation archives, publication repositories, and the individual experiences of academic and non-academic staff. Consequently, decision-making processes often depend on partial data, personal experience, or documents that are not always integrated. In this context, integrating KM with EA is critical because EA provides structure, while KM furnishes mechanisms for managing knowledge content. When both are integrated, higher education institutions can develop a model that not only describes organizational architecture but also connects it to knowledge flows that support competitiveness.

The concept of integrating EA and KM is supported by various studies that position EA as a knowledge management discipline (Kotusev et al., 2023). These studies indicate that the primary issue in EA does not reside solely in architectural modeling but also in how organizations understand, interpret, and utilize the knowledge embedded in architecture. Knowledge fragmentation and semantic underspecification in EA tools pose challenges that impede EA's effectiveness as a strategic instrument. In higher education institutions, this condition manifests when academic data are not connected with research data, cooperation data are not linked to performance indicators, or quality assurance documents are not integrated with strategic planning. Therefore, research on an integrated knowledge management model within EA is highly relevant to strengthening the competitiveness of higher education institutions.

In addition to knowledge fragmentation, a significant challenge in higher education digital transformation is the alignment between institutional strategy and information technology (Takeuchi et al., 2022). Empirical evidence suggests that numerous digital projects fail at an early stage due to the absence of alignment between business objectives and technical requirements. Although such findings may originate in contexts beyond higher education, their implications are broad. Many digital initiatives in higher education institutions—including academic systems, learning management systems, research repositories, quality assurance systems, performance dashboards, and reporting systems—are often developed based on the needs of particular units without a comprehensive architectural framework. As a result, systems overlap, data integration becomes difficult, and strategic information cannot be readily accessed. This condition may inhibit higher education institutions' ability to respond to policy changes, student needs, accreditation standards, opportunities for collaboration, and demands for scientific publication.

Studies on data integration further emphasize its importance in supporting knowledge discovery (Hock & Gomez, 2022). Data preparation can consume more than half of the total time in the knowledge discovery process, making data integration a key determinant of analytical quality. This finding is highly relevant to higher education because data-driven decision-making can only function when data are available, standardized, connected, and trustworthy. Without

a clear data architecture, knowledge management processes will struggle to generate valid organizational knowledge. Data integration within EA can help higher education institutions connect various data sources—including student, faculty, research, publication, curriculum, cooperation, alumni, financial, and facilities data—thereby enabling EA to serve as a structural foundation for KM. In contrast, KM serves as a mechanism for transforming data and information into strategic knowledge.

In the context of digital transformation, human and organizational factors cannot be overlooked (Zhang et al., 2021). Human factors such as inertia and a lack of cross-unit communication are primary causes of failure to achieve dynamic alignment between business strategy and information technology. The success of digital transformation is strongly determined by an organization's capacity to overcome psychological, socio-cognitive, and structural inertia. Higher education institutions frequently encounter similar challenges. Digital transformation is not merely about procuring applications or infrastructure but also involves changing work culture, coordination patterns, data-sharing practices, leadership commitment, and human resource readiness. Therefore, an integrated KM model within EA needs to account for human dimensions, organizational culture, leadership, and cross-unit collaboration.

Stakeholder considerations also occupy an important position in EA development (Lukaszewski & Xie, 2024; Kitsios et al., 2022). Visual communication using ArchiMate is recognized as crucial for aligning business and information technology understanding during the early stages of project initiation. ArchiMate serves as a boundary object that bridges the gap in understanding between business and IT stakeholders. In higher education institutions, stakeholders encompass university leadership, faculties, study programs, lecturers, academic staff, students, alums, industry partners, government agencies, accreditation bodies, and society. Without an effective architectural communication mechanism, a university's digital strategy may be interpreted differently across units. Therefore, KM and EA integration must provide architectural representations that are understandable, communicable, and useful as institutional coordination tools.

The literature further demonstrates that EA plays an important role in project governance and project-based organizations (Atencio et al., 2024; Kitsios et al., 2022; Zhi & Zhou, 2022). EA, while still rarely applied in project-based organizations, is highly needed for effective governance. Higher education institutions share many characteristics with project-based organizations, particularly in managing research, community service, grants, accreditation, curricula, cooperation, and digital transformation initiatives. Each of these activities requires cross-unit coordination and continuous documentation of knowledge. If EA is integrated with KM, the outcomes of institutional projects can transcend administrative reports and become organizational knowledge that is reusable for strategic improvement.

The competitiveness of higher education institutions is also related to institutional capacity to build sustainability and innovation (Cagle & Ahmed, 2024; Fernando, 2022). Conceptual models of sustainable digital transformation in universities demonstrate that integrating technology, systems, and educational phenomena constitutes a viable pathway. This confirms that higher education digital transformation must be directed not only toward internal efficiency but also toward long-term institutional sustainability. Green Enterprise Architecture (GREAN) provides one avenue for integrating environmental sustainability targets into an organization's digital architecture structure (Vandevenne et al., 2023). EA thus has the potential to integrate various strategic orientations, including sustainability, academic quality, research reputation, and competitiveness. In higher education, competitiveness is measured not only by technology adoption but also by the institution's ability to generate academic, social, economic, and reputational value.

From a technological perspective, developments in AI, cloud computing, ERP systems, digital twins, cybersecurity, and process mining have progressively expanded the scope of EA (Handa et al., 2021; Jiang et al., 2023; Meierhofer et al., 2021; Ayala et al., 2023). Large Language Models increasingly function as strategic partners in modernizing legacy systems, and formal collaboration between human experts and AI has the potential to improve transparency in strategic decisions within ArchiMate. Big Data and Cloud Computing exert a strong influence on EA principles, and EA is increasingly employed for cybersecurity analysis, especially in critical infrastructure. These developments indicate that EA is becoming a center for integrating various digital technologies—an evolution that is strategically significant for higher education institutions.

However, several gaps in the literature constitute the basis for this study (Milovanov, 2022; Rodríguez-Rios & Roa-Sánchez, 2022; Soelistijanto & Siringoringo, 2023; Busch & Zalewski, 2025). First, most EA studies continue to focus on business organizations, the public sector, banking, manufacturing, or critical infrastructure, while the development of an EA-KM model explicitly directed at higher education competitiveness remains limited. Second, studies on KM in EA often discuss conceptual aspects, observability, AI, or knowledge fragmentation, but few have formulated an integrated model applicable to higher education institutions as a strategic framework. Third, the literature on higher education digital transformation emphasizes the importance of sustainability and governance, but has not strongly

connected these concerns with EA structures and KM processes. Fourth, EA evaluation continues to face standardization challenges, indicating the need for a model that is not only conceptual but also directed toward evaluable competitiveness indicators.

Based on the foregoing discussion, the study entitled 'A Knowledge Management Integration Model within Enterprise Architecture to Improve the Competitiveness of Higher Education Institutions' possesses both academic and practical urgency. Academically, this study seeks to fill the gap between the literature on EA, KM, digital transformation, and higher education competitiveness, viewing EA not merely as an information technology framework but as an organizational knowledge infrastructure. In practice, this study can assist higher education institutions in developing a knowledge governance model that connects to business processes, data, applications, technology, organizational actors, and institutional performance indicators (Chang & Zhang, 2024; Khoshroo & Talari, 2025). This study employs a Systematic Literature Review (SLR) and Bibliometric Analysis to map research developments, identify key themes, locate research gaps, and formulate the conceptual model's direction. The article is structured as follows: introduction, background, related work, methodology, results, discussion, and conclusion.

2. Background

Digital transformation in higher education necessitates a conceptual foundation that connects strategy, business processes, technology, and organizational knowledge. EA provides a mechanism for mapping the current organizational state and designing the desired future state. Meanwhile, KM ensures that organizational knowledge can be continuously created, shared, utilized, and renewed. When these two approaches are integrated, higher education institutions can build an organizational architecture that is not only technically sound but also knowledge-based.In recent literature, EA is positioned as a primary driver of digital transformation (Pulparambil et al., 2021; Pattij et al., 2022). The building blocks approach has been identified as necessary to support architectural flexibility in a dynamic environment. Scholars recognize that there is no single, universally applicable approach to Enterprise Architecture Management, as different configurations of elements can support digital transformation under different organizational conditions (Prajova et al., 2021). This finding implies that higher education institutions need to develop an EA model that is appropriate to their specific institutional characteristics rather than mechanically adopting a general framework.

KM constitutes an important element because higher education institutions are fundamentally knowledge-based organizations (Bukhori et al., 2024; Huang et al., 2022; Zhang et al., 2021). EA maintains a close relationship with KM because architecture inherently stores knowledge about organizational structures, processes, technologies, and decisions. However, this knowledge is often dispersed across documents, modeling tools, information systems, and the experiences of organizational actors. Therefore, integrating KM into EA can improve decision-making quality, reduce fragmentation, and strengthen organizational learning processes.

3. Related Work

Previous studies reveal several major research streams that are highly relevant to this investigation.

3.1. EA and Digital Transformation

Studies on EA and digital transformation demonstrate that EA plays a pivotal role in orchestrating business and IT resources to address turbulent competitive environments (Christy et al., 2024; Irawan et al., 2024; Pulparambil et al., 2021; Trad, 2021). Business transformation managers are increasingly positioned as architects of adaptive business systems. Standard architectures often lack sufficient flexibility, necessitating a building-block approach that can accommodate dynamic organizational requirements.

3.2. EA and Knowledge Management

Studies on the relationship between EA and KM position EA as a knowledge management discipline and identify epistemological, technological, and organizational barriers to effective integration (Hock & Gomez, 2022). AI-based observability approaches can enable EA to function as a living knowledge infrastructure, continuously capturing and updating organizational knowledge. This research stream is directly relevant to the proposed study because it positions EA as a mechanism for systematic knowledge management rather than merely as a documentation tool.

3.3. Data Integration and Knowledge Discovery

Studies on data integration and knowledge discovery demonstrate the critical importance of integration as a prerequisite for quality knowledge generation (Hock & Gomez, 2022). In higher education institutions, data integration constitutes a prerequisite for developing quality dashboards, accreditation systems, research management systems, and evidence-based strategic decision-making. Poorly integrated data inevitably leads to fragmented institutional knowledge.

3.4. Stakeholders and Architectural Communication

Studies on stakeholders and architectural communication highlight the indispensable role of ArchiMate as a visual communication tool for aligning business and IT understanding among diverse actors (Borucka et al., 2021; Lukaszewski & Xie, 2024; Meierhofer et al., 2021). In higher education institutions, architectural communication is particularly necessary due to the multiplicity of stakeholders with distinct interests and information needs.

3.5. Higher Education Digital Transformation and Sustainability

Studies on higher education digital transformation and sustainability propose models that integrate technology, systems, and educational phenomena to support long-term institutional resilience (Al-Shareeda et al., 2024; Sheeba et al., 2023). These studies provide a conceptual basis for understanding digital transformation in higher education as a long-term strategic orientation rather than merely a temporary technology project.

4. Methods

(10 pt) Here introduce the paper, and put a nomenclature if necessary, in a box with the same font size as the rest of the paper. The paragraphs continue from here and are only separated by headings, subheadings, images and formulae. The section headings are arranged by numbers, bold and 10 pt. Here follows further instructions for authors.

4.1. Research Design

This study adopts a Systematic Literature Review (SLR) approach combined with bibliometric analysis. The SLR method enables a systematic and reproducible examination of the published literature using defined inclusion and exclusion criteria, thereby minimizing selection bias and enhancing the rigor of the theoretical synthesis. Bibliometric analysis complements the SLR by providing quantitative insights into publication trends, keyword co-occurrence patterns, and thematic evolution across the literature corpus. Together, these methods facilitate a comprehensive mapping of the EA and KM research landscape in the context of competitiveness in higher education.

4.2. Research Questions

This study addresses the following research questions:

RQ1: How has the integration of EA and KM evolved within the digital transformation literature from 2021 to 2026?
RQ2: What role does EA-based knowledge management play in strengthening organizational competitiveness in higher education institutions?
RQ3: What are the conceptual components of an integrated KM-EA model for higher education institutions?

4.3. Search Protocol and Inclusion Criteria

The literature search was conducted using Scopus as the primary scientific database. Search strings were constructed using combinations of relevant keywords, including 'Enterprise Architecture,' 'Knowledge Management,' 'Digital Transformation,' 'Higher Education,' 'Competitiveness,' 'AI-enhanced architecture,' 'Data Integration,' 'ERP,' 'Cloud Computing,' and 'Cybersecurity.' Publications were restricted to the period 2021–2026 to capture contemporary developments. Inclusion criteria required that articles be peer-reviewed, written in English, and directly relevant to at least one of the identified research themes. Review articles, book chapters, and conference proceedings were included where substantial thematic relevance was established.

4.4. Exclusion Criteria

Articles were excluded if they did not address EA, KM, digital transformation, or higher education in substantive terms; if they were published before 2021; if they were not accessible in full text; or if they were found to be duplicates across database sources. Articles focusing exclusively on infrastructure or operational IT without strategic or architectural dimensions were similarly excluded.

4.5. Quality Assessment

Quality assessment was conducted using established criteria for systematic literature reviews, including methodological rigor, the relevance of findings to the research questions, the clarity of the theoretical framework, and the reliability of the empirical evidence presented. Studies receiving low quality ratings were excluded from the final synthesis. All included articles were indexed in Scopus, thereby providing baseline assurance of peer-review quality.

4.6. Data Extraction

Data extraction was performed using a structured extraction form encompassing the following elements: article title, author names, publication year, research context and geographical scope, theoretical framework employed, research methodology, principal findings, stated research limitations, and relevance to digital transformation and EA-KM integration themes. Extracted data were systematically recorded in a structured database to facilitate subsequent thematic synthesis and bibliometric analysis.

4.7. Bibliometric Analysis Tools

Bibliometric analysis was performed using VOSviewer (version 1.6.20) for keyword co-occurrence mapping and network visualization. Publication trend analysis was conducted using descriptive statistical methods. Thematic clustering was performed to identify major research streams and their inter-relationships. An overlay visualization was employed to track the temporal evolution of themes from 2021 to 2026.

4.8. Scope of Literature Context

Table 1. Scope of literature context

Research Domain	Primary Focus
Enterprise Architecture	EA frameworks, modeling, governance, evaluation
Public Sector EA	Digital government, governance architecture
Banking and Financial Services	Digital transformation, legacy modernization
Industry and Manufacturing	Lean manufacturing, sustainability, digital twin
Healthcare	Institutional pluralism, EA operationalization
Enterprise Systems	ERP, cloud ERP, data integration
Cybersecurity Architecture	Zero Trust, EA for cyber risk analysis
Higher Education	Digital transformation, knowledge management, and competitiveness

4.9. Purpose of Analysis

The purpose of analysis in this study:

a. To map EA and KM research trends in the digital transformation context;
b. To identify EA contributions to organizational competitiveness;
c. To locate research gaps in the KM and EA integration literature with specific attention to higher education institutions;
d. To formulate initial conceptual components of a KM-EA integrated model;
e. To establish a robust theoretical foundation for further dissertation research.

4.10. Data Sources

The primary data sources consist of scientific articles summarized in the reference corpus, which includes 197 publications exported from the Scopus database via Mendeley reference management software. The data elements employed in the bibliometric and content analysis include: article title, author names, publication year, research context, theoretical framework, research methodology, principal findings, stated limitations, and correlation with digital transformation themes.

4.11. Visualization

The planned visualizations in this study include: a publication distribution graph by year; a keyword co-occurrence map generated using VOSviewer; a network visualization among the themes of EA, KM, AI, digital transformation, and competitiveness; an overlay visualization to observe temporal theme development; and a conceptual diagram of the integrated KM model within EA.

5. Result and Discussion

5.1. Bibliometric Analysis

Based on the analysis of the literature corpus, publication trends demonstrate increasing scholarly attention to EA in the context of digital transformation, artificial intelligence, data integration, cybersecurity, and sustainability. Publications from 2025 are the most dominant in the corpus, followed by those from 2021, 2024, and 2026. This distribution indicates that the EA theme has grown substantially stronger following the post-pandemic acceleration of digital transformation initiatives globally.

Table 2. Publication distribution by year

Year	Number of Articles
2021	7
2022	4
2023	2
2024	7
2025	9
2026	6
Total	35

The principal thematic clusters emerging from the bibliometric analysis are presented in Table 3.

Table 3. Principal research themes identified in the corpus

Theme	Primary Focus
EA and Digital Transformation	Strategic alignment, building blocks, and dynamic capabilities
EA and Knowledge Management	Architecture as knowledge infrastructure
AI-Enhanced EA	Observability, Large Language Models, co-intelligence
Data Integration	Knowledge discovery, data preparation, data fusion
Cybersecurity Architecture	Zero Trust, critical infrastructure protection
ERP and Cloud ERP	Enterprise system integration, open innovation
Sustainability	Green EA, sustainable university transformation
Stakeholder Management	ArchiMate, visual communication, boundary objects
Higher Education	Digital transformation, KM, institutional competitiveness

Bibliometrically, the themes most proximate to this study are Enterprise Architecture, Knowledge Management, Digital Transformation, Data Integration, Artificial Intelligence, and Higher Education Competitiveness. The relational structure among these themes indicates that EA can function as the connecting infrastructure between strategy, technology, and organizational knowledge.

To visualize this thematic structure, a keyword co-occurrence network was constructed from the author keywords of the 197 reviewed publications, as shown in Figure 1. The network reveals three coherent clusters: an EA-frameworks cluster centered on enterprise architecture, TOGAF, digital transformation, and blueprint; a modeling-and-intelligence cluster comprising ArchiMate, ontology, IT governance, and artificial intelligence; and a governance-and-practice cluster encompassing stakeholders, case study, agile, and risk management. The centrality of enterprise architecture within the network, together with its dense linkages to digital transformation and artificial-intelligence-related terms, corroborates the bibliometric finding that EA research is increasingly converging with knowledge-oriented and intelligent-system themes, thereby reinforcing the rationale for the KM-EA integration model proposed in this study.

5.2. Study Analysis

The study's analysis reveals that EA primarily serves as an integration mechanism (Takeuchi et al., 2024; Takeuchi et al., 2022; Hermanto & Ibrahim, 2025; Rosak-Szyrocka et al., 2023; Xu et al., 2022; Borucka et al., 2021; Meierhofer et al., 2021). The literature consistently emphasizes the importance of aligning business objectives with technical requirements, highlights data integration as the foundation for high-quality knowledge discovery, and demonstrates that architectural visualization can enhance shared understanding among business and IT stakeholders. These findings collectively establish that EA can serve as a bridge between strategy, data, technology, and organizational actors.

Studies on EA and KM provide the most direct contribution to this research (Rembulan et al., 2023; Zhu et al., 2024). EA can be effectively positioned as a knowledge management discipline, while AI-based observability approaches have

the potential to transform EA into a living knowledge infrastructure. These findings support the argument that EA needs to be developed not only as architectural documentation but also as a dynamic system capable of continuously capturing, processing, and utilizing organizational knowledge.

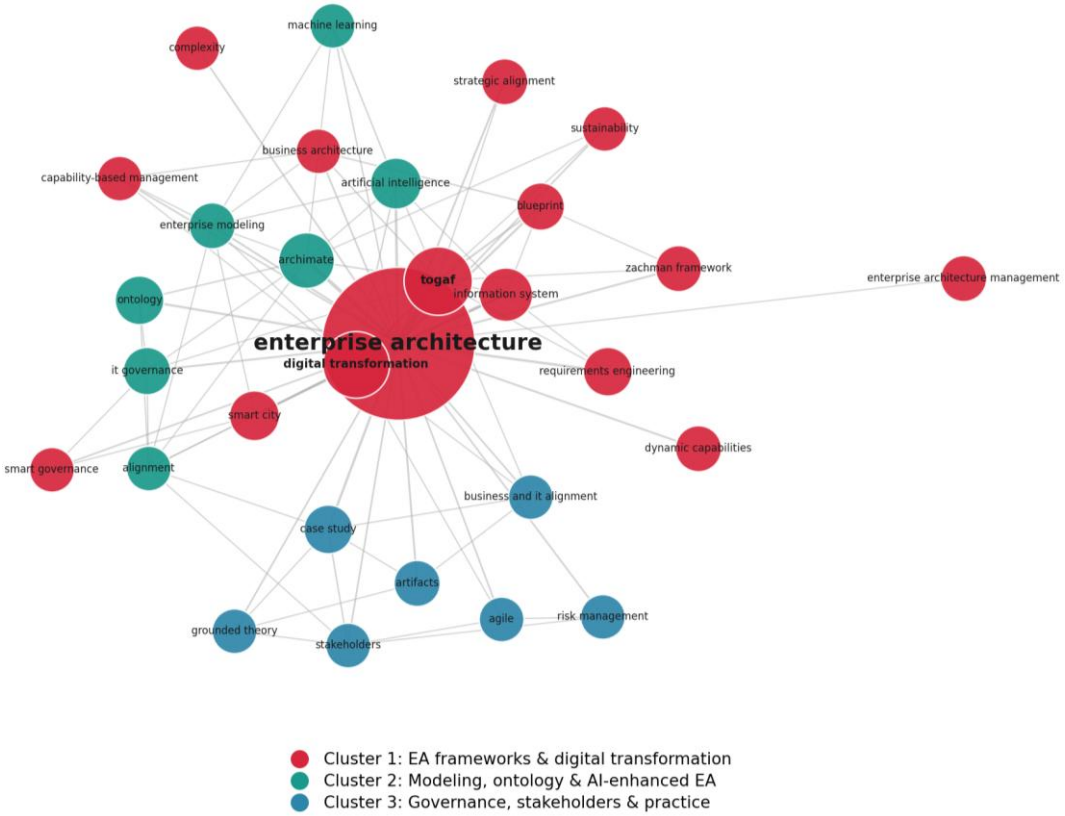

Fig. 1. Keyword co-occurrence network of the reviewed corpus (node size = keyword frequency; color = thematic cluster).

In the context of higher education, studies emphasizing sustainable digital transformation that integrates technology, systems, and educational phenomena strengthen the argument that higher education institutions require a digital transformation model that is not merely technical but also institutional and knowledge-based. Higher education competitiveness can be substantially improved when organizational knowledge is systematically managed through a coherent EA structure.

5.3. Summary of Findings

Enterprise Architecture (EA) has evolved from static documentation into a strategic mechanism for supporting digital transformation and organizational knowledge governance. Knowledge Management (KM) constitutes an essential dimension of EA because architectural artifacts inherently contain valuable organizational knowledge. In this context, data integration is a prerequisite for developing EA-based KM systems. At the same time, the emergence of artificial intelligence, Large Language Models, and observability technologies offers transformative opportunities to advance EA as an intelligent knowledge infrastructure. Higher education institutions, therefore, require an integrated KM-EA model due to the high complexity of their processes, actors, data, and knowledge requirements. However, the principal research gap remains the lack of a comprehensive, integrated KM-EA model specifically designed to enhance the competitiveness of higher education institutions.

5.4. Discussion

The synthesis of the literature demonstrates that KM and EA integration can provide a robust foundation for enhancing the competitiveness of higher education. EA furnishes an architectural structure that maps the relationships among institutional strategy, business processes, data, applications, and technology. KM ensures that knowledge embedded within this structure can be created, shared, utilized, and evaluated on an ongoing basis. When both approaches are

integrated, higher education institutions acquire the institutional capacity to learn, adapt, and make strategic decisions with greater agility and precision. In the proposed model, EA functions as the structural foundation across multiple architectural layers. Business architecture maps academic, research, community service, cooperation, and governance processes. Data architecture manages strategic institutional data sources. Application architecture connects the institution's information systems. Technology architecture supports digital infrastructure. All these layers are then connected to KM processes—specifically knowledge creation, knowledge storage, knowledge sharing, knowledge utilization, and knowledge evaluation—thereby creating a dynamic and coherent knowledge-driven organizational system.

Higher-education competitiveness can be fostered through multiple mechanisms. First, KM-EA integration can improve strategic alignment by ensuring that every digital decision is explicitly linked to institutional objectives. Second, this integration can accelerate decision-making by rendering data and knowledge more accessible and actionable. Third, it can reduce system duplication and information fragmentation. Fourth, it can strengthen accreditation and quality assurance processes by systematically documenting evidence of institutional performance within the architectural framework. Fifth, it can catalyze institutional innovation by enabling the synthesis of knowledge from diverse organizational units into novel strategies. Accordingly, an integrated KM model within EA has the potential to make both theoretical and practical contributions. Theoretically, this model expands the understanding of EA as a knowledge infrastructure that encompasses not only technical but also human, organizational, and strategic dimensions. Practically, it can assist higher education institutions in building digital governance that is more adaptive, collaborative, and competitive in the contemporary knowledge economy.

5.5. Bibliometric Conclusions

In general, the dataset confirms that scholarly research during the 2021–2026 period has experienced sustained growth, particularly in the thematic areas of enterprise architecture, blockchain, Internet of Things, cybersecurity, artificial intelligence, cloud computing, and digital transformation. The year 2025 saw the highest number of publications in the corpus, indicating that this field remains dynamically evolving and attracts strong academic and professional interest. The dominance of the 'enterprise architecture' keyword confirms that EA remains a foundational element in scholarly discussions of organizational digital transformation. However, the most recent publications increasingly associate EA with complementary technologies—AI, blockchain, cloud computing, IoT, and cybersecurity—indicating a paradigmatic evolution in which EA is no longer viewed as a static framework but as a dynamic approach for managing organizational and technological complexity in an integrated fashion. In the context of dissertation research, these findings reinforce the scientific soundness of developing an integrated knowledge management model within enterprise architecture. Such a study has the potential to make substantive contributions to knowledge governance, strategic technology alignment, and the enhancement of the competitiveness of higher education institutions in the digital era.

6. Proposed Conceptual Model

(10 pt) Here introduce the paper, and put a nomenclature if necessary, in a box with the same font size as the rest of the paper. The paragraphs continue from here and are only separated by headings, subheadings, images and formulae. The section headings are arranged by numbers, bold and 10 pt. Here follows further instructions for authors.

The proposed integrated KM-EA model for higher education competitiveness consists of five hierarchically organized and functionally interconnected layers, as presented in Table 4.

Table 4. Components of the integrated KM-EA conceptual model

Layer	Component Description
Strategic Layer	Institutional vision, mission, strategic objectives, competitiveness indicators, and higher education long-term strategy.
EA Layer	Business architecture, data architecture, application architecture, and technology architecture aligned with institutional strategy.
KM Layer	Knowledge creation, knowledge storage, knowledge sharing, knowledge utilization, and knowledge evaluation processes.
Governance Layer	Policies, standards, stakeholder engagement mechanisms, quality assurance protocols, and architecture evaluation frameworks.
Competitiveness Layer	Academic quality, research reputation, innovation capacity, collaboration networks, accreditation outcomes, and institutional performance metrics.

The model operates on the principle that institutional competitiveness is not an outcome achieved through technological adoption alone but emerges from the systematic governance of organizational knowledge within a coherent architectural framework. The Strategic Layer defines the institutional direction and competitive ambition. The EA Layer provides the structural scaffolding that maps how technology, data, and processes support these strategic objectives. The KM Layer ensures that knowledge embedded within this structure is continuously identified, captured, organized, and made accessible to decision-makers. The Governance Layer provides the regulatory and coordination mechanisms that maintain the integrity and coherence of the integrated system. Finally, the Competitiveness Layer translates the knowledge governance outcomes into measurable institutional performance.

Figure 2 illustrates the complete structure of the proposed model, depicting how the Strategic, EA, KM, Governance, and Competitiveness layers are vertically interconnected and how each layer decomposes into its constituent components.

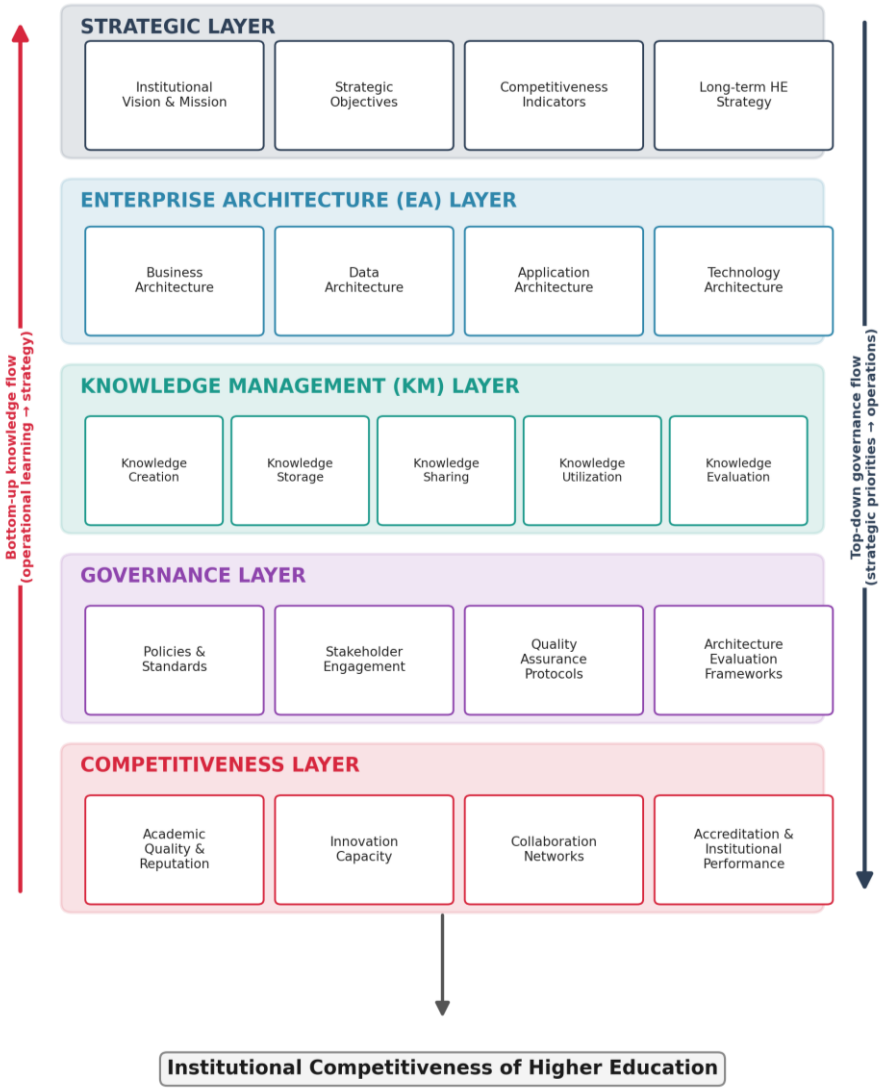

Fig. 2. Conceptual model of KM-EA integration for higher education competitiveness, showing the five interconnected layers and bidirectional strategic-operational flows.

The bidirectional relationships among layers are particularly significant. Bottom-up knowledge flows from operational processes through the KM Layer to the Strategic Layer, enabling evidence-based institutional learning and adaptive strategy refinement. Top-down governance flows from the Strategic Layer through EA frameworks to operational units, ensuring that institutional priorities are systematically translated into architectural decisions and knowledge management practices.

7. Conclusion

Based on the systematic literature review and bibliometric analysis conducted in this study, several substantive conclusions can be drawn. Enterprise Architecture has undergone a fundamental evolution from a documentation-oriented approach into a strategic mechanism that supports digital transformation, data integration, technology governance, and organizational decision-making. Knowledge Management constitutes an indispensable element because higher education institutions are intrinsically knowledge-based organizations that critically depend on their capacity to create, store, share, and utilize institutional knowledge. The synthesis of the literature demonstrates that integrating KM and EA holds considerable potential to overcome system fragmentation, data silos, and knowledge dispersion in higher education institutions. The proposed model, comprising a strategic layer, EA layer, KM layer, governance layer, and competitiveness layer, provides a coherent conceptual framework that higher education institutions can employ to build strategic alignment, strengthen organizational learning, improve decision-making quality, and accelerate knowledge-based digital transformation.

The principal contribution of this article is the development of a conceptual foundation for subsequent research that can be validated and refined through empirical approaches. Future research should test the relationships among variables in the proposed model, develop operationalizable indicators of higher education competitiveness, and evaluate the model's effectiveness across diverse higher education institutional contexts, particularly within the Indonesian higher education landscape. Methodological approaches, including expert validation interviews, Design Science Research, case study analysis, and quantitative structural equation modeling using PLS-SEM, are recommended for future empirical phases. This conceptual synthesis is subject to the inherent limitations of literature-based inquiry, including reliance on Scopus-indexed publications and the exclusion of non-English sources; nevertheless, it establishes a defensible theoretical platform on which subsequent empirical dissertation research can be systematically built and refined.

Acknowledgements

The authors gratefully acknowledge the support of the Doctoral Program in Information Systems, School of Postgraduate Studies, Universitas Diponegoro, Semarang, Indonesia, in facilitating this research. The authors declare no conflicts of interest.

References

Abdallah, A., Abran, A., Qasaimeh, M., Ahmad, A., & Al-Refai, A. (2023). ANALYSIS OF THE SCALE TYPES AND MEASUREMENT UNITS IN ENTERPRISE ARCHITECTURE (EA) MEASUREMENT. Interdisciplinary Journal of Information, Knowledge, and Management, 18, 321–352. https://doi.org/10.28945/5113

Adwan, E. (2025). IT Maturity Model Design and Evaluation for Sustainable Smart Cities Assessment. Journal of Information Systems Engineering and Business Intelligence, 11(2), 279–292. https://doi.org/10.20473/jisebi.11.2.279-292

Afshani, J., Karimi, A., Osati, E. N., & Zarafshan, F. (2022). A Fuzzy DEMATEL-ANP-Based Approach to Prioritize Activities in Enterprise Architecture. Complexity, 2022, 2158255. https://doi.org/10.1155/2022/2158255

Aghamohammadpour, A., Mahdipour, E., & Attarzadeh, I. (2023). Architecting a threat hunting system based on the DODAF framework. Journal of Supercomputing, 79(4), 4215–4242. https://doi.org/10.1007/s11227-022-04808-6

Agusta, Y. (2023). Managing the Development of a Sustainable Digital Village. Sustainability (Switzerland), 15(9), 7575. https://doi.org/10.3390/su15097575

Ahdiani, H., & Legowo, N. (2022). ENTERPRISE ARCHITECTURE OF AN APPLICATION OF MOBILE REFERRAL MARKETING IN A CONSUMER FINANCE COMPANY WITH TOGAF FRAMEWORK. Journal of Theoretical and Applied Information Technology, 100(10), 3194–3206. https://www.scopus.com/pages/publications/85131756241?origin=resultslist

Ajer, A., Hustad, E., & Vassilakopoulou, P. (2021). Enterprise architecture operationalization and institutional pluralism: The case of the Norwegian Hospital sector. Information Systems Journal, 31(4), 610–645. https://doi.org/10.1111/isj.12324

Ajer, A., Hustad, E., Olsen, D., & Vassilakopoulou, P. (2023). Institutional Work for Enterprise Architecture. Communications of the Association for Information Systems, 53, 278–298. https://doi.org/10.17705/1CAIS.05311

Akatev, Y. (2026). The Place and Role of an Intelligent Assistant in the Architecture of an Organization. Scientific and Technical Information Processing, 53(1), 47–53. https://doi.org/10.3103/S0147688226700012

Al-Kharusi, H., Miskon, S., & Bahari, M. (2021). Enterprise architects and stakeholders' alignment framework in enterprise architecture development. Information Systems and e-Business Management, 19(1), 137–181. https://doi.org/10.1007/s10257-020-00484-2

Alhari, M., & Fajrillah, A. (2022). Enterprise Architecture: A Strategy to Achieve the e-Government Dimension of Smart Village Using TOGAF ADM 9.2. International Journal on Informatics Visualization, 6(2), 540–545. https://doi.org/10.30630/joiv.6.2-2.1147

Alwadain, A. (2026). A Socio-Technical Analysis of Enterprise Architecture Misalignments. International Journal of Advanced Computer Science and Applications, 17(3), 982–989. https://doi.org/10.14569/IJACSA.2026.0170387

Alzahrani, N., & Alghamdi, H. (2023). Towards a Framework for Elevating the Usage of eLearning Technologies in Higher Education Institutions. International Journal of Advanced Computer Science and Applications, 14(12), 290–297. https://doi.org/10.14569/IJACSA.2023.0141230

Alzoubi, Y., & Mishra, A. (2024). Enterprise architecture contribution in distributed agile software development. Systems Engineering, 27(3), 570–584. https://doi.org/10.1002/sys.21739

Amin, F., Hussein, S., Daud, N., Bakar, N., & Ahmad, W. (2024). Cultivating excellence: a case study of enterprise architecture transformational journey in higher education. Indonesian Journal of Electrical Engineering and Computer Science, 34(1), 548–555. https://doi.org/10.11591/ijeecs.v34.i1.pp548-555

Ananda, V., Lee, F., & Breliastiti, R. (2025). Designing business architecture for a machinery distribution company using the Open Group Architecture Framework method. International Journal of Advances in Applied Sciences, 14(1), 185–192. https://doi.org/10.11591/ijaas.v14.i1.pp185-192

Anes, S. R., & Mamede, H. (2024). Strengthening the Resilience and Perseverance of Rural Accommodation Enterprises in the Iberian Depopulated Areas through Enterprise Architecture. Sustainability (Switzerland), 16(2), 533. https://doi.org/10.3390/su16020533

Anthony, J. B., Abbas, P. S., Helfert, M., & Guo, H. (2021). Digital transformation with enterprise architecture for smarter cities: a qualitative research approach. Digital Policy, Regulation and Governance, 23(4), 355–376. https://doi.org/10.1108/DPRG-04-2020-0044

Anthony, J. B., Petersen, S., & Krogstie, J. (2023). A model to evaluate the acceptance and usefulness of enterprise architecture for the digitalization of cities. Kybernetes, 52(1), 422–447. https://doi.org/10.1108/K-07-2021-0565

Aoun, C., Mansour, N., Dornaika, F., & Lagadec, L. (2024). Environmental Constraints for Intelligent Internet of Deep-Sea/Underwater Things: An Enterprise Architecture Approach. Sensors, 24(8), 2433. https://doi.org/10.3390/s24082433

Aprilia, K., Lee, F., Geasela, Y., Everlin, S., & Tampinongkol, F. (2024). Design of Enterprise Architecture Using the Zachman Framework at a Private School in Central Jakarta. Journal of Computer Science, 20(9), 1059–1068. https://doi.org/10.3844/JCSSP.2024.1059.1068

Atencio, E., Mancini, M., & Bustos, G. (2025). Ontology-Based Integration of Enterprise Architecture and Project Management: A Systems Thinking Approach for Project-Based Organizations in the Architecture, Engineering, and Construction Sector. Systems, 13(6), 477. https://doi.org/10.3390/systems13060477

Badawi, S., Takruri, M., Salameh, K., Guessoum, D., ElBadawi, I., & Al-Qaisi, A. (2026). Data Governance and Security Assurance in ISO27001 Programs: A Context Study on Quality and Compliance in Middle Eastern

Organizations. Applied Mathematics and Information Sciences, 20(1), 253–265. https://doi.org/10.18576/amis/200117

Bakhshi, J., & Efatmaneshnik, M. (2026). Assessing Capability Complexity Using Enterprise Architecture Framework. Systems Engineering, 29(4), 591–616. https://doi.org/10.1002/sys.70039

Banh, L., Khang, T. T., & Strobel, G. (2025). An Affordance Perspective on Generative AI in Enterprise Architecture. IEEE Access, 13, 192711–192730. https://doi.org/10.1109/ACCESS.2025.3631323

Barros, O. (2022). A Management and Enterprise Architecture Framework for Comprehensive Structure Design of Complex Services. International Journal of Service Science, Management, Engineering, and Technology, 13(1). https://doi.org/10.4018/IJSSMET.290335

Bastidas, V., Reychav, I., Ofir, A., Bezbradica, M., & Helfert, M. (2022). Concepts for Modeling Smart Cities: An ArchiMate Extension. Business and Information Systems Engineering, 64(3), 359–373. https://doi.org/10.1007/s12599-021-00724-w

Belfadel, A., Laval, J., Bonner, C. C., & Moalla, N. (2022). Requirements engineering and enterprise architecture-based software discovery and reuse. Innovations in Systems and Software Engineering, 18(1), 39–60. https://doi.org/10.1007/s11334-021-00423-5

Belfadel, A., Amdouni, E., Laval, J., Cherifi, C., & Moalla, N. (2022). Towards software reuse through an enterprise architecture-based software capability profile. Enterprise Information Systems, 16(1), 29–70. https://doi.org/10.1080/17517575.2020.1843076

Bouayad, H., Benabbou, L., & Berrado, A. (2021). Aligning information technology and supply chain: An approach to map SCOR to COBIT. International Journal of Information System Modeling and Design, 12(3), 1–26. https://doi.org/10.4018/IJISMD.2021070101

Bousdekis, A., & Mentzas, G. (2021). Enterprise Integration and Interoperability for Big Data-Driven Processes in the Frame of Industry 4.0. Frontiers in Big Data, 4, 644651. https://doi.org/10.3389/fdata.2021.644651

Bruls, W., Winter, R., Foorthuis, R., Steenbergen, M., Lankhorst, M., Mommers, B., & Brinkkemper, S. (2025). Business IT Alignment—Where should we go: a View from Practice. Enterprise Modeling and Information Systems Architectures, 20. https://doi.org/10.18417/emisa.20.1

Bui, Q., & Lyytinen, K. (2022). Aligning adoption messages with audiences' priorities: A mixed-methods study of the diffusion of enterprise architecture among the US state governments. Information and Organization, 32(4), 100423. https://doi.org/10.1016/j.infoandorg.2022.100423

Busch, N., & Zalewski, A. (2025). A Systematic Literature Review of Enterprise Architecture Evaluation Methods. ACM Computing Surveys, 57(5), 113. https://doi.org/10.1145/3706582

Calhau, R., Almeida, J., Kokkula, S., & Guizzardi, G. (2024). Modeling competences in enterprise architecture: from knowledge, skills, and attitudes to organizational capabilities. Software and Systems Modeling. https://doi.org/10.1007/s10270-024-01151-7

Campbell, R. (2026). Synchronizing Concurrent Security Modernization Programs: A Systems Integration Framework for Post-Quantum Cryptography, Zero Trust Architecture, and AI Security. Systems, 14(3), 233. https://doi.org/10.3390/systems14030233

Cavique, L., Cavique, M., Mendes, A., & Cavique, M. (2022). Improving information system design: Using UML and axiomatic design. Computers in Industry, 135, 103569. https://doi.org/10.1016/j.compind.2021.103569

Chandra, Y., Gaol, F., & Matsuo, T. (2021). Enterprise architecture for the digital services industry on electronic customer feedback using TOGAF. International Journal of Innovative Computing, Information and Control, 17(1), 297–313. https://doi.org/10.24507/ijicic.17.01.297

Chandra, Y., & Legowo, N. (2022). UTILIZING A DATA FRAMEWORK TO SUPPORT THE DECISION-MAKING PROCESS WITH AN ENTERPRISE ARCHITECTURE APPROACH BY USING THE TOGAF FRAMEWORK. Journal of Theoretical and Applied Information Technology, 100(20), 6226–6232. https://www.scopus.com/pages/publications/85141335888?origin=resultslist

Chawviang, A., Kiattisin, S., Thirasakthana, M., & Mayakul, T. (2023). A Smart Co-Operative Management Framework Based on an EA Concept for Sustainable Development. Sustainability (Switzerland), 15(9), 7328. https://doi.org/10.3390/su15097328

Christy, V., Andry, J., Kamil, A., & Lee, F. (2024). Information system architecture for a healthcare company based on the Open Group Architecture Framework. International Journal of Advances in Applied Sciences, 13(4), 810–817. https://doi.org/10.11591/ijaas.v13.i4.pp806-813

Cuzin, M., Mallet, A., Nocentini, K., Deguilhem, B., Fau, V., Bauer, T., Véron, P., & Segonds, F. (2025). Life Cycle Assessment of PLM System Scenarios: Sensitivity Insights from an Academic Use Case. Sustainability (Switzerland), 17(20), 9279. https://doi.org/10.3390/su17209279

Dang, D. (2021). Institutional Logics and Their Influence on Enterprise Architecture Adoption. Journal of Computer Information Systems, 61(1), 42–52. https://doi.org/10.1080/08874417.2018.1564632

Daoudi, S., Larsson, M., Hacks, S., & Jung, J. (2023). Discovering and Assessing Enterprise Architecture Debts. Complex Systems Informatics and Modeling Quarterly, 2023(35), 1–29. https://doi.org/10.7250/csimq.2023-35.01

Daoudi, W., Imgharene, K., Doumi, K., & Kjiri, L. (2023). Impact of Strategic Initiatives on the Adaptation of Enterprise Architecture. Journal of Computer Science, 19(11), 1318–1332. https://doi.org/10.3844/jcssp.2023.1318.1332

Darmoul, S., Attajer, A., Sallez, Y., & Chaabane, S. (2026). Artificial immune systems as a design pattern for disturbance management in cyber-physical production systems. Knowledge-Based Systems, 339, 115642. https://doi.org/10.1016/j.knosys.2026.115642

Dedić, N. (2021). Eafp: Enterprise architecture fusion process. Journal of Information and Organizational Sciences, 45(1), 223–241. https://doi.org/10.31341/jios.45.1.10

Dehne, A., Niyazov, S., & Sandkuhl, K. (2024). Variability Modeling in Enterprise Architecture Management: Case Study and Survey on Existing Approaches. Complex Systems Informatics and Modeling Quarterly, 2024(39), 26–47. https://doi.org/10.7250/csimq.2024-39.02

Dhawan, M. (2026). Decoupling Deployment Velocity From Platform Governance: An Empirical Case Study of WebSocket-Enabled Gateway-Microservice Architecture. IEEE Access, 14, 9348–9358. https://doi.org/10.1109/ACCESS.2026.3654150

Divatia, A., & Jagasia, J. (2025). Enterprise Architecture and Data Management for Digital Transformation: A Higher Education Institute (HEI) Case. Communications of the Association for Information Systems, 57. https://doi.org/10.17705/1cais.05740

Duarte, S., de, S. J., & de, S. J. (2021). A conceptual framework for an integrated information system to enhance urban mobility. International Journal of Decision Support System Technology, 13(4), 33–49. https://doi.org/10.4018/IJDSST.2021100103

Edrisi, F., Perez-Palacin, D., Caporuscio, M., & Giussani, S. (2024). Developing and Evolving a Digital Twin of the Organization. IEEE Access, 12, 45475–45494. https://doi.org/10.1109/ACCESS.2024.3381778

El, H. M., El, H. M., & Ettaki, B. (2025). A new enterprise architecture-based approach for smart city value co-creation. International Journal of Electrical and Computer Engineering, 15(1), 767–782. https://doi.org/10.11591/ijece.v15i1.pp767-782

Ettahiri, I., & Doumi, K. (2024). A novel dynamic enterprise architecture model: leveraging MAPE-K loop and case-based reasoning for context awareness. International Journal of Electrical and Computer Engineering, 14(2), 1875–1889. https://doi.org/10.11591/ijece.v14i2.pp1875-1889

Ettahiri, I., Rassam, L., Doumi, K., & Zellou, A. (2025). Validating and Evaluating a Dynamic Enterprise Architecture Model: A Case Study. Journal of Computer Science, 21(3), 595–611. https://doi.org/10.3844/jcssp.2025.595.611

Fadhly, M., & Fajar, A. (2022). IMPLEMENTATION OF INTEGRATION SYSTEM BASED ON MICROSERVICES USING DOMAIN-DRIVEN DESIGN METHODOLOGY. Journal of Theoretical and Applied Information Technology, 100(7), 2127–2141. https://www.scopus.com/pages/publications/85128586767?origin=resultslist

Farshadi, R., Nazemi, E., & Abdolvand, N. (2022). A FRAMEWORK FOR RANKING CRITICAL SUCCESS FACTORS OF BUSINESS INTELLIGENCE BASED ON ENTERPRISE ARCHITECTURE AND MATURITY MODEL. Interdisciplinary Journal of Information, Knowledge, and Management, 17, 543–575. https://doi.org/10.28945/5032

Fernández-Cejas, M., Pérez-González, C., Roda-García, J., & Colebrook, M. (2022). CURIE: Towards an Ontology and Enterprise Architecture of a CRM Conceptual Model. Business and Information Systems Engineering, 64(5), 615–643. https://doi.org/10.1007/s12599-022-00744-0

Fuentes-Quijada, G., Ruiz-González, F., & Caro, A. (2025). Enterprise Architecture and IT Governance to Support the BizDevOps Approach: a Systematic Mapping Study. Information Systems Frontiers, 27(3), 865–888. https://doi.org/10.1007/s10796-024-10473-2

Gao, D., Chen, J., & Rahimi, S. (2026). AI Identification: An Integrated Framework for Sustainable Governance in Digital Enterprises. Sustainability (Switzerland), 18(4), 1750. https://doi.org/10.3390/su18041750

Geasela, Y., & Legowo, N. (2022). Designing Information System Architecture Based on Education 4.0 Case Study: Senior High School Institutions of Indonesia. Journal of Computer Science, 18(7), 622–637. https://doi.org/10.3844/JCSSP.2022.622.637

Glaser, P., Sallinger, E., & Bork, D. (2026). The extended EA ModelSet—a FAIR dataset for researching and reasoning enterprise architecture modeling practices. Software and Systems Modeling, 25(3), 659–677. https://doi.org/10.1007/s10270-025-01278-1

Gobin-Rahimbux, B., Khan, M., Cadersaib, Z., Cheerkoot-Jalim, S., Chooramun, N., Sahib-Kaudeer, N., Kishnah, S., & Ahku, Y. (2023). An ICT architecture for Smart Local Councils: a Mauritian case study. International Journal of Information Technology (Singapore), 15(5), 2423–2433. https://doi.org/10.1007/s41870-023-01280-0

Godager, B., Mohn, K., Merschbrock, C., & Huang, L. (2024). EXPLORING THE ENTERPRISE BIM CONCEPT IN PRACTICE: THE CASE OF ASSET MANAGEMENT IN A NORWEGIAN HOSPITAL. Journal of Information Technology in Construction, 29, 549–572. https://doi.org/10.36680/j.itcon.2024.025

Gong, Y., & Janssen, M. (2021). Roles and capabilities of enterprise architecture in big data analytics technology adoption and implementation. Journal of Theoretical and Applied Electronic Commerce Research, 16(1), 37–51. https://doi.org/10.4067/S0718-18762021000100104

Gong, Y., & Janssen, M. (2023). Why Organizations Fail in Implementing Enterprise Architecture Initiatives?. Information Systems Frontiers, 25(4), 1401–1419. https://doi.org/10.1007/s10796-022-10298-x

Goolla, N. (2026). Enterprise workflow modernization through artificial intelligence-driven integration of legacy banking systems. Journal of Digital Banking, 11(1), 45–66. https://doi.org/10.69554/UJDE7869

Griffo, C., Almeida, J., Guizzardi, G., & Nardi, J. (2021). Service contract modeling in Enterprise Architecture: An ontology-based approach. Information Systems, 101, 101454. https://doi.org/10.1016/j.is.2019.101454

Gudas, S. (2021). Causal modeling in enterprise architecture frameworks. Informatica (Netherlands), 32(2), 247–281. https://doi.org/10.15388/21-INFOR446

Guerrero-Avendaño, A., Nieto, B. W., & Luna, A. C. (2023). Governance and Corporate Management System Supported by Innovation, Technology, and Digital Transformation as a Driver of Change. Sustainability (Switzerland), 15(17), 13150. https://doi.org/10.3390/su151713150

Haki, K., & Legner, C. (2021). The mechanics of enterprise architecture principles. Journal of the Association for Information Systems, 22(5), 1334–1375. https://doi.org/10.17705/1jais.00696

Hamidani, J., & Ali, H. (2025). Enterprise Architecture for Sustainable SME Resilience: Exploring Change Triggers, Adaptive Capabilities, and Financial Performance in Developing Economies. Sustainability (Switzerland), 17(15), 6688. https://doi.org/10.3390/su17156688

Hannemann, I., Rodrigues, S., Loures, E., Deschamps, F., & Cestari, J. (2022). Applying a decision model based on multiple criteria decision-making methods to evaluate the influence of digital transformation technologies on enterprise architecture principles. IET Collaborative Intelligent Manufacturing, 4(2), 101–111. https://doi.org/10.1049/cim2.12046

Hardi, K., & Legowo, N. (2023). Enterprise Architecture: Enabling Digital Transformation for Operational Business Process during COVID-19. HighTech and Innovation Journal, 4(1), 1–18. https://doi.org/10.28991/HIJ-2023-04-01-01

Harmelink, R., van, M. S., Adriaanse, A., van, H. J., Topan, E., & Vrijhoef, R. (2025). Strategic and operational construction logistics control tower. Developments in the Built Environment, 21, 100625. https://doi.org/10.1016/j.dibe.2025.100625

Hoffmann, R., Nishimura, H., & Gomes, P. (2024). Exploring Safety Culture in Urban Air Mobility: System of Systems Perspectives Using Enterprise Architecture. Systems, 12(5), 178. https://doi.org/10.3390/systems12050178

Horn, N., Gampfer, F., & Buchkremer, R. (2021). Latent Dirichlet Allocation and t-Distributed Stochastic Neighbor Embedding Enhance Scientific Reading Comprehension of Articles Related to Enterprise Architecture. AI (Switzerland), 2(2), 179–194. https://doi.org/10.3390/ai2020011

Hostos, H., Avila, O., & Goepp, V. (2025). An evaluation-aware and aligned method for transforming a production system into a cyber-physical production system. International Journal of Computer Integrated Manufacturing. https://doi.org/10.1080/0951192X.2025.2545483

Iliashenko, O., & Lukyanchenko, E. (2022). Possibilities of using computer vision for data analytics in medicine; [Возможности применения компьютерного зрения для аналитики данных в медицине]. Izvestiya of Saratov University. Mathematics. Mechanics. Informatics, 22(2), 224–232. https://doi.org/10.18500/1816-9791-2022-22-2-224-232

Ivas, I., Milašinović, B., & Fertalj, K. (2026). Developing an Adaptive Enterprise Architecture Model Integrating Business Capabilities, Value Streams, and IT for Strategic Alignment in Complex Organizations. IEEE Access, 14, 9453–9472. https://doi.org/10.1109/ACCESS.2026.3653876

Iyamu, T., & Chitsa, F. (2025). An enterprise technical architecture for the implementation of the South African National Health Insurance. Electronic Journal of Information Systems in Developing Countries, 91(2), e12352. https://doi.org/10.1002/isd2.12352

Jayakrishnan, M., Subri, N., & Asri, L. (2025). Developing an AI-Enhanced Enterprise Architecture Model for Strategic Decision-Making in Malaysia's Railway Industry. Journal Online Informatika, 10(2), 340–351. https://doi.org/10.15575/join.v10i2.1170

Jonathan, E., & Andry, J. (2024). Business enterprise architecture for a fitness center using the Open Group Architecture Framework. International Journal of Advances in Applied Sciences, 13(1), 160–167. https://doi.org/10.11591/ijaas.v13.i1.pp160-167

Jordan, Andry, J., Adikara, F., G., Y., & Lee, F. (2024). Implementation of Information System Architecture Using TOGAF and Ward Peppard Analysis for High School. Journal of Computer Science, 20(6), 690–699. https://doi.org/10.3844/jcssp.2024.690.699

Joshi, H. (2025). Emerging Technologies Driving Zero Trust Maturity Across Industries. IEEE Open Journal of the Computer Society, 6, 25–36. https://doi.org/10.1109/OJCS.2024.3505056

Juzoń, Z., Wikarek, J., & Sitek, P. (2023). Application of Enterprise Architecture and Artificial Neural Networks to Optimize the Production Process. Electronics (Switzerland), 12(9), 2015. https://doi.org/10.3390/electronics12092015

Júnior, S., Medeiros, F., & Lira, H. (2023). Toward an information systems architecture model for university hospitals: A case study in a Brazilian public hospital. Electronic Journal of Information Systems in Developing Countries, 89(3), e12248. https://doi.org/10.1002/isd2.12248

Jüngling, S., Fetai, I., Rogger, A., Morandi, D., & Peraic, M. (2022). On the Track to Application Architectures in Public Transport Service Companies. Applied Sciences (Switzerland), 12(12), 6073. https://doi.org/10.3390/app12126073

Kaidalova, J., Sandkuhl, K., & Seigerroth, U. (2021). Product-IT Inclusive Enterprise Architecture Management: An Approach Based on Ecosystems, Customer Journey, and Data-Driven Business Opportunities. Complex Systems Informatics and Modeling Quarterly, 2021(26), 1–25. https://doi.org/10.7250/csimq.2021-26.01

Kapoor, R. (2026). Redefining Enterprise Architecture In The Age Of Artificial Intelligence: From Static Governance To Adaptive, AI-Augmented Practice. International Journal of Artificial Intelligence and Machine Learning, 6(4s), 946–954. https://doi.org/10.51483/IJAIML.6.4s.2026.946-954

Kassa, E., & Mentz, J. (2021). Towards a human-capabilities-conscious enterprise architecture. Information (Switzerland), 12(8), 327. https://doi.org/10.3390/info12080327

Kautz, T., & Winter, R. (2024). Digital Transformation Designer: Towards a Comprehensive, Collaborative, and Easy-to-Use Modeling Support for Enterprise-level Change Endeavors. Enterprise Modeling and Information Systems Architectures, 19, 4. https://doi.org/10.18417/emisa.19.4

Kemp, N. (2021). Toward a teleology for the enterprise. International Journal of Enterprise Information Systems, 17(2), 1–20. https://doi.org/10.4018/IJEIS.2021040101

Khairina, D., Purwanto, P., & Nugraheni, D. (2025). The Mediator Role of Enterprise Architecture Quality in Integrated Information System Architecture Success Model with Two-Stage Approach: Success Information System Architecture (SISA) Model. International Journal of Intelligent Engineering and Systems, 18(7), 412–433. https://doi.org/10.22266/ijies2025.0831.28

Khyavi, M., Mahmood, N. Z. S., & Ahmadabadi, A. (2024). IoT and Enterprise Architecture Synergy: Driving Industrial Process Optimization. EAI Endorsed Transactions on Internet of Things, 10. https://doi.org/10.4108/eetiot.4366

Kirikova, M., Grundspenkis, J., & Stasko, A. (2023). Towards Respecting Systems of Systems in IT Project Quality Management. Baltic Journal of Modern Computing, 11(1), 134–149. https://doi.org/10.22364/bjmc.2023.11.1.08

Kitsios, F., Kyriakopoulou, M., & Kamariotou, M. (2022). Exploring Business Strategy Modeling with ArchiMate: A Case Study Approach. Information (Switzerland), 13(1), 31. https://doi.org/10.3390/info13010031

Kotusev, S., & Kurnia, S. (2021). The theoretical basis of enterprise architecture: A critical review and taxonomy of relevant theories. Journal of Information Technology, 36(3), 275–315. https://doi.org/10.1177/0268396220977873

Kotusev, S., Kurnia, S., & Dilnutt, R. (2022). The concept of information architecture in the context of enterprise architecture. Aslib Journal of Information Management, 74(3), 432–457. https://doi.org/10.1108/AJIM-05-2021-0130

Kotusev, S., Kurnia, S., & Dilnutt, R. (2022). The practical roles of enterprise architecture artifacts: A classification and relationship. Information and Software Technology, 147, 106897. https://doi.org/10.1016/j.infsof.2022.106897

Kotusev, S., Kurnia, S., & Dilnutt, R. (2023). Enterprise architecture artifacts as boundary objects: An empirical analysis. Information and Software Technology, 155, 107108. https://doi.org/10.1016/j.infsof.2022.107108

Kotusev, S., & Alwadain, A. (2024). Modeling Business Capabilities in Enterprise Architecture Practice: The Case of Business Capability Models. Information Systems Management, 41(2), 201–223. https://doi.org/10.1080/10580530.2023.2231635

Kotusev, S., Kurnia, S., Dilnutt, R., & van, D. W. R. (2024). The Structuring of Enterprise Architecture Functions in Organizations: Towards a Systematic Theory. Business and Information Systems Engineering, 66(4), 465–488. https://doi.org/10.1007/s12599-023-00845-4

Kurnia, S., Kotusev, S., Shanks, G., Dilnutt, R., Taylor, P., & Milton, S. (2021). Enterprise Architecture Practice under a Magnifying Glass: Linking Artifacts, Activities, Benefits, and Blockers. Communications of the Association for Information Systems, 49(1), 668–698. https://doi.org/10.17705/1CAIS.04936

Kurnia, S., Kotusev, S., Shanks, G., Dilnutt, R., & Milton, S. (2021). Stakeholder engagement in enterprise architecture practice: What inhibitors are there?. Information and Software Technology, 134, 106536. https://doi.org/10.1016/j.infsof.2021.106536

Lace, K. (2022). Post-Merger Information System Integration Decision Framework. Baltic Journal of Modern Computing, 10(4), 754–775. https://doi.org/10.22364/bjmc.2022.10.4.09

Lakhrouit, J., & Baïna, K. (2023). ASSESSMENT OF THE ENTERPRISE ARCHITECTURE BASED ON THE PATTERN. Journal of Theoretical and Applied Information Technology, 101(16), 6321–6336. https://www.scopus.com/pages/publications/85173447891?origin=resultslist

Legowo, N., & Kaharmies, I. (2023). Enterprise Architecture Application and Business Process Improvement: A Case Study of Bus Terminal in Indonesia. Journal of System and Management Sciences, 13(5), 371–389. https://doi.org/10.33168/JSMS.2023.0524

Levina, A., Ilin, I., Trifonova, N., & Tick, A. (2023). Data-Driven Management of Vaccination and Its Consequences. Systems, 11(11), 553. https://doi.org/10.3390/systems11110553

Liao, M., & Wang, C. (2021). Using enterprise architecture to integrate lean manufacturing, digitalization, and sustainability: A lean enterprise case study in the chemical industry. Sustainability (Switzerland), 13(9), 4851. https://doi.org/10.3390/su13094851

Loft, P., He, Y., Yevseyeva, I., & Wagner, I. (2022). CAESAR8: An agile enterprise architecture approach to managing information security risks. Computers and Security, 122, 102877. https://doi.org/10.1016/j.cose.2022.102877

Lubkowski, P., Krygier, J., Sondej, T., Dobrowolski, A., Apiecionek, L., Znaniecki, W., & Oskwarek, P. (2023). Decision Support System Proposal for Medical Evacuations in Military Operations †. Sensors, 23(11), 5144. https://doi.org/10.3390/s23115144

Madyatmadja, E., Liliana, L., Chakir, A., & Andry, J. (2021). Implementation of the Zachman framework using the Capsicum model for the electrical equipment trading industry. ICIC Express Letters, Part B: Applications, 12(3), 207–213. https://doi.org/10.24507/icicelb.12.03.207

Mahendra, R., & Legowo, N. (2021). IMPROVE INDONESIA NATIONAL E-PROCUREMENT FAIRNESS with VENDOR DATA-DRIVEN CAPABILITY ASSESSMENT and TOGAF ADM. Journal of Theoretical and Applied Information Technology, 99(24), 5834–5849. https://www.scopus.com/pages/publications/85122345814?origin=resultslist

Mantravadi, S., Srai, J., & Møller, C. (2023). Application of MES/MOM for Industry 4.0 supply chains: A cross-case analysis. Computers in Industry, 148, 103907. https://doi.org/10.1016/j.compind.2023.103907

MARCAO, R., PESTANA, G., & SOUSA, M. (2021). Gamification framework for management practice. Journal of Information Science and Engineering, 37(5), 1109–1133. https://doi.org/10.6688/JISE.202109_37(5).0009

Martínez-López, J., García, F., Ruiz, F., & Vizcaíno, A. (2024). Contributions of enterprise architecture to software engineering: A systematic literature review. Journal of Software: Evolution and Process, 36(4), e2572. https://doi.org/10.1002/smr.2572

Masi, M., Sellitto, G., Aranha, H., & Pavleska, T. (2023). Securing critical infrastructures with a cybersecurity digital twin. Software and Systems Modeling, 22(2), 689–707. https://doi.org/10.1007/s10270-022-01075-0

Masuda, Y., Zimmermann, A., Viswanathan, M., Bass, M., Nakamura, O., & Yamamoto, S. (2021). Adaptive enterprise architecture for the digital healthcare industry: A digital platform for drug development. Information (Switzerland), 12(2), 1–26. https://doi.org/10.3390/info12020067

Maulana, Y., Azmi, Z., & Arshah, R. (2023). Modeling of Strategic Alignment to Modify TOGAF Architecture Development Method Based on Business Strategy Model. International Journal on Advanced Science, Engineering and Information Technology, 13(1), 180–185. https://doi.org/10.18517/ijaseit.13.1.16565

Maulana, M., Suroso, A., Nurhadryani, Y., & Seminar, K. (2023). The Smart Governance Framework and Enterprise System's Capability for Improving Bio-Business Licensing Services. Informatics, 10(2), 53. https://doi.org/10.3390/informatics10020053

Mengmeng, Z., Shuanghui, Y., Honghui, C., Aimin, L., Junxian, L., & Xiaoxue, Z. (2021). Modeling the dynamic alignment of business and information systems via the lens of human-centered architecture evolution. Journal of Systems Engineering and Electronics, 32(4), 881–888. https://doi.org/10.23919/JSEE.2021.000076

Michelle, & Sfenrianto (2021). Factors affecting the effectiveness of enterprise architecture information system implementation. Journal of Theoretical and Applied Information Technology, 99(21), 5003–5017. https://www.scopus.com/pages/publications/85119274478?origin=resultslist

Miksa, T., Oblasser, S., & Rauber, A. (2022). Automating Research Data Management Using Machine-Actionable Data Management Plans. ACM Transactions on Management Information Systems, 13(2), 18. https://doi.org/10.1145/3490396

Mohamed, A., Abdo, A., & El-bendary, N. (2021). Law Architecture for Regulatory-Compliant Public Enterprise Model: A Focus on Healthcare Reform in Egypt. International Journal of Advanced Computer Science and Applications, 12(6), 341–353. https://doi.org/10.14569/IJACSA.2021.0120638

Molnár, B., & Benczúr, A. (2022). The Application of Directed Hyper-Graphs for Analysis of Models of Information Systems. Mathematics, 10(5), 759. https://doi.org/10.3390/math10050759

Montecchiari, D. (2026). Ontology-Based Validation of Enterprise Architecture Principles. Applied Sciences (Switzerland), 16(7), 3352. https://doi.org/10.3390/app16073352

Muhaemin, B. E. S., H., & Hadi, P. P. (2026). Agile Enterprise Architecture in the Context of Digital Transformation: A Critical Review. International Journal on Informatics Visualization, 10(1), 271–288. https://doi.org/10.62527/joiv.10.1.4666

Mukti, I., Firdausy, D., Aldea, A., & Iacob, M. (2023). Architecting rural smartness: A collaborative platform design for rural digital business ecosystem. Electronic Journal of Information Systems in Developing Countries, 89(1), e12236. https://doi.org/10.1002/isd2.12236

Nakakawa, A., Kasule, D., Kasusse, M., Guma, G., Aisu, S., Ogwok, P., & Sendagire, H. (2024). Process for Leveraging Enterprise Architecture in Information Systems Strategic Planning: A Case of Developing a Strategy and Master Plan for a National Integrated Health Laboratory Information Management System in Uganda. Complex Systems Informatics and Modeling Quarterly, 2024(40), 58–93. https://doi.org/10.7250/csimq.2024-40.03

Namagembe, F., Nakakawa, A., Tulinayo, F., Proper, H., & Overbeek, S. (2023). Towards an E-Government Enterprise Architecture Framework for Developing Economies. Complex Systems Informatics and Modeling Quarterly, 2023(35), 30–66. https://doi.org/10.7250/csimq.2023-35.02

Nateghi, A., & Mosharraf, M. (2023). Architecting the Future: A Model for Enterprise Integration in the Metaverse. Journal of Metaverse, 3(2), 190–199. https://doi.org/10.57019/jmv.1355500

Necula, S., & Sireteanu, N. (2026). A Hierarchical Attention Framework for Business Information Systems: Theoretical Foundation and Proof-of-Concept Implementation. Computers, Materials and Continua, 86(2). https://doi.org/10.32604/cmc.2025.070861

Nhabomba, A., Alturas, B., & Alexandre, I. (2025). Enterprise Architecture Assessment and User Satisfaction Model Estimate in Statistical Organizations of African Countries. Electronic Journal of Information Systems in Developing Countries, 91(5), e70028. https://doi.org/10.1002/isd2.70028

Nuerk, J., & Dařena, F. (2023). Activating the value potential of supply chain business models through Systems Engineering. Systems Engineering, 26(5), 660–674. https://doi.org/10.1002/sys.21676

Oliveira, Í., Sales, T., Almeida, J., Baratella, R., Fumagalli, M., & Guizzardi, G. (2024). Ontology-based security modeling in ArchiMate. Software and Systems Modeling, 23(4), 925–952. https://doi.org/10.1007/s10270-024-01149-1

Omari, H., Alkhateeb, A., & Hammo, B. (2024). APPLYING TOGAF-BASED ENTERPRISE ARCHITECTURE IN THE HEALTHCARE SECTOR: A CASE STUDY OF THE NATIONAL CENTER FOR DIABETES IN JORDAN. Jordanian Journal of Computers and Information Technology, 10(2), 182–197. https://doi.org/10.5455/jjcit.71-1705704023

O'Leary, D. (2021). Enterprise architecture for accounting and finance transformation: Using strategy maps to develop high-performance finance. Journal of Emerging Technologies in Accounting, 18(1), 61–76. https://doi.org/10.2308/JETA-2020-007

Pathak, S., Krishnaswamy, V., & Sharma, M. (2025). A dynamic capability perspective on the impact of big data analytics and enterprise architecture on innovation: an empirical study. Journal of Enterprise Information Management, 38(2), 532–563. https://doi.org/10.1108/JEIM-01-2024-0059

Perdana, E., Sitohang, B., Sastramihardja, H., & Candra, M. (2023). Requirements for Domain-Specific Language in Enterprise Architecture-based SDGs Orchestration. International Journal on Advanced Science, Engineering and Information Technology, 13(6), 2407–2417. https://doi.org/10.18517/ijaseit.13.6.17835

Plessius, H., van, S. M., Ravesteijn, P., & Versendaal, J. (2025). The Development of an Instrument to Assess the Areas Where Enterprise Architecture Contributes to Organizational Goals. Information Systems Management, 42(3), 247–264. https://doi.org/10.1080/10580530.2024.2387578

Poels, G., Ruiz, F., García, F., & Piattini, M. (2026). Process maps as boundary objects for integrating enterprise architecture and business processes. Enterprise Information Systems, 20(7), 2659640. https://doi.org/10.1080/17517575.2026.2659640

Pratama, I., Dachyar, M., & Pratama, N. (2023). Optimization of Resource Allocation and Task Allocation with Project Management Information Systems in Information Technology Companies. TEM Journal, 12(3), 1814–1824. https://doi.org/10.18421/TEM123-65

Proper, H., Wagter, R., & Bekel, J. (2023). On enterprise coherence governance with GEA: a 15-year co-evolution of practice and theory. Software and Systems Modeling, 22(2), 551–571. https://doi.org/10.1007/s10270-022-01059-0

Pérez-Castillo, R., Caivano, D., Ruiz, F., & Piattini, M. (2021). ArchiRev—Reverse engineering of information systems toward ArchiMate models. An industrial case study. Journal of Software: Evolution and Process, 33(2), e2314. https://doi.org/10.1002/smr.2314

Pérez-Castillo, R., Delgado, A., Ruiz, F., Bacigalupe, V., & Piattini, M. (2022). A method for transforming the knowledge discovery metamodel to ArchiMate models. Software and Systems Modeling, 21(1), 311–336. https://doi.org/10.1007/s10270-021-00912-y

Qu, M., Li, S., Jiang, T., Fang, Z., Guo, P., & Li, Q. (2026). Preventing data-driven risk propagation in human–artificial intelligence interaction: A scenario security architecture. Computers in Industry, 177, 104458. https://doi.org/10.1016/j.compind.2026.104458

Rachmaniah, M., Suroso, A., Syukur, M., & Hermadi, I. (2022). Enterprise Architecture for Smart Enterprise System: A Quest for Chili Agrosystem. International Journal of Advanced Computer Science and Applications, 13(4), 341–350. https://doi.org/10.14569/IJACSA.2022.0130440

Rahmanian, M., Nassiri, R., Mohsenzadeh, M., & Ravanmehr, R. (2023). Test case generation for enterprise business services based on enterprise architecture design. Journal of Supercomputing, 79(2), 1877–1907. https://doi.org/10.1007/s11227-022-04742-7

Rehman, Z., Tariq, N., Moqurrab, S., Yoo, J., & Srivastava, G. (2024). Machine learning and Internet of Things applications in enterprise architectures: Solutions, challenges, and open issues. Expert Systems, 41(1), e13467. https://doi.org/10.1111/exsy.13467

Riel, J., Koutsopoulos, G., Bider, I., Wautelet, Y., Poels, G., Calhau, R., Perjons, E., & Tsilionis, K. (2025). Advancing the Domain of Strategy Planning and Implementation through Enterprise Architecture: A Research Agenda for Capability-Based Management. Communications of the Association for Information Systems, 56. https://www.scopus.com/pages/publications/105000443303?origin=resultslist

Rigger, E., Shea, K., & Stanković, T. (2022). Method for identification and integration of design automation tasks in industrial contexts. Advanced Engineering Informatics, 52, 101558. https://doi.org/10.1016/j.aei.2022.101558

Roberto, P. C., Luis, P. D. G. S., & Mamede, H. (2024). A Lightweight Ontology for Enterprise Architecture Mining of API Gateway Logs. IEEE Access, 12, 128585–128601. https://doi.org/10.1109/ACCESS.2024.3456119

Roelens, B. (2021). Selected Topics on Business Information Systems Research: Editorial Introduction to Issue 26 of CSIMQ. Complex Systems Informatics and Modeling Quarterly, 2021(26), I–II. https://doi.org/10.7250/csimq.2021-26.00

Rozario, M., Zainuddin, A., & Manokaran, P. (2023). Analysis of a survey on the role of enterprise architecture in the field of healthcare technology by knowledge-based research. International Journal of Computing and Digital Systems, 13(1), 547–557. https://doi.org/10.12785/ijcds/130145

Sabau, A., Hacks, S., & Steffens, A. (2021). Implementation of a continuous delivery pipeline for enterprise architecture model evolution. Software and Systems Modeling, 20(1), 117–145. https://doi.org/10.1007/s10270-020-00828-z

Safaei, A., Nassiri, R., & Rahmani, A. (2022). Enterprise service composition in IIoT manufacturing: integer linear optimization based on the hybrid multi-objective grey wolf optimizer. International Journal of Advanced Manufacturing Technology, 122(1), 427–445. https://doi.org/10.1007/s00170-022-09835-4

Safaei, A., Nassiri, R., & Rahmani, A. (2022). Enterprise service composition models in the IoT context: solutions comparison. Journal of Supercomputing, 78(2), 2015–2042. https://doi.org/10.1007/s11227-021-03873-7

Santosa, I., & Mulyana, R. (2023). The IT Services Management Architecture Design for Large and Medium-sized Companies based on ITIL 4 and TOGAF Framework. International Journal on Informatics Visualization, 7(1), 30–36. https://doi.org/10.30630/joiv.7.1.1590

Saoud, A., & Bellabdaoui, A. (2023). Towards a generic platform to support collaboration in freight transportation: taxonomic literature and design based on the Zachman framework. Enterprise Information Systems, 17(2), 1939894. https://doi.org/10.1080/17517575.2021.1939894

Saoud, A., Bellabdaoui, A., Lachgar, M., Hanine, M., & Ashraf, I. (2024). Enterprise Architecture Framework Selection for Collaborative Freight Transportation Digitalization: A Hybrid FAHP-FTOPSIS Approach. International Journal of Advanced Computer Science and Applications, 15(11), 1173–1184. https://doi.org/10.14569/IJACSA.2024.01511115

Sayerwala, M. (2026). Ai-Assisted Legacy Front-End Modernization: Intelligent Jquery-To-React Transformation Using Automated Component Extraction And Dependency Analysis. International Journal of Artificial Intelligence and Machine Learning, 6(4S), 903–909. https://doi.org/10.51483/IJAIML.6.4s.2026.903-909

Schiewe, M., Curtis, J., Bushong, V., & Cerny, T. (2022). Advancing Static Code Analysis With Language-Agnostic Component Identification. IEEE Access, 10, 30743–30761. https://doi.org/10.1109/ACCESS.2022.3160485

Schoonderbeek, J., & Proper, H. (2024). Toward an ontology for EA modeling and EA model quality. Software and Systems Modeling, 23(3), 535–558. https://doi.org/10.1007/s10270-023-01146-w

Shahnami, S., & Michael, J. (2026). Mobile Telemetry-Centered Threat Modeling for Managed Enterprise Architectures. Computer, 59(5), 111–117. https://doi.org/10.1109/MC.2026.3668342

Shalamanov, V., & Penchev, G. (2021). Methodology for Organizational Design of Cyber Research Networks. Studies in Big Data, 84, 25–47. https://doi.org/10.1007/978-3-030-65722-2_3

Shao, D., Ishengoma, F., & Makawa, A. (2026). Enterprise Architecture as a Tool for Technical Debt Management in Public Universities: Contextual Challenges and Governance Opportunities. Electronic Journal of Information Systems in Developing Countries, 92(1), e70051. https://doi.org/10.1002/isd2.70051

Singh, P., Lynch, F., & Helfert, M. (2024). Enterprise architecture for the transformation of public services based on citizens' feedback. Digital Policy, Regulation and Governance, 26(1), 38–54. https://doi.org/10.1108/DPRG-11-2022-0123

Sitton, M. (2023). Deployment of the EPIC framework for an intelligent transportation system. Systems Engineering, 26(6), 830–846. https://doi.org/10.1002/sys.21698

Soma, R. (2026). End-to-End Architecture for LLM-Based Business Process Automation: A Low-Code Integration Framework With Performance Benchmarking. IEEE Access, 14, 105921–105940. https://doi.org/10.1109/ACCESS.2026.3696852

Srisawat, S., Wannapiroon, P., & Nilsook, P. (2024). Distributed Digital Enterprise Architecture for Transformation of Educational Organizations. TEM Journal, 13(2), 1645–1657. https://doi.org/10.18421/TEM132-77

Stein, H. (2026). Toward a taxonomy of generative AI use cases in business contexts: Integrating complexity, risk, and strategy. Journal of Computational Science, 96, 102826. https://doi.org/10.1016/j.jocs.2026.102826

Suprapto, D., & Wella (2024). Leveraging TOGAF for Effective Enterprise Architecture Planning in Human Resource Management: A Case Study of A Financial Holding Company. Journal of Logistics, Informatics and Service Science, 11(1), 1–21. https://doi.org/10.33168/JLISS.2024.0101

Takeuchi, H., Husen, J., Tun, H., Washizaki, H., & Yoshioka, N. (2024). Enterprise architecture-based metamodel for machine learning projects and their management. Future Generation Computer Systems, 161, 135–145. https://doi.org/10.1016/j.future.2024.06.062

Tamm, T., Seddon, P., & Shanks, G. (2022). How enterprise architecture drives organizational benefits. International Journal of Information Management, 67, 102554. https://doi.org/10.1016/j.ijinfomgt.2022.102554

Thomas, K., Pacôme, B., Kanga, K., Asseu, O., & Kermarrec, Y. (2024). Hybrid Framework 4.0 for Enterprise Architecture in the Context of Teleworking. Journal of Computer Science, 20(12), 1622–1635. https://doi.org/10.3844/jcssp.2024.1622.1635

Toumi, A., Fosso, W. S., & Hafsi, M. (2026). Architecting knowledge through AI-enhanced observability: A design science approach to enterprise architecture as a knowledge discipline. International Journal of Information Management, 89, 103070. https://doi.org/10.1016/j.ijinfomgt.2026.103070

Trad, A. (2021). The Business Transformation Framework and Enterprise Architecture Framework for Managers in Business Innovation: An Applied Holistic Mathematical Model. International Journal of Service Science, Management, Engineering, and Technology, 12(1), 142–181. https://doi.org/10.4018/IJSSMET.20210101.oa1

Trimanadi, R., & Indra, S. D. (2025). Understanding Government Enterprise Architecture: A Review and Case Study. IEEE Access, 13, 90088–90108. https://doi.org/10.1109/ACCESS.2025.3571742

Turegeldinova, A., Kassenkhan, A., Amralinova, B., Sarkambayeva, S., Nugumanov, S., & Khamitova, Z. (2026). Design and Pilot Evaluation of a Traceability-Oriented Enterprise Architecture for Advanced Salary Payment Management. Information (Switzerland), 17(7), 635. https://doi.org/10.3390/info17070635

Uzhakova, N., & Fischer, S. (2024). Data-Driven Enterprise Architecture for Pharmaceutical R&D. Digital, 4(2), 333–371. https://doi.org/10.3390/digital4020017

van, D. W. R., Hendrickx, T., Brinkkemper, S., & Kurnia, S. (2021). The impact of EA-driven dynamic capabilities, innovativeness, and structure on organizational benefits: A variance and fsqca perspective. Sustainability (Switzerland), 13(10), 5414. https://doi.org/10.3390/su13105414

Van, R. J., & Poels, G. (2023). A Method for Developing Generic Capability Maps: A Design Science Study in the Professional Sport Industry. Business and Information Systems Engineering, 65(4), 403–424. https://doi.org/10.1007/s12599-023-00793-z

Vandevenne, N., Van, R. J., & Poels, G. (2023). Green Enterprise Architecture (GREAN)—Leveraging EA for Environmentally Sustainable Digital Transformation. Sustainability (Switzerland), 15(19), 14342. https://doi.org/10.3390/su151914342

Venkatesan, D., & Sridhar, S. (2021). Promoting business-IT alignment through agent metaphor-based software technology. International Journal of Information Technology and Management, 20(1-2), 178–206. https://doi.org/10.1504/IJITM.2021.114164

Villamil, R., Restrepo-Carmona, J., Escobar, A., Aponte-Moreno, A., Herrera, J., Gutiérrez-Betancur, S., & Fletscher, L. (2026). An Enterprise Architecture-Driven Service Integration Model for Enhancing Fiscal Oversight in Supreme Audit Institutions. Applied System Innovation, 9(1), 16. https://doi.org/10.3390/asi9010016

Volkova, V., Leonova, A., & Loginova, A. (2021). Models for the development of the enterprise's information-control complex. System Research and Information Technologies, 2021(1), 121–130. https://doi.org/10.20535/SRIT.2308-8893.2021.1.10

Wang, W. (2025). Achieving Business Scalability With Composable Enterprise Architecture. IEEE Access, 13, 76464–76472. https://doi.org/10.1109/ACCESS.2025.3564710

Weller, J., & Dumitrescu, R. (2025). Decision-Driven Analytics in Smart Factories: Enterprise Architecture Framework for Use Case Specification and Engineering (FUSE). Electronics (Switzerland), 14(21), 4271. https://doi.org/10.3390/electronics14214271

Wong, Z., Gong, Y., & Ushiro, S. (2025). A pathway from fragmentation to interoperability through standards-based enterprise architecture to enhance patient safety. npj Digital Medicine, 8(1), 41. https://doi.org/10.1038/s41746-025-01442-3

Wu, K., Beydoun, G., Sohaib, O., & Gill, A. (2022). The Co-construct/ Co-evolving Process between Organization's Absorptive Capacity and Enterprise System Practice under Changing Context: The Case of ERP Practice. Information Systems Frontiers, 24(6), 2123–2138. https://doi.org/10.1007/s10796-021-10238-1

Würtz, M., & Sandkuhl, K. (2023). Enterprise Architecture for Integration of Demand-Responsive Services in Public Transport. Complex Systems Informatics and Modeling Quarterly, 2023(34), 62–83. https://doi.org/10.7250/csimq.2023-34.03

Yablonsky, S. (2021). AI-driven platform enterprise maturity: from human-led to machine-governed. Kybernetes, 50(10), 2753–2789. https://doi.org/10.1108/K-06-2020-0384

Yan, M., Chou, C., & Chi, H. (2025). Strategic Architecture of Sustainable System Development for ESG Transformation in Large Multi-Purpose Sports Venues. Systems, 13(12), 1108. https://doi.org/10.3390/systems13121108

Zhi, Q., & Zhou, Z. (2022). Empirically modeling enterprise architecture using ArchiMate. Computer Systems Science and Engineering, 40(1), 357–374. https://doi.org/10.32604/CSSE.2022.018759

Zia, M., Khalid, A., & Hamid, K. (2025). AI-Enhanced Software Architectures: Bridging Technology and Strategy. Journal of Computing and Biomedical Informatics, 9(2). https://www.scopus.com/pages/publications/105027216346?origin=resultslist

Zorrilla, M., & Yebenes, J. (2025). Architecture Building Blocks for Data Governance in Data Spaces. Information (Switzerland), 16(11), 927. https://doi.org/10.3390/info16110927