

ENTERPRISE ARCHITECTURE TRENDS OVER A DECADE: A BIBLIOMETRIC ANALYSIS

Albi Firmansyah¹; Grandys Frieska Prassida^{2*}

Program Studi Sistem Informasi^{1,2}
Universitas Internasional Semen, Indonesia^{1,2}
<https://uisi.ac.id/>^{1,2}
albi.firmansyah20@student.uisi.ac.id¹, grandys.prassida@uisi.ac.id^{2*}

(*) Corresponding Author
(Responsible for the Quality of Paper Content)



The creation is distributed under the Creative Commons Attribution-NonCommercial 4.0 International License.

Abstract— Enterprise Architecture (EA) has recently become significantly essential for every organization in ensuring the alignment of information technology implementation with the organization's strategy and goals. However, its diverse application to organizations can uprise interesting trends that can be reviewed further. Therefore, this research, through a systematic literature review approach, shows the importance of paying attention to the context and scope of EA which has evolved in the last decade. Bibliometric analysis methods are used to show existing correlations, based on journal article data obtained from 2013 to 2023. This research provides a valuable contribution to the development of EA literature by identifying topics that are frequently discussed and those that have the potential to be discussed in the future and who examine them and their relationship to each other. Furthermore, this research can also provide practitioners and stakeholders with a better understanding of the latest EA implementation trends.

Keywords: bibliometric analysis, enterprise architecture, systematic literature review.

Intisari— Enterprise Architecture (EA) saat ini menjadi sangat penting bagi setiap organisasi dalam memastikan keselarasan implementasi teknologi informasi dengan strategi dan tujuan organisasi. Namun, penerapannya yang beragam pada organisasi dapat memunculkan tren menarik yang dapat dikaji lebih lanjut. Oleh karena itu, penelitian ini melalui pendekatan tinjauan literatur sistematis menunjukkan pentingnya memperhatikan konteks dan ruang lingkup EA yang berkembang dalam satu dekade terakhir. Metode analisis bibliometrik digunakan untuk menunjukkan korelasi yang ada, berdasarkan data artikel jurnal yang diperoleh dari tahun 2013 hingga 2023. Penelitian ini memberikan kontribusi berharga bagi pengembangan literatur EA dengan mengidentifikasi topik-topik yang sering dibahas dan yang potensial untuk dibahas di masa depan beserta siapa yang menelitinya dan hubungannya satu sama lain. Lebih lanjut, penelitian ini juga dapat memberikan pemahaman yang lebih baik kepada para praktisi dan pemangku kepentingan mengenai tren implementasi EA terkini.

Kata Kunci: analisis bibliometrik, arsitektur enterprise, tinjauan literatur sistematis.

INTRODUCTION

In the evolving era of digital transformation, the use of information technology in the business world is crucial for organizations to achieve their goals. Yet, it is also essential to align the information technology initiatives with the business strategy of the organization to achieve effective and efficient results [1]. In this context, the application of

Enterprise Architecture (EA) becomes a relevant concept to ensure alignment between information technology and organizational business [2]. This alignment can be achieved when an organization can define various needs of information technology to support the business processes effectively [2].

Enterprise Architecture (EA) is a crucial element for organizations to design, manage, and integrate their information systems [3]. In realizing

the goals and business strategies of the organization, Enterprise Architecture (EA) is used as a driver for standardization, consistency, compliance, and integration to align information systems and information technology [3].

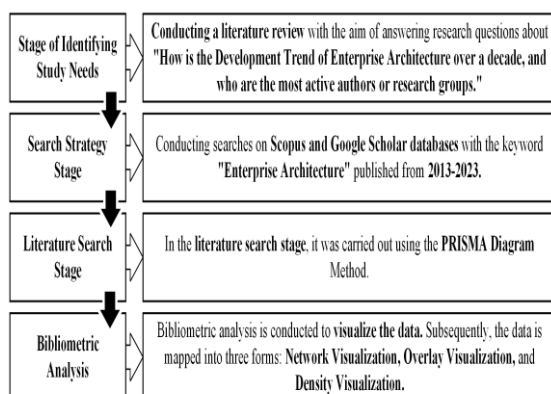
Currently, rapid economic development and the growth of information technology have compelled companies to be more adaptive and innovative in managing their information systems. However, a lack of awareness of systematic approaches and a deep understanding of trends in Enterprise Architecture (EA) management still needs improvement, necessitating a comprehensive review. Based on this, an appropriate approach is required.

By conducting a Systematic Literature Review (SLR) to provide a comprehensive overview of current enterprise architecture, organizations can understand the latest development trends. SLR is a method used to systematically interpreting and evaluating previous research related to a specific phenomenon, allowing it to be replicated by other researchers.

The aim of this research is expected to provide information about enterprise architecture trends over a decade and serve as inspiration, especially on less-discussed topics. It can also act as a guide and consideration in improving enterprise architecture in the future.

MATERIALS AND METHODS

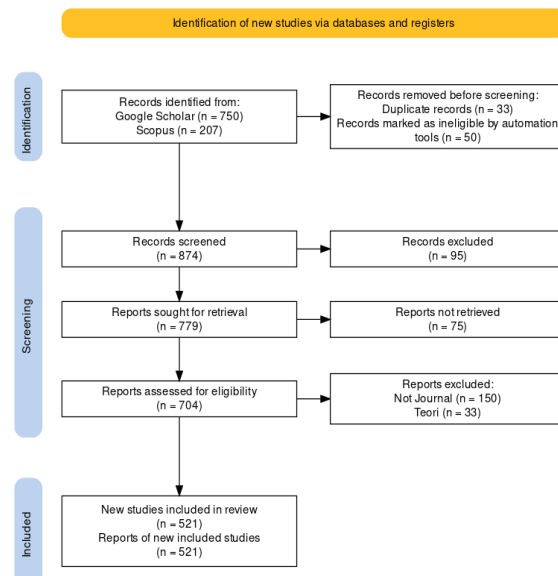
In achieving the research objectives, a literature review on enterprise architecture for the period 2013-2023 is conducted using the Systematic Literature Review approach. Several steps were taken, such as identifying study needs, developing a search strategy, conducting literature searches, and bibliometric analysis, as shown in Figure 1.



Source: (Research Results, 2024)
 Figure 1. Research Stage Flowchart

The flowchart explains the steps involved in conducting a review of enterprise architecture over a decade. In the initial stage, the research needs are identified, involving a literature review with the aim of addressing research questions related to "How is the Development Trend of Enterprise Architecture over a decade and who are the most active authors or research groups."

Next, in the search strategy stage, searches are conducted using the Scopus and Google Scholar databases. Scopus is chosen for its extensive indexing of abstracts and citations of scientific journals worldwide [4], and Google Scholar is accessed for its free availability [5]. The search is conducted using Publish or Perish as a tool for simultaneous searching from various sources, making it the most effective method currently.



Source: (Research Results, 2024)
 Figure 2. PRISMA Diagram

In the literature search stage, it was carried out using the PRISMA Diagram, as shown in Figure 2. "There are several stages, starting from identification, screening, eligibility, and inclusion." There are several stages, starting from identification, screening, eligibility, and included. The identification search is exclusively targeted at literature, titles, keywords, and abstracts matching the keyword "Enterprise Architecture," with the expectation of obtaining broader data. The identification search includes literature published from 2013 to 2023, thus obtaining a total of 750 results from Google Scholar and 207 from Scopus.

Before proceeding to the screening process, some literature was excluded, such as 33 duplicate records and 50 records marked as ineligible by automation tools. As a result, 874 literature items

remained at the screening stage, where further exceptions were identified, totaling 170 literature items. In the eligibility stage, 704 literature items remained, followed by a more detailed filtering process, including the removal of 150 non-journal literature items and 33 literature items unrelated to the topic. In the final stage, 521 journals that align with the keywords, publication years, and journal-type literature were obtained.

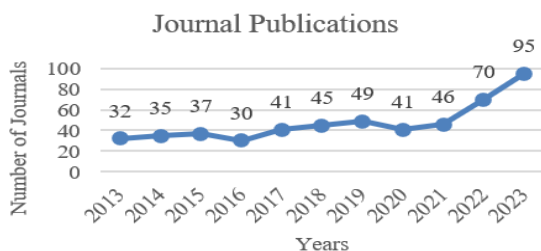
In the last stage, bibliometric analysis is conducted. Bibliometric analysis can be categorized into two categories: performance analysis and science mapping [6]. Various techniques, such as publication frequency, citation frequency, most-cited publications, and publications calculated for specific analytical units [7], can be applied. Bibliometric analysis is carried out using the VOSviewer application for its effective capacity in managing large-sized data and presenting various interesting visualizations, analyses, and searches. Prepared data from the database is then mapped in three forms: Network Visualization, Overlay Visualization, and Density Visualization [5].

RESULTS AND DISCUSSION

Based on the literature search results using the Publish or Perish application according to the search criteria for the keyword "Enterprise Architecture" from 2013 to 2023.

Obtaining a total of 957 literature from Google Scholar and Scopus, resulting in a final total of 521 journals that align with the keyword "Enterprise Architecture". The researcher has also summarized some journals with the highest number of citations, divided into two groups: 2013-2018 and 2019-2023, as shown in Tables 1 and 2.

Furthermore, by limiting the search results, it is evident that the number of journal publications on relevant topics has experienced a significant increase from 2020 to 2023. This is illustrated in Figure 3, where in 2023, the highest number of journal publications reached 95. This demonstrates the increasing interest and research focus on "Enterprise Architecture."



Source: (Research Results, 2024)
Figure 3. Number of Journal Publications from 2013-2023

Table 1. Most Citations in the Year 2013-2018

Cites	Auth ors	Title	Publication
276	[8]	An exploration of enterprise architecture research	Communications of the Association for Information Systems
267	[9]	Enterprise architecture management and its role in corporate strategic management	Information Systems and e-Business Management
253	[10]	A new paradigm for the continuous alignment of business and IT: Combining enterprise architecture modelling and enterprise ontology	Computers in Industry
248	[11]	Exploring the future of enterprise architecture: A Zachman perspective	Computers in Industry
222	[12]	A systematic literature review on Enterprise Architecture Implementation Methodologies	Information and Software Technology

Source: (Research Results, 2024)

Table 2. Most Citations in the Year 2019-2023

Cites	Auth ors	Title	Publication
150	[13]	Towards a comprehensive understanding of digital transformation in government: Analysis of flexibility and enterprise architecture	Government Information Quarterly
129	[14]	The value of and myths about enterprise architecture	International Journal of Information Management
92	[15]	An integrated conceptual model for information system security risk management supported by enterprise architecture management	Software and Systems Modeling
92	[16]	The Internet of Things for enterprises: An ecosystem, architecture, and IoT service business model	Internet of Things



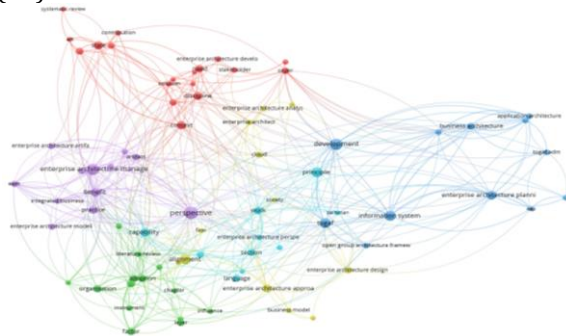
Cites	Auth ors	Title	Publication
84	[17]	Developing a government enterprise architecture framework to support the requirements of big and open linked data with the use of cloud computing	Journal of Information Management

Source: (Research Results, 2024)

A. Mapping the Keyword Relationships in Enterprise Architecture Publications (Co-Occurrence)

Next, the data stored in the Research Information System (RIS) format is analyzed using the VOSviewer application. In co-occurrence analysis, we utilize it to generate visualizations of keywords frequently discussed with an occurrence frequency of 5 or more. Subsequently, these keywords are categorized based on their respective themes or discussions.

Bibliometric analysis produces visualizations in the form of Network Visualization, Overlay Visualization, and Density Visualization. The bibliometric network consists of nodes represented by circles to represent entities such as authors or keywords and edges to represent relationships between pairs of nodes. Mapping and clustering in bibliometric analysis using VOSviewer are complementary and mutually reinforce each other [18]. Allows to perceive that the keywords with the biggest frequency are: (a) "perspective" (33); (b) "development" (26); (c) "enterprise architecture management" (26); (d) "togaf" (21); (e) "alignment" (20); (f) "information system" (20); (g) "principle" (20).



Source: (Research Results, 2024)

Figure 4. Network Visualization Based on Keywords

Based on Figure 4, it displays the results of the analysis using network visualization on the "Enterprise Architecture" research within the timeframe of 2013-2023. The distance between the

nodes represents the strength of the two-node relationship (i.e., a smaller distance reveals a greater strength). The correlation between the two words is shown by the lines; the thicker the line, the greater their co-occurrence. An example is the link strength on the following node: (a) "perspective" with "integrated business" (6); (b) "perspective" with "enterprise architecture management" (4); (c) "perspective" with "description" (4); (d) "perspective" with "organization" (2); and (e) "perspective" with "artifact" (2).

Based on the data from 521 journals indexed in Scopus and Google Scholar, they can be grouped into 6 clusters, identified by the node colors of each keyword, it can be observed as presented in the following Table 3.

Table 3. Clusters grouped by the node colors of each keywords

Cluster/Color/Label	Keywords (Occurrence, Links, Total Link Strength)
Cluster 1/Red/Context	Context (14;18;20), state (14;12;18), discipline (12;16;16), need (11;15;18), systematic literature review (10;11;19), order (9;15;16), business process (9;13;17), knowledge (8;9;10), stakeholder (7;7;8), enterprise architecture development (7;6;6), agile enterprise architecture (6;4;5), contribution (6;7;8), solution (6;8;8), systematic mapping study (5;9;10), term enterprise architecture (5;7;7), art (5;6;10), lack (5;6;6), and systematic review (5;3;4).
Cluster 2/Green/Adoption	Adoption (11;11;19), impact (11;15;20), factor (11;11;20), organization (11;13;15), public sector (10;13;22), layer (9;7;9), enterprise architecture adoption (7;12;17), literature review (7;16;18), abstract (7;10;10), instrument (7;10;12), chapter (6;5;5), importance (6;8;8), influence (6;8;10), and enterprise transformation (5;13;16).
Cluster 3/Dark Blue/Development	Development (26;21;31), TOGAF (21;21;30), information system (20;20;29), enterprise architecture planning (15;18;28), business architecture (10;12;25), technology architecture (7;11;17), application architecture (7;9;17), data architecture (7;10;22), open group architecture framework (7;8;11), TOGAF ADM (7;9;12), Zachman framework (7;5;7), and EAP (5;7;13).
Cluster 4/Yellow/Alignment	Alignment (20;14;15), enterprise architecture approach (13;13;17), enterprise architecture design (9;12;14), cloud (8;9;9), business model (6;4;5), enterprise architect (6;10;10), enterprise architecture analysis (6;5;5), enterprise



Cluster/Color/Label	Keywords (Occurrence, Links, Total Link Strength)
Cluster 5/Purple/Perspective	architecture implementation (5;3;3), example (5;6;6), internet (5;3;3), firm (4;7;7), and society (4;7;7). Perspective (32;32;54), enterprise architecture management (25;24;42), benefit (15;27;41), practice (13;19;26), artifact (9;15;22), EAM (9;15;30), enterprise architecture practice (9;11;13), enterprise architecture artifact (8;9;12), enterprise architecture modeling (8;8;9), collection (7;12;14), description (7;14;20), integrated business (7;11;21).
Cluster 6/Blue/Principle	Principle (20;21;26), capability (16;17;20), work (13;16;20), language (11;7;8), section (10;14;15), domain (9;13;13), adaptive enterprise architecture (6;8;8), enterprise architecture perspective (6;9;10), Zachman (5;10;10), and ArchiMate (5;6;8).

Source: (Research Results, 2024)

Table 3 displays the thematic cluster associated with context (Cluster 1), adoption (Cluster 2), development (Cluster 3), alignment (Cluster 4), perspective (Cluster 5), and principle (Cluster 6).

The first cluster brings the topic related to context. In several previous articles, the context of enterprise architecture was often found in literature reviews or exploratory studies. Some of them mention contexts that are closely related to the concept or state of the art of enterprise architecture [19], [20] in the realm of digital transformation [21] and enterprise microservice.

The second cluster highlights the adoption topic. The issues and challenges in enterprise architecture adoption have been thoroughly explained in previous articles. More specifically, several studies also obtained the impact of enterprise architecture adoption in the public sector [22]–[24], and the healthcare sector [25]. Meanwhile, several empirical studies have examined the factors that influence enterprise architecture adoption using theories, for example the technology, organization, environment framework and organizational theory [23] and an extended technology acceptance model [26].

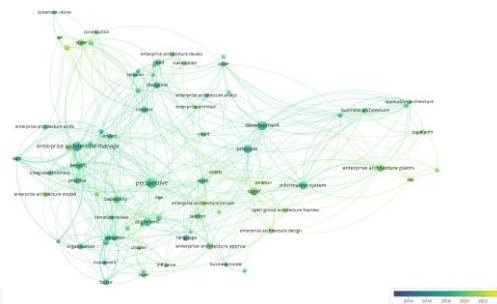
The third cluster points out development. The topic of enterprise architecture development is very close to the use of frameworks or development methods. Most existing research has used The Open Group Architecture Framework (TOGAF) as a guide for developing enterprise architecture in organizations [27]–[31]. Apart from that,

development in enterprise architecture is also related to the use of enterprise architecture planning methods [32]–[34].

The fourth cluster focuses on alignment. Organizations can leverage enterprise architecture to improve business and IT alignment. This alignment essentially focuses on the organization's business strategy and its information technology strategy. However, it can also be related to enterprise architects and stakeholders [35], or enterprise systems capabilities with business strategy, and can even look at alignment to the IT project portfolio [36]. This alignment considers the visual approach of enterprise architecture [37] as well as paying attention to dynamic aspects of enterprise architecture [38].

The fifth cluster link to perspective. Enterprise architecture is often conceptualized as a description of an organization from integrated business and IT in a holistic perspective. Previous articles have explored various perspectives that describe conceptual models or practices of enterprise architecture, such as systems theory perspective [39], [40], institutional perspective [41], a resource-based perspective [42], digital transformation perspective [43], Zachman perspective [11], to review the most recent digital maturity models from an enterprise architecture design perspective [44].

The last cluster covers topic related to principle. [45] follow a principled approach to propose competence modeling representation strategies in Enterprise Architecture. The keyword principles are mostly used to explain the foundation or mechanism for executing enterprise architecture in an adaptive [46], agile [47], or integrated manner with IT governance [48] or IT services management.



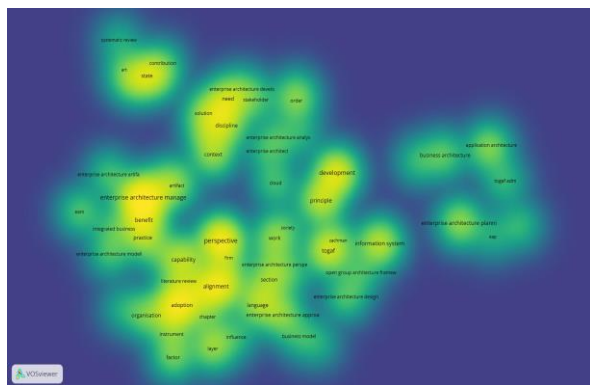
Source: (Research Results, 2024)

Figure 5. Overlay Visualization Based on Keywords

Next, in Figure 5, bibliometric analysis is conducted using overlay visualization, where the color of each node represents keywords indicating the publication year. For instance, "enterprise architecture planning" has a green-colored node, indicating that journals with this keyword were

prominently discussed in the range of 2020-2022. Another example is "enterprise architecture management," which has a toska-colored node, signifying that journals with this keyword were widely discussed around 2016-2019.

Furthermore, in bibliometric analysis using density visualization, researchers can determine how extensively a keyword is discussed. The indicator determining this is the brightness of the color; the brighter the color, the more frequently the keyword is researched or discussed. Conversely, the darker the color, the less frequently the keyword is studied. This can be observed in Figure 6.



Source: (Research Results, 2024)
 Figure 6. Density Visualization Based on Keywords

For example, in the case of bright, yellow-colored nodes, it signifies that the area is a topic that has been extensively researched, such as "enterprise architecture management," "development," and "perspective." For example, the keyword "enterprise architecture management," researched by [49] in the research journal titled "The impact of enterprise architecture management on information systems architecture complexity." This study presents a comparative analysis of how Enterprise Architecture Management (EAM) is taught. It identifies similarities and differences in the courses offered and proposes a prototype EAM course that can be adapted for both disciplines. The analysis also highlights the need for more detailed and easily accessible information about EAM courses at universities.

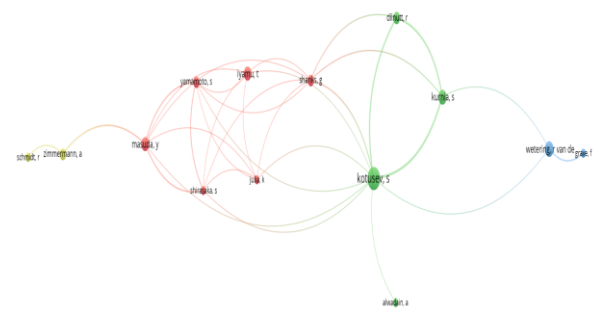
Next, in the case of the keyword "development," researched by [28] in the research journal titled "Development of an Enterprise Architecture for Healthcare using TOGAF ADM." The study discusses the development of Enterprise Architecture for healthcare services using TOGAF ADM. This research focuses on the challenges faced and proposes a framework to align IT with business strategy. The study analyzes the current and target architectures, identifies gaps, and makes recommendations for improvement.

In the case of the keyword "perspective," researched by [50] in the research journal titled "Digital Architectures Under Society 5.0: An Enterprise Architecture Perspective," the aim is to identify and analyze the digital architectures designed and built under Society 5.0 from an enterprise architecture perspective. The results explain that the analyzed digital architectures mostly use conceptual and system representations, rely little on existing enterprise architecture frameworks, are not based on explicit principles, and do not refer to reference architectures for Society 5.0.

Conversely, keywords like "cloud," "enterprise architecture design," and "systematic review" with a faded yellow node color indicate that they are rarely discussed or have not been extensively researched. For example, the keyword "cloud" has been examined by [51] in their research titled "Implementation of Enterprise Architecture in Cloud Computing Companies." This study presents an analysis of the effectiveness of utilizing cloud services in the industry. Additionally, the article employs the TOGAF ADM framework. Therefore, there are many research topics or keywords that are still worthy of further investigation.

B. Mapping Author Relationships in Enterprise Architecture Publications (Co-Authorship)

The data stored in the Research Information System (RIS) format will be analyzed using the VOSviewer application. In co-authors analysis, it is employed to visualize the relationships among authors and contributors actively engaged in similar research, in this case maximum of 15 and minimum of 3 authors per document.



Source: (Research Results, 2024)
 Figure 7. Network Visualization Based on Authors

In Figure 7, the results of the analysis using network visualization are presented, showing that each author in journal writing still maintains connections and relationships with one another. Among the numerous authors or contributors, there are only 4 clusters with a total of 14 authors who are

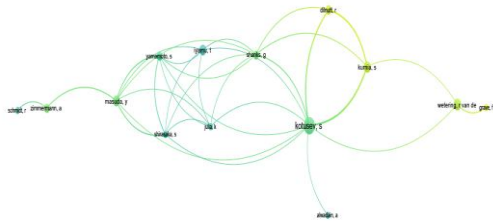


interconnected, identified by the node colors of each authors, it can be observed as presented in the following Table 4.

Table 4. Clusters grouped by the node colors of each authors

Clustering	Keywords
Cluster 1 (Red Node)	Iyamu, T; Julia, K; Masuda, Y; Shanks, G; Shirasaka, S; and Yamamoto, S.
Cluster 2 (Green Node)	Alwadain, A; Dilnutt, R; Kotusev, S; and Kurnia, S.
Cluster 3 (Blue Node)	Grave, F (the right most blue node); and Wetering, R van de.
Cluster 4 (Yellow Node)	Schmidt, R (the left most yellow node); and Zimmermann, A.

Source: (Research Results, 2024)



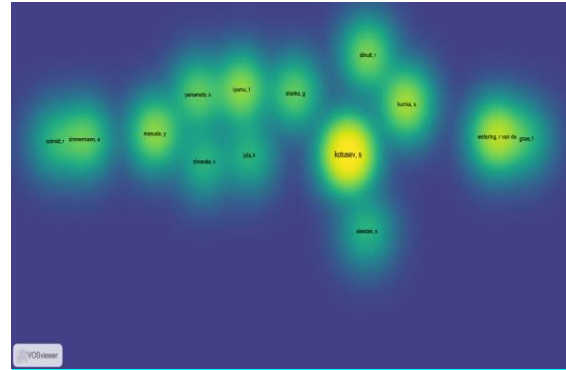
VOSviewer

Source: (Research Results, 2024)

Figure 8. Overlay Visualization Based on Authors

Furthermore, in Figure 8, the bibliometric analysis results using overlay visualization are presented, where the color of each node represents when the author or contributor published a journal. For instance, Kotusev, S, has a green-colored node, indicating publications around the year 2020, and the previous years as a contributor to other authors. Another example is Shanks, G, with a brighter green node, signifying journal publications around the year 2021.

In bibliometric analysis using density visualization, it can be identified who the active authors are, frequently publishing journals on the topic of enterprise architecture. The determining indicator is the brightness of the color; the brighter it is, the more frequently they publish journals. This can be observed in Figure 9. Based on these results, it is evident that an actively publishing and contributing author is Kotusev, S. An example of this is the journal titled "Enterprise architecture artifacts as boundary objects: An empirical analysis," published in 2023, authored by Kotusev, S; Kurnia, S; and Dilnutt, R.



Source: (Research Results, 2024)

Figure 9. Density Visualization Based on Authors

CONCLUSION

Based on the results and discussions above, it can be concluded that bibliometric analysis techniques applied to publications in enterprise architecture, visualized using VOSviewer, can assist researchers in identifying development trends through keywords related to research titles and contributors who have the most connections with other authors. In this study, literature searches were conducted using databases from Scopus and Google Scholar. The research findings indicate that the highest number of enterprise architecture publications occurred in 2023, reaching 95 journals. Bibliometric analysis revealed 6 clusters and 78 items in the visualization results based on keywords, with the most extensive discussions centering around "enterprise architecture management," "development," and "perspective." Additionally, there are 4 clusters and 14 items in the visualization results based on authors, highlighting that the most active and interconnected author is Kotusev, S. Furthermore, numerous topics or keywords, such as "cloud," "enterprise architecture design," "systematic review," and others, have not been thoroughly explored. Therefore, it can be concluded that topics related to enterprise architecture remain widely discussed. The outcomes of this research are expected to provide information on trends in enterprise architecture and serve as inspiration for further research, particularly on less-explored topics. Additionally, these findings can serve as a guide and consideration for improving enterprise architecture in the future.

REFERENCE

- [1] H. Li, Y. Wu, D. Cao, and Y. Wang, "Organizational mindfulness towards digital transformation as a prerequisite of information processing capability to achieve

- market agility," *J. Bus. Res.*, vol. 122, pp. 700–712, Jan. 2021, doi: 10.1016/j.jbusres.2019.10.036.
- [2] F. Thaib and A. W. R. Emanuel, "Perancangan Enterprise Architecture UNIPAS Morotai Menggunakan TOGAF ADM," *Teknika*, 2020, doi: 10.34148/teknika.v9i1.247.
- [3] R. Ansyori, "A systematic literature review: Critical Success Factors to Implement Enterprise Architecture," *Procedia Computer Science*, vol. 135, pp. 43–51, 2018, doi: 10.1016/j.procs.2018.08.148.
- [4] V. K. Singh, P. Singh, M. Karmakar, J. Leta, and P. Mayr, "The journal coverage of Web of Science, Scopus and Dimensions: A comparative analysis," *Scientometrics*, vol. 126, no. 6, pp. 5113–5142, Jun. 2021, doi: 10.1007/s11192-021-03948-5.
- [5] D. N. Al Husaeni, A. B. D. Nandiyanto, and R. Maryanti, "Bibliometric Analysis of Special Needs Education Keyword Using VOSviewer Indexed by Google Scholar," *Indones. J. Community Spec. Needs Educ.*, vol. 3, no. 1, pp. 1–10, Mar. 2022, doi: 10.17509/ijcsne.v3i1.43181.
- [6] N. Donthu, S. Kumar, D. Mukherjee, N. Pandey, and W. M. Lim, "How to conduct a bibliometric analysis: An overview and guidelines," *J. Bus. Res.*, vol. 133, pp. 285–296, Sep. 2021, doi: 10.1016/j.jbusres.2021.04.070.
- [7] C. Bota-Avram, *Science Mapping of Digital Transformation in Business*. in SpringerBriefs in Business. Cham: Springer Nature Switzerland, 2023. doi: 10.1007/978-3-031-26765-9.
- [8] D. Simon, K. Fischbach, and D. Schoder, "An Exploration of Enterprise Architecture Research," *Commun. Assoc. Inf. Syst.*, vol. 32, no. 1, pp. 1–71, 2013, doi: 10.17705/1CAIS.03201.
- [9] D. Simon, K. Fischbach, and D. Schoder, "Enterprise architecture management and its role in corporate strategic management," *Inf. Syst. E-bus. Manag.*, vol. 12, no. 1, pp. 5–42, Feb. 2014, doi: 10.1007/s10257-013-0213-4.
- [10] K. Hinkelmann, A. Gerber, D. Karagiannis, B. Thoenssen, A. van der Merwe, and R. Woitsch, "A new paradigm for the continuous alignment of business and IT: Combining enterprise architecture modelling and enterprise ontology," *Comput. Ind.*, vol. 79, pp. 77–86, Jun. 2016, doi: 10.1016/j.compind.2015.07.009.
- [11] J. Lapalme, A. Gerber, A. Van der Merwe, J. Zachman, M. De Vries, and K. Hinkelmann, "Exploring the future of enterprise architecture: A Zachman perspective," *Comput. Ind.*, vol. 79, pp. 103–113, Jun. 2016, doi: 10.1016/j.compind.2015.06.010.
- [12] B. D. Rouhani, M. N. Mahrin, F. Nikpay, R. B. Ahmad, and P. Nikfard, "A systematic literature review on Enterprise Architecture Implementation Methodologies," *Inf. Softw. Technol.*, vol. 62, no. 1, pp. 1–20, Jun. 2015, doi: 10.1016/j.infsof.2015.01.012.
- [13] Y. Gong, J. Yang, and X. Shi, "Towards a comprehensive understanding of digital transformation in government: Analysis of flexibility and enterprise architecture," *Gov. Inf. Q.*, vol. 37, no. 3, p. 101487, Jul. 2020, doi: 10.1016/j.giq.2020.101487.
- [14] Y. Gong and M. Janssen, "The value of and myths about enterprise architecture," *International Journal of Information Management*. Elsevier, vol. 46, pp. 1–9, Jun. 2019, doi: 10.1016/j.ijinfomgt.2018.11.006.
- [15] N. Mayer, J. Aubert, E. Grandry, C. Feltus, E. Goettelmann, and R. Wieringa, "An integrated conceptual model for information system security risk management supported by enterprise architecture management," *Softw. Syst. Model.*, vol. 18, no. 3, pp. 2285–2312, Jun. 2019, doi: 10.1007/s10270-018-0661-x.
- [16] I. Lee, "The Internet of Things for enterprises: An ecosystem, architecture, and IoT service business model," *Internet of Things*, vol. 7, p. 100078, Sep. 2019, doi: 10.1016/j.iot.2019.100078.
- [17] M. Lnenicka and J. Komarkova, "Developing a government enterprise architecture framework to support the requirements of big and open linked data with the use of cloud computing," ... *J. Inf. Manag.*, vol. 46, pp. 124–141, Jun. 2019, doi: 10.1016/j.ijinfomgt.2018.12.003.
- [18] L. Susanti, L. Tania, H. W. Komala, and C. Meiden, "Pemetaan Bibliometrik terhadap Social Theory pada Bidang Akuntansi Menggunakan VOSviewer," *J. Ekobistek*, vol. 11, pp. 272–277, 2022, doi: 10.35134/ekobistek.v11i4.393.
- [19] Diana, L., Kurniawan, T. A., Priharsari, D., & Prabowo, W. S "Clarifying the Concept of Enterprise Architecture & System of Systems: A Systematic Literature Review," *Proceedings of the 7th International Conference on Sustainable Information Engineering and Technology*, pp. 294–303, 2022, doi: 10.1145/3568231.3568279.

- [20] S. Kotusev, S. Kurnia, and R. Dilnutt, "The concept of information architecture in the context of enterprise architecture," *Aslib Journal of Information Management*, pp. 432-457, May. 2022, doi: 10.1108/AJIM-05-2021-0130.
- [21] I. Kaniawulan, Y. Wibisono, A. Wahyudin, and ..., "Systematic Literature Review: Digital Transformation Challenges and Strategies in the Context of Enterprise Architecture," *European Journal of humanities and educational advancements*, vol. 3 no.3, pp. 40-49, 2022, [Online]. Available: <https://www.neliti.com/publications/393634/systematic-literature-review-digital-transformation-challenges-and-strategies-in>
- [22] N. A. Ahmad, S. M. Drus, and H. Kasim, "Factors of organizational adoption of enterprise architecture in Malaysian public sector: a multi group analysis," *Journal of Systems and Information Technology*, vol 24 no. 4, pp. 331-360, Nov. 2022, doi: 10.1108/JSIT-11-2020-0254.
- [23] N. A. Ahmad, S. M. Drus, and H. Kasim, "Factors that influence the adoption of enterprise architecture by public sector organizations: an empirical study," in *IEEE Access*, vol. 8, pp. 98847-98873, 2020, doi: 10.1109/ACCESS.2020.2996584
- [24] D. Dang and S. Pekkola, "Organizational Change and Enterprise Architecture Adoption: A Case Study in the Public Sector," *Information systems research in Vietnam: A shared vision and new frontiers*, pp. 49-64, 2022, doi: 10.1007/978-981-19-3804-7_4.
- [25] Jonnagaddala, J., Guo, G. N., Batongbacal, S., Marcelo, A., & Liaw, S. T. "Adoption of enterprise architecture for healthcare in AeHIN member countries," *BMJ health & care informatics*, vol. 27 no. 1, 2020. doi: 10.1136/bmjhci-2020-100136.
- [26] B. A. Jnr and S. A. Petersen, "Using an extended technology acceptance model to predict enterprise architecture adoption in making cities smarter," *Environment Systems and Decisions*. Springer, 2023. doi: 10.1007/s10669-022-09867-x.
- [27] S. Sukiman and Z. Zulganef, "Designing Enterprise Architecture Using TOGAF Architecture Development Model (Case Study: BLC Course Institutions)," *International Journal of Ethno-Sciences and Education Research*, vol 3 no.1, pp. 21-29, 2023, doi: 10.46336/ijeer.v3i1.385.
- [28] A. S. Girsang and A. Abimanyu, "Development of an Enterprise Architecture for Healthcare using TOGAF ADM," *Emerging Science Journal*, vol 5 no. 1, pp. 305-321, Jun. 2021, doi: 10.28991/esj-2021-01278.
- [29] N. Q. Nada, S. Wibowo, and M. Novita, "Designing Enterprise Architecture in Koperasi Karyawan using TOGAF Architecture Development," *IOP Conference Series: Materials Science and Engineering*, vol 835, no. 1, p.012049, 2020, doi: 10.1088/1757-899X/835/1/012049.
- [30] R. T. Abineno and L. M. D. Ratu, "Enterprise architecture design using TOGAF at the health center," *Jurnal Teknik Informatika Inovatif Wira Wacana*, vol 3, no.1, Feb. 2023, doi: 10.58300/inovatif-wira-wacana.v1i3.436.
- [31] D. Amanda, D. Hindarto, E. Indrajit, and E. Dazki, "Proposed use of TOGAF-Based Enterprise Architecture in Drinking Water Companies" *Sinkron: jurnal dan penelitian teknik informatika*, vol. 8 no.3, pp. 1265-1277. 2023. doi: 10.33395/sinkron.v8i3.12477.
- [32] B. Rianto, M. J. Chrismondari, M. S. Rais, and ..., "The Development Of Enterprise Architecture Business Crm At Pt. Capella Dinamik Nusantara With Eap Methodology," *Jurnal Perangkat Lunak*, vol. 5 no. 2, pp. 65-73, 2023, doi: 10.32520/jupel.v5i2.2537.
- [33] S. Herman, Y. Nugraha, N. A. Hamdani, and ..., "Enterprise Architectural Planning Hospital Using Oracle Architecture Development Process (OADP) General Hospital Type C," *3rd International Conference on Education and Technology*, pp. 376-389, 2023, doi: 10.2991/978-2-38476-056-5_40.
- [34] Ulmi, U., Putra, A. P. G., Ginting, Y. D. P., Laily, I. L., Humani, F., & Ruldeviyani, Y., "Enterprise architecture planning for enterprise university information system using the TOGAF architecture development method," *IOP Conference Series: Materials Science and Engineering*, vol. 879, no.1, p. 012073, 2020, doi: 10.1088/1757-899X/879/1/012073.
- [35] H. Al-Kharusi, S. Miskon, and M. Bahari, "Enterprise architects and stakeholders alignment framework in enterprise architecture development," *Information Systems and e-Business Management*, vol. 19 no. 1, pp. 137-181, 2021, doi: 10.1007/s10257-020-00484-2.
- [36] C. Gellweiler, "Connecting enterprise



- architecture and project portfolio management: A review and a model for IT project alignment,” *International Journal of Information Technology Project Management (IJITPM)*, vol 11, no.1, pp. 99-114, 2020. doi: 10.4018/IJITPM.2020010106
- [37] B. Fritscher and Y. Pigneur, “A visual approach to business IT alignment between business model and enterprise architecture,” *Sustainable Business: Concepts, Methodologies, Tools, and Applications*, pp. 543-566, 2020, doi: 10.4018/978-1-5225-9615-8.ch025.
- [38] I. Ettahiri, K. Doumi, and A. Zellou, “Towards a Dynamic Model of Business IT Alignment Using Enterprise Architecture: A Comparative Study,” *International Conference on Advanced Intelligent Systems and Informatics*, pp. 707-720, 2022, doi: 10.1007/978-3-031-20601-6_58.
- [39] E. S. Chia and N. Javanbakht, “Enterprise Architecture and EA Modelling from Systems Theory Perspective.” 2023 18th Annual System of Systems Engineering Conference (SoSe), pp. 1-7, 2023. doi: 10.1109/SoSE59841.2023.10178615.
- [40] N. Javanbakht and E. S. Chia, “A Generic Business Architecture Reference Model Using Systems Theory Perspective in Enterprise Architecture,” *2023 IEEE 25th Conference on Business Informatics (CBI)*, pp. 1-10, 2023, doi: 10.1109/CBI58679.2023.10187480.
- [41] D. Dang and S. Pekkola, “Institutional perspectives on the process of enterprise architecture adoption,” *Information Systems Frontiers*. Springer, 2020. doi: 10.1007/s10796-019-09944-8.
- [42] F. Ahlemann, C. Legner, and J. Lux, “A resource-based perspective of value generation through enterprise architecture management,” *Inf. & Management*, vol. 58, no.1, 2021, doi: 10.1016/j.im.2020.103266.
- [43] H. Weigand, “Adopting the Paradox Theory Perspective to Enterprise Architecture in a Digital Transformation: A Case Study Approach,” *arno.uvt.nl*. 2023. [Online]. Available: <http://arno.uvt.nl/show.cgi?fid=161531>
- [44] N. Alsufyani and A. Q. Gill, “A review of digital maturity models from adaptive enterprise architecture perspective: Digital by design,” *2021 IEEE 23rd Conference on Business Informatics (CBI)*, vol. 1, pp. 121-130, 2021, doi: 10.1109/CBI52690.2021.00023.
- [45] R. F. Calhau, C. L. B. Azevedo, and ..., “Towards Ontology-based Competence Modeling in Enterprise Architecture,” *2021 IEEE 25th International Enterprise Distributed Object Computing Conference (EDOC)*, pp. 71-81, 2021, doi: 10.1109/EDOC52215.2021.00018.
- [46] W. Daoudi, K. Doumi, and L. Kjiri, “Adaptive enterprise architecture: towards a model,” *Proceedings of the 10th International Conference on Information Systems and Technologies*, pp. 1-7, 2020, doi: 10.1145/3447568.3448539.
- [47] T. Kaddoumi and M. Watfa, “A foundational framework for agile enterprise architecture,” *Int. J. Lean Six Sigma*, vol. 13, no. 1, pp. 136-155, 2022, doi: 10.1108/IJLSS-03-2021-0057.
- [48] M. S. Landolsi, Y. Sayeb, W. Krimi, and ..., “Improving Smart City Frameworks based on Enterprise Architecture with territorial governance to manage covid-19 crisis,” *2022 6th International Conference on Advanced Technologies for Signal and Image Processing (ATSIP)*, pp. 1-6, 2022, doi: 10.1109/ATSIP55956.2022.9805925.
- [49] J. Beese, S. Aier, K. Haki, and R. Winter, “The impact of enterprise architecture management on information systems architecture complexity,” *European journal of information systems*, vol 32, no. 6, pp. 1070-1090, 2022, doi: 10.1080/0960085X.2022.2103045.
- [50] J. P. S. Piest, Y. Masuda, and M. E. Iacob, “Digital Architectures Under Society 5.0: An Enterprise Architecture Perspective,” *International Conference on Enterprise Design, Operations, and Computing*, pp. 5-24, 2023, doi: 10.1007/978-3-031-26886-1_1.
- [51] D. Michael, R. E. Indrajit, and E. Dazki, “Implementation of Enterprise Architecture in Cloud Computing Companies,” *Sinkron: jurnal dan penelitian teknik informatika*, vol. 6, no. 2, pp. 549-559, 2022, doi: 10.33395/sinkron.v7i2.11407.