ENTERPRISE ARCHITECTURE FRAMEWORK IN THE GOVERNMENT SECTOR: A REVIEW

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ABSTRACT

This study investigates the implementation landscape of enterprise architecture (EA) frameworks within the government sector. Despite the growing recognition of EA's importance, practical implementation in governmental bodies often needs help with challenges such as legacy systems, bureaucratic inertia, and resource constraints, leading to fragmented IT landscapes and inefficiencies. This study utilizes a systematic literature review (SLR) investigating the implementation landscape of EA frameworks within the government sector. Our analysis of diverse case studies across countries reveals notable trends in EA adoption, with Indonesia, Malaysia, and India emerging as leaders in implementation count. The prevalence of popular frameworks like TOGAF, Zachman, and FEAF is noted, alongside country-specific preferences such as Colombian GEAF, Namibian GEAF, Finnish National EA, and South Africa GWEA. Importantly, we identify six critical factors-Governance, Management, Resources, Socio-economic, Technology, and Information-that are crucial for successfully adopting EA frameworks in governmental contexts. This practical guide is designed to help policymakers and practitioners overcome implementation challenges, thereby enhancing organizational efficiency and governance.

Keywords: *Enterprise Architecture, EA Framework, e-Government, Systematic Literature Review, Critical Factors*

1. INTRODUCTION

Nearly all enterprise architecture (EA) literature acknowledges the Zachman Framework as a pivotal document that profoundly influenced the field. Nevertheless, Kotusev's research has categorized the evolution of EA development into three distinct phases. These phases encompass Business Systems Planning (1960s-1980s), initial EA stages (1980s-1990s), and modern EA practices (1990s-present) [1]. EA represents a general strategy for harmonizing IT assets with business operations and objectives. EA frequently serves as a conduit between various organizational segments and divisions. This characteristic poses difficulties in establishing EA initiatives, as multiple units must engage in discussions and reach consensus regarding the scope, magnitude, granularity, goals, and resources involved [2]. EA is a strategic methodology sizable enterprises employ to oversee digital transformation endeavors. Its principal objective is to present an all-encompassing outlook covering business, technology, and information realms. It suggests that organizational influence procedures are pivotal in molding the comprehension and integration of EA within an entity [3].

An EA Framework is a structured collection of principles, methodologies, standards, templates, and tools that guide organizations in developing and implementing their enterprise architecture. It systematically aligns business processes, information, technology, and human resources with an organization's strategic goals and objectives. EA frameworks offer a common language and make informed decisions about the enterprise architecture's design, operation, and evolution [4]. Examples of well-known EA frameworks are TOGAF (The Open Group Architecture Framework), Zachman Framework, and FEAF (The Federal Enterprise Architecture Framework). TOGAF provides an expansive approach to designing, planning, implementing, and

governing enterprise IT architecture [5]. Zachman Framework offers a structured way of organizing and describing an enterprise's architecture from multiple perspectives [6]. At the same time, FEAF is a reference model that provides a common approach for integrating and aligning federal government agencies' business operations with their IT capabilities [7].

The efficient management of information systems has become paramount for the effective functioning of government entities worldwide. As governments endeavor to streamline operations, enhance service delivery, and foster transparency, adopting robust EA frameworks emerges as a strategic imperative [8][9]. The contemporary governmental apparatus operates within an intricate network of interconnected systems, ranging from administrative processes to citizen-facing services. Amidst this complexity, the need for a cohesive architectural blueprint becomes evident, one that aligns organizational goals with IT infrastructure and resources. EA frameworks are invaluable in this endeavor, offering structured methodologies for designing, implementing, and governance IT systems within government agencies [10][11].

However, despite the growing recognition of enterprise architecture's importance, its practical implementation remains challenging for many governmental bodies [12]. Factors such as legacy systems, bureaucratic inertia, and resource constraints often hinder the realization of architectural visions, leading to fragmented IT landscapes and inefficiencies. Moreover, the dynamic nature of governmental functions necessitates adaptable, scalable frameworks that can accommodate evolving requirements and technologies.

This study is essential as it addresses the need to understand the implementation landscape of EA frameworks within the government sector. It sheds light on notable trends in EA adoption, identifies prevalent frameworks, and uncovers country-specific preferences. Resilience of this study include its extensive investigation of EA framework implementation within the government sector and the identification of critical factors for successful adoption, offering valuable insights for policymakers and practitioners. However, limitations such as potential bias from reliance on specific databases and the temporal scope of the study may affect the generalizability of findings and overlook qualitative dimensions crucial for understanding EA adoption complexities.

Promoting the Systematic Literature Review (SLR) methodology in this context stems from its endorsement as a solution, as it presents a rigorous and structured method for synthesizing current research [13]. Researchers utilize the SLR method to discern trends in EA framework implementation and critical factors regarding adopting EA frameworks in the government sector. Against this background, this review explores the current landscape of EA frameworks in the government sector. By synthesizing existing literature and case studies, the research question is: *What are the emerging trends of EA framework implementation, and what are the critical factors or success factors of EA adoption in the government sector?*

2. METHODOLOGY

In this research endeavor, the PRISMA methodology guides the systematic review process, promoting transparency and reliability in reporting, which is a systematic approach used in research synthesis to identify, select, and critically appraise relevant studies for inclusion in a systematic review or meta-analysis. It involves a broad search strategy across multiple databases, screening retrieved records based on predefined eligibility criteria and extracting critical data from included studies [14]. PRISMA also emphasizes transparent reporting to enhance the reproducibility and reliability of the review findings. This methodological framework ensures rigor and consistency in the evidence synthesis, facilitating evidence-based decision-making across various disciplines [15].
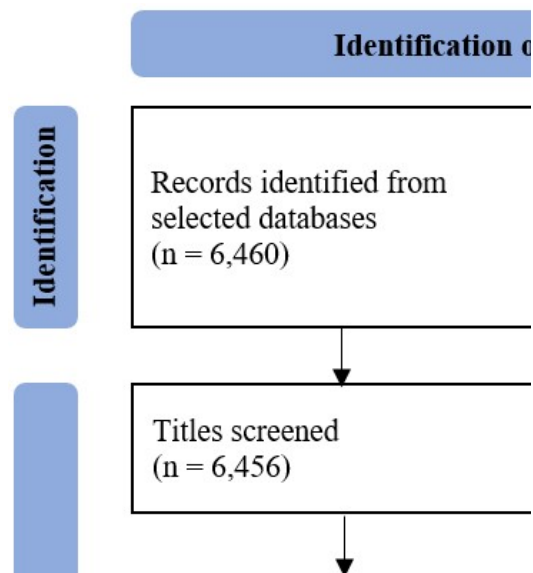

Figure 1: PRISMA Workflow for Selecting Literature

The depicted workflow in Figure 1 elucidates how primary literature was identified and selected for inclusion in this study. Furthermore, the study encompasses a systematic literature review to investigate the implementation of the EA framework in the Government or public sector. The study organizes its approach into various procedures as follows:

a) Establishing accessible references from data sources deemed suitable for international journal publication.

b) Formulating pertinent keywords to conduct data searches in an international journal context.

c) Identifying criteria for the inclusion and exclusion of search results tailored to meet the standards of international journal publication.

d) Acquiring data from reputable sources suitable for international journal submission.

e) Critically reviewing and scrutinizing the collected data to ensure its suitability for publication in international journals.

f) Analyzing and deliberating on the findings to address the research question within the framework of international journal standards.

2.1 Opting for Data Sources

The foremost step involves selecting readily available data sources as the primary literature for the study. Subsequently, the objective is to identify pertinent journals, conferences, or alternative publications. Additionally, this process entails carefully considering and evaluating the selected databases to ensure all-around coverage and relevance to the research topic. It is crucial to prioritize databases offering diverse scholarly articles and conference proceedings to enrich the systematic literature review process.

Table 1: Preferred Data Sources

#	Preferred Sources	Address
1	Wiley Online Library	https://onlinelibrary.wiley.com
2	Springer Link	https://link.springer.com
3	Science Direct	https://www.sciencedirect.com
4	ProQuest	https://search.proquest.com
5	IEEEXplore DL	https://ieeexplore.ieee.org
6	Emerald Insight	https://www.emeraldinsight.com
7	Ebscohost	https://search.ebscohost.com
8	AIS Elec. Library	http://aisel.aisnet.org
9	ACM Digital Library	https://dl.acm.org

Table 1 illustrates that the sources listed above are valuable resources for conducting SLR due to their extensive collections of scholarly articles, conference proceedings, and other academic publications across various disciplines. Wiley Online Library, Springer Link, Science Direct, ProQuest, IEEEXplore Digital Library, Emerald Insight, EBSCOhost, AIS Electronic Library, and ACM Digital Library offer researchers access to a wide range of peer-reviewed journals, books, and conference proceedings covering topics relevant to their respective fields. These platforms provide researchers with credible and reliable sources of information, facilitating the general review and synthesis of existing literature for academic research purposes.

2.2 Formulating Pertinent Keywords

The subsequent procedure employs diverse keywords to identify interrelated research papers, incorporating Boolean operators such as OR and AND to refine the data. Additionally, we define symbols to enhance result prioritization while implementing an ordering clause to facilitate more accessible access to relevant articles. Ultimately, including a wide range of keywords is expected to contribute to comprehensively addressing the research question. The specifics regarding the variety of keywords utilized are delineated as follows:

(("enterprise architecture") OR ("enterprise framework") OR ("EAF")) AND (("government") OR ("e-gov") OR ("bureaucracy")).

Additionally, it is essential to note that some database sources restrict the use of double apostrophes ("") when searching for a series of two or more phrases. Furthermore, specific sources advise against using double quotes to mitigate potential errors. Adhering to these guidelines ensures accurate and effective search results.

2.3 Parameters for Inclusion and Exclusion

Researchers utilize inclusion and exclusion criteria to decide which subjects, studies, or data sources to include in their research or analysis and which to exclude. After establishing keywords and Boolean operations, the author specifies search inclusion and exclusion criteria, which are guidelines for selecting relevant materials. These criteria play a crucial role in ensuring the relevance and accuracy of the research findings by effectively filtering out irrelevant data sources.

a) This research considers articles published between 2014 and 2023 for inclusion.

b) Publications predating 2014 are omitted from consideration.

c) English-language publications are prioritized.

d) Only international journals and conference proceedings are selected as publication types.

e) Additionally, the author evaluates other publications, such as book chapters or lecture notes, as they often contain updated information and high-quality literature from reputable databases.

2.4 Data Retrieval

Table 2 examines 6,460 articles retrieved from preferred databases using keywords across all search fields. Subsequently, researchers identified 256 articles as potential research based on their titles. Additionally, researchers carefully analyzed, evaluated, and ultimately selected 55 articles based on their abstracts and full-text content suitability for this research. Furthermore, the subsequent table provides a detailed description of the data extraction process from each data source.

Table 2: Data Retrieval

Preferred Sources	Studies Found	Potential Studies	Preferred Studies
Wiley Online Library	388	6	2
Springer Link	513	23	3
Science Direct	1,115	20	4
ProQuest	2,599	37	9
IEEEXplore DL	783	42	14
Emerald Insight	299	8	2
Ebscohost	121	6	3
AIS Elec. Library	453	69	9
ACM Digital Library	189	45	9
Total	**6,460**	**256**	**55**

3. RESULT AND DISCUSSION

Researchers investigate the paper distribution per year and paper types, the country-implemented EA, EA framework mapping to reference, and critical factors of EA adoption about the enactment of EA frameworks across diverse countries:

a) Scrutinize the paper distribution annually and paper types to discern temporal trends and fluctuations in EA research output within the government sector.

b) Our investigation extends to the country-implemented EA initiatives, where we analyze

the geographic distribution and prevalence of EA adoption across different nations.

c) Delve into the critical factors influencing EA adoption, exploring the key determinants and barriers that shape countries' decisions to implement EA frameworks.

3.1 Paper Distribution Per Year and Types

Figure 2 exemplifies data on the number of publications related to enterprise architecture within the government sector over ten years from 2014 to 2023. The trend insinuates fluctuating levels of publication activity, with the highest count recorded in 2018 (11 publications) and the lowest in 2022 (1 publication). Over the years, there has been variation in the number of publications, suggesting potential shifts in research interest or focus within EA in the government sector.
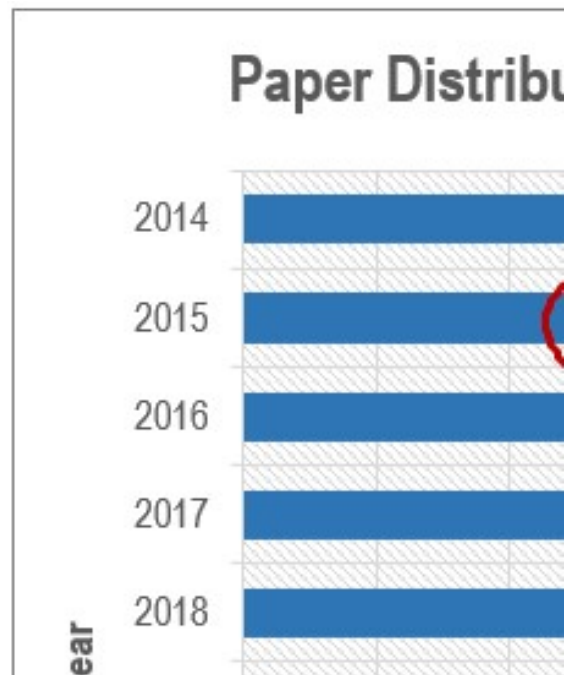

Figure 2: Paper Distribution Per Year

From 2014 to 2019, a general upward trend in publication counts reveals an increasing interest or emphasis on enterprise architecture within government sectors. However, after 2019, there appears to be a slight decline in publication counts, with fewer publications in 2020 and subsequent years. It could imply a potential shift in research priorities or a plateau in research output within this domain. This lowering in publication counts prompts the exploration of underlying factors influencing the trajectory of EA research, such as emerging technologies, evolving

governmental policies, or changing organizational priorities. It prompts a more profound examination into whether the descent signifies a temporary deviation in research focus or a more profound transformation in the field's landscape.
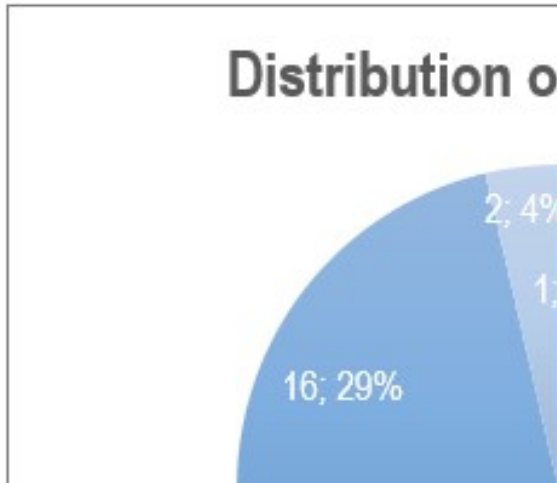

Figure 3: Distribution of Paper Types

Figure 3 provides insights into the distribution of publication types related to enterprise architecture within the government sector. Conference proceedings constitute the majority of publications, accounting for 65.45% of the total count. It implies that conferences are a prevalent platform for disseminating research findings and discussions on enterprise architecture practices. Researchers often favor publishing in conferences over journals due to the quicker dissemination of findings, broader visibility among peers and industry professionals, and the opportunity for timely feedback and networking.

Journals also play a significant role, representing 29.09% of the total publications. It indicates the importance of scholarly journals for sharing in-depth research and insights in this field. Researchers often prefer journal publishing over conferences due to the rigorous peer-review process, which ensures high quality and the associated longer-term visibility and recognition. On the other hand, conference proceedings and journals dominate the landscape of publications; it is noteworthy that other types of publications also contribute. Book chapters and lecture notes comprise smaller proportions, with 1.82% and 3.64% of the total count, respectively. Although less common, these publication types still contribute valuable insights and perspectives to the discourse on EA within government sectors.

3.2 The Country-Implemented EA

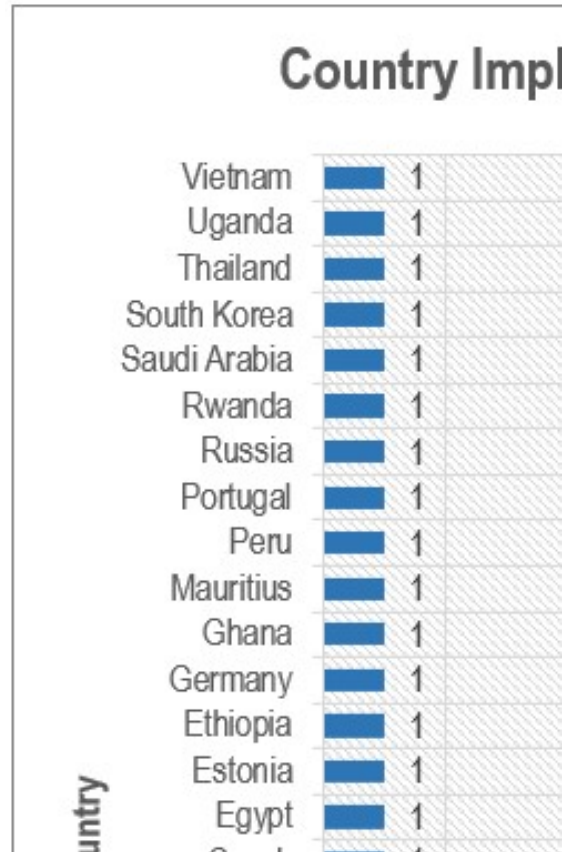The following figure of country-implemented EA as follows:

Figure 4: Country Implemented EA

Figure 4 portrays the robust implementation of EA in the government sectors of various countries, which signifies a strategic approach towards modernizing governance and enhancing service delivery. Countries like Indonesia and Malaysia, with multiple implementations, demonstrate a concerted effort to leverage EA frameworks to optimize resource allocation, improve decision-making processes, and foster interoperability among government systems [16][17]. These implementations likely involve extensive initiatives, including policy reforms, organizational restructuring, and technological investments, to achieve greater efficiency and effectiveness in public service delivery [18].

Moreover, the presence of EA implementations in diverse countries such as India, Colombia, and Finland underscores the global recognition of EA as a transformative tool for addressing modern governments' complex

challenges [4][19][20]. These implementations may vary in scope and scale, ranging from national-level initiatives to localized projects, but collectively contribute to advancing the capabilities and resilience of public sector organizations. By aligning IT investments with strategic objectives, countries can harness the potential of EA to drive digital transformation agendas, promote innovation, and ensure citizen-centric service delivery [21].

Overall, the widespread adoption of EA in the government sector reflects a growing acknowledgment of its role in shaping the future of governance worldwide. As countries navigate the complexities of an increasingly interconnected and digitalized world, the effective implementation of EA frameworks will remain paramount in fostering agility, responsiveness, and resilience in government operations [22][23]. Through ongoing collaboration, knowledge-sharing, and capacity-building efforts, countries can further leverage EA to address emerging challenges and capitalize on new opportunities for sustainable development and inclusive growth [24].

Table 3 represents a general overview of EA frameworks adopted by various countries and sectors within the government domain. It highlights the diversity of EA frameworks utilized across different regions, reflecting each country's unique preferences and priorities in aligning IT strategies with government objectives. For instance, countries like Australia and Thailand implement Agile EA, emphasizing agility and flexibility in responding to changing government needs and priorities. On the other hand, countries like Egypt and Estonia adopt Egyptian GEAF and Estonia GEAF, respectively, indicating a tailored approach to EA development that addresses specific national requirements and contextual factors.

Table 3: EA Framework Mapping To Reference.

EA Framework	Country	Typ.	Sec.	Ref.
Agile EA	Australia	C	Gov	[21]
Egyptian GEAF	Egypt	C	Gov	[10]
Estonia GEAF	Estonia	C	Gov	[25]
India GEAF	India	C	Gov	[26]
Colombian GEAF	Colombia	C	Gov	[27]
FEAF	Thailand	C	Gov	[28]
TOGAF	Indonesia	C	Gov	[29]
Ghana GEAF	Ghana	C	Gov	[30]
FEAF	USA	J	Gov	[31]
Multi Framework	USA	C	Gov	[18]
Nambian GEAF	Nambia	J	Gov	[32]
Pakistan EAF	Pakistan	C	Gov	[33]
FEAF	Russia	C	Gov	[22]
TOGAF, 1GovEA	Malaysia	C	PS	[34]
FEA, Custom	Vietnam	C	PS	[35]

EA Framework	Country	Typ.	Sec.	Ref.
India GEAF	India	C	Gov	[36]
Finnish National EA	Finland	BC	Gov	[37]
South Korea EAF	South Korea	J	Gov	[23]
TOGAF	Saudi Arabia	C	Gov	[38]
TOGAF, 1GovEA	Malaysia	C	PS	[39]
i-GEA	Indonesia	J	Gov	[40]
1GovEA	Malaysia	C	PS	[41]
Finnish National EA	Finland	LN	Gov	[4]
TOGAF, Zachman	India	C	Gov	[19]
TOGAF, Zachman	Norwegia	C	PS	[42]
FEA	Portugal	C	Gov	[43]
Zachman	India	C	Gov	[12]
TOGAF	Indonesia	J	Gov	[11]
Colombian GEAF	Colombia	C	Gov	[20]
Scoping GEA	Uganda	LN	PS	[44]
TOGAF	Indonesia	J	Gov	[5]
TOGAF	Indonesia	C	Gov	[45]
Nambian GEAF	Nambia	J	Gov	[46]
TOGAF	Indonesia	C	Gov	[47]
TOGAF	Croatia	C	Gov	[48]
TOGAF	Indonesia	C	Gov	[49]
myGovEA	Malaysia	C	Gov	[50]
TOGAF	Ethiopia	C	Gov	[51]
Gov with BOLD	Czech	J	Gov	[52]
Rwanda GEAF	Rwanda	J	Gov	[53]
TOGAF	Peru	J	Gov	[9]
TOGAF, Zachman	Pakistan	J	PS	[7]
South Africa GWEA	South Africa	C	Gov	[54]
FEA	Indonesia	C	Gov	[8]
GEA-PA	Morocco	J	Gov	[55]
MyGovEA	Malaysia	C	Gov	[56]
TOGAF, Zachman	Mauritius	J	Gov	[57]
South Africa GWEA	South Africa	J	Gov	[58]
Zachman	Morocco	C	Gov	[59]
TOGAF	Norwegia	C	PS	[3]
TOGAF, ArchiMate	Chile	J	Gov	[60]
myGovEA	Malaysia	J	Gov	[16]
Zachman	Indonesia	C	Gov	[6]
TOGAF	Indonesia	C	Gov	[17]
EAM Framework	Germany	C	PS	[24]

Moreover, the table showcases the widespread adoption of globally recognized EA frameworks such as TOGAF and FEAF across multiple countries, including Indonesia, Malaysia, and the USA. These frameworks provide standardized methodologies and best practices for EA implementation, enabling countries to streamline their IT architectures and improve interoperability within government systems [31][56][17]. Additionally, some countries implement multi-framework approaches, as seen in the USA, which implements both FEAF and Multi Framework, underscoring the complexity and diversity of EA initiatives in large-scale government organizations [18].

Furthermore, the table illustrates the application of EA frameworks in various sectors within the government domain, including the public sector, government agencies, and specific

government ministries. For example, Malaysia implements TOGAF and 1GovEA in the public sector, emphasizing the importance of standardizing IT architectures and promoting collaboration across government agencies [39][41]. Similarly, countries like India and South Korea adopted TOGAF and EAF in their respective government sectors, highlighting the widespread recognition of these frameworks as industry standards for EA development [23][19].

The table provides valuable insights into the global landscape of EA implementation in the government sector, showcasing the diverse range of frameworks and approaches adopted by countries worldwide to enhance governance effectiveness, promote digital transformation, and drive innovation in public service delivery [23][6]. Through ongoing collaboration and knowledge-sharing, countries can leverage EA frameworks to address complex challenges, foster interoperability, and realize their modern and efficient government vision [23][43].

3.3 Critical Factors of Influencing EA

In modern governance, implementing EA frameworks is essential for enhancing organizational effectiveness, optimizing resource allocation, and driving digital transformation initiatives. However, the successful enactment of EA within government sectors is contingent upon many critical factors shaping its adoption landscape. The following table indicates the critical factors or success factors of EA framework adoption as follows:

Table 4: Critical Factors of EAF Adoption.

Factors	Instruments	References
Governance	Political	[28]; [33]; [34]
	Legislative	[33]
	Leadership	[6]; [33]
	ICT policy	[33]; [41]
	Legal framework	[6]; [28]; [33]; [23]
	Blue print & masterplan	[6]; [23]; [20]; [34]
	G2G relationship	[6]
	Inspection & Assessment	[6]
	Stability	[6]
	Multi-level governance	[20]; [34]; [41]; [43]; [56]
Management	Top management support	[23]; [33]; [34]; [41]; [43]; [56]; [6]
	Managerial strategy	[33]; [34]
	Collaboration	[23]; [28]; [33]; [43]
	Communication	[34]; [41]; [56]
	Autonomy	[33]

Factors	Instruments	References
	Vission and mission	[6]; [41]; [43]
	Project management	[6]; [23]; [43]
	Objectives	[23]; [41]
	Change management	[23]; [41]; [56]
	Organization culture	[34]; [38]; [41]; [56]
	Organization value	[34]; [38]
	Competitive presure	[56]
	Commitment	[34]; [41]
Resources	Labor expertise	[6]; [23]; [33]; [34]; [41]; [43]; [56]
	Capital	[33]; [41]
	Material	[33]
	Funding	[6]; [33]; [34]; [56]
	ICT Literacy	[6]; [33]
	Common protocol	[28]; [20]
	Service Innovation	[6]
	Portofolio	[20]
	Triple helix	[20]
	Vendor support	[38]; [56]
	Documentation	[34]; [41]
	SLA implementation	[34]; [38]
Socio-economic	Digital divide	[33]
	Education and skills	[33]
	Trust	[6]; [33]
	Income	[33]
	Cost	[33]; [34]; [38]
	Benefit	[6]; [33]; [34]; [56]
	Process agreement	[6]; [28]; [23]; [38]
	Public engagement	[6]
Technology	Data harmonization	[28]
	ICT Infrastructure	[6]; [20]; [41]; [43]
	System quality	[6]
	Service reliability	[6]; [38]
	System accessibility	[6]; [38]
	EA management system	[23]; [34]
	EA reference model	[23]; [38]
	EA framework	[23]; [34]; [41]
	Interoptability	[20]; [38]
	IT Operation	[20]
	Technology readiness	[56]
	Technology complexity	[56]
Information	Usefullness	[6]
	Ease of use	[6]; [38]
	Social contentment	[6]
	Security and privacy	[6]; [33]; [38]; [41]; [43]
	Online services	[20]
	Data analytic	[20]; [38]

Table 4 presents the context of EA framework adoption within the government sector; various critical factors significantly influence the success and effectiveness of implementation measures. As one of the primary factors, governance confines a wide array of instruments ranging from political support and legislative frameworks to leadership engagement and ICT

policies [28][33][34]. Effective governance mechanisms ensure the alignment of EA initiatives with strategic objectives, foster stakeholder collaboration, and provide the regulatory framework to govern the enactment process. Furthermore, governance structures facilitate the establishment of blueprints and master plans, guide government-to-government relationships, and enable regular inspection and assessment to ensure accountability and transparency [34][23][20][6].

Management represents another crucial factor influencing EA framework adoption, containing a spectrum of instruments such as top management support, collaborative strategies, and effective communication channels [34][41][56]. Strong leadership support is essential for championing EA endeavors, driving organizational change, and fostering a culture of innovation and collaboration [28][33]. Effective project management practices, clear objectives, and change management strategies are vital for ensuring the successful execution of EA performance endeavors. Moreover, organizational culture, values, and competitive pressures are critical in shaping managerial decisions and actions related to EA adoption and implementation [38][41][56].

Resources are fundamental enablers for adopting the EA framework within the government sector. Adequate allocation of human, financial, and technological resources is essential to support the planning, development, and undertaking of EA initiatives [33][34]. Labor expertise, capital investments, and funding are crucial for acquiring and deploying IT infrastructure, tools, and resources to sustain EA implementation. Moreover, fostering ICT literacy, promoting service innovation, and ensuring vendor support are essential for building and sustaining the capabilities required for successful EA adoption [38][56].

Socio-economic factors also significantly impact the adoption of the EA framework in the government sector. Addressing issues such as the digital divide, education, and skills gaps and building trust among citizens are essential for fostering public engagement and support for EA endeavors [33][34][38]. Furthermore, assessing the cost, benefits, and socio-economic impact of EA implementation is crucial for informing decision-making processes and prioritizing investment in EA capabilities. Process agreement and public engagement mechanisms ensure transparency, accountability, and public participation in the EA implementation process [28][23][38][6].

Technology factors are pivotal in shaping the success of EA framework adoption within the government sector. Ensuring data harmonization, robust ICT infrastructure, and reliable service delivery are essential for supporting the complexities of EA implementation [41][43][20][6]. Additionally, leveraging EA management systems, reference models, and frameworks is critical for standardizing and streamlining the EA development process. Moreover, addressing issues related to technology readiness, accessibility, and complexity is essential for ensuring the seamless integration and interoperability of EA systems within government organizations [34][23][41].

Information factors are paramount in determining the usability, security, and effectiveness of EA frameworks within the government sector. Ensuring the usefulness and ease of use of EA systems, addressing security and privacy concerns, and providing online services are essential for fostering social contentment and public trust in EA endeavors [33][38][41][43][6]. Moreover, leveraging data analytics capabilities to derive actionable insights and improve decision-making processes is crucial for maximizing the value and impact of EA framework adoption [38][20].

The findings presented in this study provide a comprehensive understanding of the implementation landscape of Enterprise Architecture (EA) frameworks within the government sector, shedding light on significant trends, preferences, and critical factors influencing successful adoption. The analysis reveals a robust implementation of EA across various countries, underscoring a strategic approach towards modernizing governance and enhancing service delivery. The study highlights the widespread adoption of globally recognized EA frameworks, such as TOGAF and FEAF, alongside country-specific preferences like Colombian GEAF and Nambian GEAF. This nuanced understanding of EA adoption patterns and identifying critical factors crucial for successful implementation contributes to the existing body of knowledge in both academic and practical domains. By synthesizing insights from diverse case studies and systematically examining the factors influencing EA framework adoption, this study provides valuable guidance for policymakers, and researchers seeking to navigate the complexities of EA implementation within governmental contexts.

4. CONCLUSION AND IMPLICATION

The research reveals a diverse landscape of EA implementation across various countries, with Indonesia leading with ten implementations, Malaysia leading with six, and India leading with four. TOGAF emerges as the most prevalent EA framework, adopted in twelve instances, followed by FEAF with six implementations. Notably, specific EA frameworks like Colombian GEAF and Namibian GEAF are favored in Colombia and Namibia, respectively. The analysis underscores the global adoption of EA frameworks, transcending continents, to enhance organizational efficiency and strategic alignment in government sectors. These findings underscore the significance of EA frameworks in modernizing government sectors worldwide, fostering interoperability, and driving digital transformation initiatives.

The study identifies six critical factors for adopting EA frameworks within the government sector: Governance, Management, Resources, Socio-economic, Technology, and Information. Governance plays a pivotal role in providing political, legislative, and leadership support, while effective management practices, including top management support and change management strategies, align organizational objectives with EA initiatives. Adequate allocation of resources, encompassing human, financial, and technological resources, is essential for sustaining EA implementation efforts. Addressing socio-economic challenges such as the digital divide and building trust is crucial for fostering public engagement and support for EA endeavors. Leveraging technology and information resources, such as data harmonization and reliable ICT infrastructure, enhance system accessibility and service reliability. In conclusion, a holistic strategy integrating these critical factors is imperative for successful EA framework adoption in the government sector, leading to enhanced organizational efficiency and service delivery.

5. LIMITATION AND FUTURE RESEARCH

While the study delivers valuable insights into adopting EA frameworks in government sectors, several limitations must be acknowledged to interpret the findings accurately. Firstly, the reliance on a specific set of databases for literature review may introduce bias and limit the comprehensiveness of the findings. Additionally, variations in the search expressions and query formulation across databases could result in overlooked or redundant studies, potentially influencing the representation of EA implementation practices across different regions and frameworks. Future research could address these limitations by employing a broader range of databases and refining search strategies to ensure a more exhaustive coverage of relevant literature. Furthermore, the study's temporal scope from 2014 to 2023 may constrain the generalizability of discoveries, as it excludes potentially significant developments and implementations outside this timeframe.

Forthcoming research could explore several avenues. Firstly, future studies could employ a broader range of databases and refine search strategies to ensure exhaustive coverage of relevant literature, thereby overcoming limitations associated with database reliance. Secondly, extending the temporal scope beyond 2023 or conducting periodic updates could capture evolving trends and emerging practices in EA implementation across government sectors. Additionally, future research could explore the qualitative dimensions of EA implementation, such as stakeholders' perceptions and the cultural context influencing EA adoption decisions, to provide a deeper understanding of the subject. Lastly, longitudinal studies tracking the evolution of EA frameworks and their impact over time could provide insights into the long-term significance and sustainability of EA endeavors within government sectors.

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