

## Analysis the Impact of Enterprise Resource Planning (ERP) and Big Data in Improving Company Performance: A Systematic Literature Review

Nyimas Aulia Gandasari<sup>1\*</sup>, Mukhtaruddin<sup>2\*</sup>

<sup>1,2</sup>Department of Accounting, Faculty of Economics, Sriwijaya University, Indonesia

\*Corresponding Author: [mukhtaruddin67@unsri.ac.id](mailto:mukhtaruddin67@unsri.ac.id)

**Abstract.** This study conducts a systematic literature review (SLR) exploring the Impact of Enterprise Resource Planning (ERP) and Big Data technologies in Improving Business Performance across global sectors. In the context of Industry 4.0, businesses are rapidly adopting the latest systems for operational efficiency. Research shows that ERP significantly improves business performance in various aspects, resulting in significant benefits for companies. Big Data is recommended as a tool for improving business processes; when combined with ERP, it enables effective and efficient production of useful outputs for companies. This SLR brings together a variety of articles from 2019-2025 and highlights a significant positive correlation between ERP, Big Data, and Business Performance of Companies. Although the relevance of these technologies is recognized, discussions on this topic in Indonesia are still limited. This study aims to encourage a deeper understanding and further research on ERP and Big Data.

**Keywords:** Big Data, Company Performance, Enterprise Resource Planning.

### 1. INTRODUCTION

In this era of the Industrial Revolution 4.0, technological progress in business is moving very fast. Various companies from all sectors are competing to use the latest systems or tools to help business processes become more efficient and effective (Muchlis et al., 2021). In this case, improving business performance in the company must be done. In research by Alsharari (2022) was found that ERP had a significant impact on improving the company's business performance from all aspects such as employees, operational activities and efficiency which had a major impact on the company's profits.

Big Data is also recommended as one of the latest system options to help business processes (Muchlis et al., 2021). Big Data collected through the ERP system is then processed into important information that is useful for the company, with this the company can produce useful output in a short time (Bandara et al., 2023).

Enterprise Resource Planning (ERP) is a software application-based system that provides comprehensive solutions for processes within an organization, enabling accurate flow of information and data (Sastrodiharjo & Khasanah, 2023). Research from James et al. (2024) explains that the ERP system in a company can be used for business processes and inter-departmental activities by being computerized directly (real-time).

Big Data is growing rapidly in the world of information and communication technology. Research conducted by Ali & Sharma (2024) states that Big Data is generated from

various sources, including the internet, mobile phone transactions, user content, business transactions, and other operational activities. In his research, Mohd Noor (2023) said that Big Data can help governments improve efficiency, effectiveness and transparency in the public sector.

The use of Big Data in ERP systems not only improves operational efficiency but also helps customer relations, making companies at the forefront of international market scale (Gambo & Matthew, 2025). Big Data and ERP in research Odamea et al. (2021) it is stated that both have a significant and positive influence on the potential of the organization. With the positive roles and results produced by ERP and Big Data in improving the business performance of this company, unfortunately this topic is still not widely discussed in Indonesia.

Through this systematic literature review, the results of the study are expected to open discussions and increase understanding of the use of ERP and Big Data systems that are not widely known. This is very unfortunate considering the potential convenience offered by the combination of these two systems. This study is sourced from journal articles from various countries in the world and covers the research years 2019-2025. It is hoped that this study can contribute to knowledge and insight into ERP and Big Data by understanding how they work and their benefits to business performance in companies.

## **2. METHODS**

This study uses the Systematic Literature Review (SLR) approach. This systematic literature review (SLR) combines various sources from the field of study, aims to review the latest developments and find topics that have not been widely researched, so that it can provide direction for more significant future research (Ali et al., 2023). In research by Dahur et al. (2023) It is stated that there are stages in carrying out SLR which are divided into three stages, namely planning, implementation, and the final stage, reporting.

### **Planning**

On this first stage explains how the steps of the literature review method will be carried out in this study. Discussion of ERP as a system that helps business processes and Big Data which is the latest technology, especially in improving business performance in a company. Following the main objective of this study, the research question can be formulated as follows: RQ1: How do Enterprise Resource Planning (ERP) and Big Data influence Improving Company Business Performance?

## **Implementation**

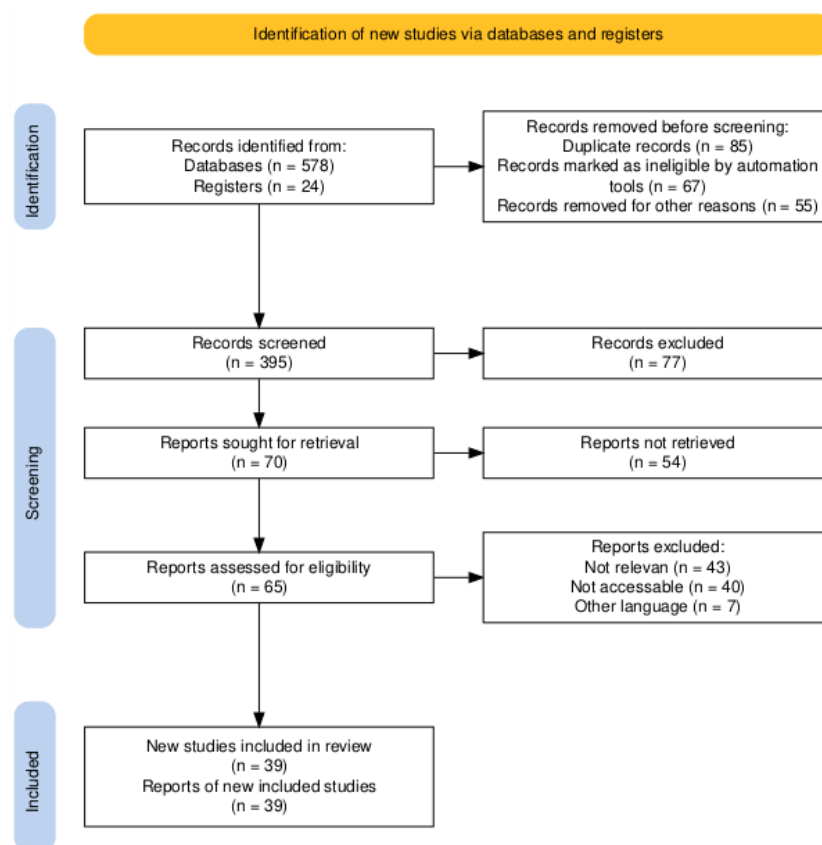
In the process of selecting journal articles, the search was conducted using certain key terms relevant to the research objectives, emphasizing ERP and Big Data variables. The following are the inclusion criteria for the use of SLR in this study:

- 1) Articles about ERP and Big Data in Improving Company Business Performance.
- 2) Articles published in 2019-2025.
- 3) Articles in English and Indonesian.
- 4) Articles come from all over the world.
- 5) Articles are related to research keywords, abstracts, full text and accessible.

SLR is conducted by selecting journal articles using objective keywords regarding the research conducted such as “ERP”, “Big Data”, “ERP in improving Company Performance”, “Big Data in improving Company Performance”, “ERP and Big Data”, “ERP and Big Data Performance”. At this stage, 602 articles were found related to the keywords, abstracts, and titles that had been used.

## **Reporting**

The data has been collected manually through an analysis approach, which includes a number of elements such as article category, title, year of publication, country where the research was conducted, research focus, applied theory, studied variables, selected research methods, and relevant research results on ERP and Big Data in Improving Company Business Performance. Figure 1 shows the results of the SLR conducted.

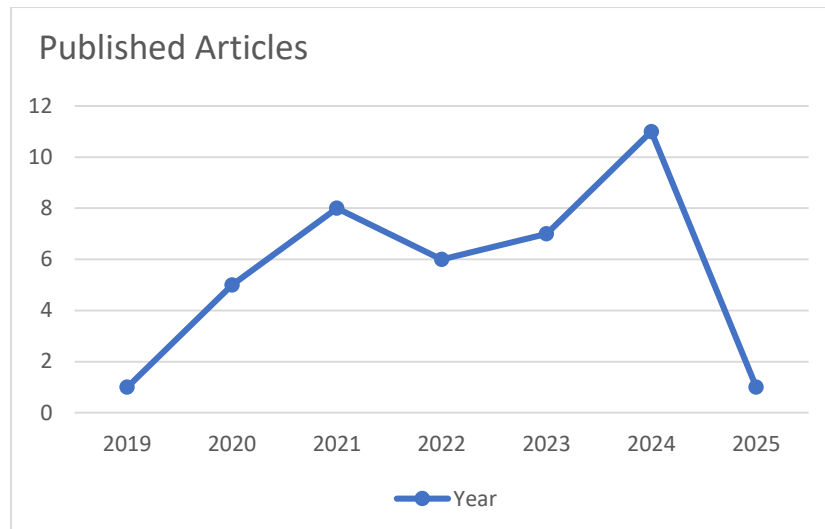


**Figure 1. PRISMA flow diagram**

The collected researches were obtained through the Publish or Perish (PoP) application, with sources from Google Scholar, PubMed, Semantic Scholar, and so on. Topic identification was carried out significantly and relevantly through existing literature, these specified criteria offer a strong foundation. With this selection method, 39 literatures were revealed that discussed ERP and Big Data to Improve Company Business Performance with a span of 2019-2025.

### 3. RESULTS AND DISCUSSION

This chart depicts the number of articles discussing the topic of “The Impact of ERP and Big Data on Improving Enterprise Business Performance” between 2019 and 2025. Overall, the pattern shows significant variation, with periods of dynamic increases and decreases as follows:



**Figure 2. Articles used**

The flowchart shows how journal usage has evolved over the years. The total number of journals used varies across time periods, reflecting changes in research direction or publishing patterns. In 2019, there was one article used, then it increased to five articles in 2020, indicating an increase in participation in academic publication. It then increased again to eight articles in 2021, but dropped again in 2022, with a total of only six publications. This decrease may be due to external factors or a decrease in publication activity at that time. In 2023, usage increased again to seven articles, and in 2024, there was a big jump, peaking at eleven articles, indicating a significant increase in research output or interest in publishing. Finally, in the year this SLR was written, 2025, there was only one article, possibly due to the early year and the limited number of publications.

After a brief decline in 2022, journal usage surged in 2023 and peaked in 2024, reaching its highest number of eleven journals. This pattern shows a significant increase in research activity and reliance on scientific journals for the distribution of knowledge in recent years. In general, the flowchart reflects a dynamic pattern of journal usage, showing phases of growth and decline, culminating in a strong upward trend in recent years.

**Table 1. Previous research**

Variable	Researcher	Result
<b>ERP</b>	(Ali et al., 2023) (Tongsuksai et al., 2023) (Nasim et al., 2020) (Sulaksono & Nursyamsi, 2022) (Lara-pérez et al., 2024) (Mwangi et al., 2022) (Ivanović & Marić, 2021) (Marsudi & Pambudi, 2021) (AlMuhayfith & Shaiti, 2020) (Alsharari, 2022) (Qadri & Dino, 2022) (Dahur et al., 2023) (James et al., 2024) (Zerbino et al., 2021)(Zeebaree et al., 2020) (Sastrodiharjo & Khasanah, 2023) (Majstorovic et al., 2022)	+
	(Mandava, 2024) (Novikov & Sazonov, 2020)	+/-
<b>Big Data</b>	(ALI & Sharma, 2024) (Yang, 2023) (Muchlis et al., 2021) (Gopal et al., 2022) (Liu & Fu, 2024) (Andriushchenko et al., 2019)	+
	(Katragadda & Eedupuganti, 2024)	+/-
<b>ERP and Big Data</b>	(Bandara & Jayawickrama, 2021) (Mohasseb, 2024) (Morawiec & Soltysik-Piorunkiewicz, 2022) (Bandara et al., 2023) (Lu, 2020) (Zhao, 2024) (Noor, 2023) (Gambo & Matthew, 2025) (Gupta et al., 2019) (Strang & Sun, 2022) (Odamea et al., 2021)	+
	(Maka et al., 2023)	+/-
+ : Positive Influence - : Negative Influence +/- : There are positive and negative perspective/Non Significant		

**Table 2. Country of research**

Country	Total	%
Indonesia	7	17,95%
United States of America	5	12,82%
China	5	12,82%
Africa	3	7,69%
Australia	2	5,13%
United Kingdom	2	5,13%
Serbia	2	5,13%
Saudi Arabia	2	5,13%
Egypt	1	2,56%
Mexico	1	2,56%
Malaysia	1	2,56%
New Zealand	1	2,56%
India	1	2,56%
Poland	1	2,56%
Italy	1	2,56%
Iraq	1	2,56%
South Korea	1	2,56%
Spanish	1	2,56%
Ukraine	1	2,56%
	<b>39</b>	<b>100%</b>

**Table 3. The research sources**

The Journal of Sources	Number Article
Scopus-Q1	10
Scopus-Q2	4
Scopus-Q3	3
Scopus-Q4	1
Scopus-Q5	2
DOAJ	1
Proceeding	4
CrossRef	3
Copernicus	1
SCilit	1
Google Scholar	2
ResearchGate	2
Sinta 1	1
Sinta 2	1
Sinta 4	1
Sinta 5	2

### **ERP and Big Data**

ERP has become a concern in the development of business technology because of its efficiency and great benefits for the business world in the world.(Marsudi & Pambudi, 2021). ERP also involves benefits such as business process improvement, implementation of best practices, and integration and combination of companies. (AlMuhayfith & Shaiti, 2020). ERP implementation is mediated by firm strategy and capabilities, and enables firms to achieve better financial performance.

Andriushchenko et al., (2019) revealed that Big Data provides a boost to the formation of information infrastructure, opening up new opportunities, new customers, and new markets. Several researchers in the study Muchlis et al., (2021) also mentioned that Big Data has an impact on company performance, management decision making and competitive advantage. Organizations that want to improve their performance should strive to build capabilities in the field of Big Data (Odamea et al., 2021).

### **ERP and Big Data in Improving Company Business Performance**

Most companies rely on ERP systems not only as a place to store data, but also as a sophisticated system that collects, analyzes, and predicts the future of the business by utilizing Big Data technology (Bandara et al., 2023). It is proven that ERP and Big Data can solve some problems in the combination of these two forms of systems. If the data obtained from the ERP system is properly analyzed by experts, then companies with the help of Big Data can find out a lot of information about what customers want and thus adjust their offers (similar to IoT)

(Ivanović & Marić, 2021). However, analyzing large volumes of data generated through ERP systems is challenging. Therefore, companies use Big Data technology to support data analysis (Bandara et al., 2023).

As ERP systems leverage Big Data and move towards predictive modeling, it is crucial to integrate both structured and unstructured data from multiple sources for efficient decision making and execution of good decisions as a service at the enterprise level (Noor, 2023). The following research from Maka et al. (2023) describes that AI-powered ERP and Big Data systems can be integrated to develop a cohesive security solution in detecting cyber vulnerabilities. This shows that ERP and Big Data are not only useful for financial or operational performance, but also maintain the security of stored and confidential data for companies.

#### **4. CONCLUSION**

In the context of the Industrial Revolution 4.0, the use of technologies such as Enterprise Resource Planning (ERP) and Big Data is becoming increasingly important to improve business performance in various sectors. Research shows that the combination of these two systems can improve operational efficiency, strengthen customer relationships, and provide critical information that supports better decision making.

Through the Systematic Literature Review method, this study identifies the trend of ERP and Big Data usage in global literature between 2019 until 2025. The results show a significant increase in publications related to this topic, while also underlining the potential of both in creating added value for companies. Although the footprint of this study in Indonesia is still limited, it is hoped that this study can open further discussions and enrich understanding of the benefits of ERP and Big Data in a business context. Innovative integration between ERP, Big Data, and additional technologies such as AI also shows their ability to improve the security and confidentiality of company data.



## REFERENCES

- Ali, I., Nguyen, N. D. K., & Gupta, S. (2023). A multi-disciplinary review of enablers and barriers to Cloud ERP implementation and innovation outcomes. *Journal of Enterprise Information Management*, 36(5), 1209–1239. <https://doi.org/10.1108/JEIM-08-2022-0273>
- ALI, S., & Sharma, P. S. (2024). How to improve firm performance using big data analytics capability and business strategy alignment. *International Journal of Scientific Research in Engineering and Management*, 08(04), 1–14. <https://doi.org/10.55041/ijssrem32538>
- AlMuhayfith, S., & Shaiti, H. (2020). The impact of enterprise resource planning on business performance: With the discussion on its relationship with open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(3), 87. <https://doi.org/10.3390/JOITMC6030087>
- Alsharari, N. M. (2022). The Implementation of Enterprise Resource Planning (Erp) in the United Arab Emirates: a Case of Musanada Corporation. *International Journal of Technology, Innovation and Management (IJTIM)*, 2(1), 1–22. <https://doi.org/10.54489/ijtim.v2i1.57>
- Andriushchenko, K., Rudyk, V., Riabchenko, O., Kachynska, M., Marynenko, N., Shergina, L., Kovtun, V., Tepliuk, M., Zhemba, A., & Kuchai, O. (2019). Processes of managing information infrastructure of a digital enterprise in the framework of the «Industry 4.0» concept. *Eastern-European Journal of Enterprise Technologies*, 1(3–97), 60–72. <https://doi.org/10.15587/1729-4061.2019.157765>
- Bandara, F., & Jayawickrama, U. (2021). Emerging Interactions of ERP Systems, Big Data and Automotive Industry. *Advances in Software Engineering, Education, and e-Learning*, 863–877. [https://doi.org/10.1007/978-3-030-70873-3\\_62](https://doi.org/10.1007/978-3-030-70873-3_62)
- Bandara, F., Jayawickrama, U., Subasinghage, M., Olan, F., Alamoudi, H., & Alharthi, M. (2023). Enhancing ERP Responsiveness Through Big Data Technologies: An Empirical Investigation. *Information Systems Frontiers*, 26(1), 251–275. <https://doi.org/10.1007/s10796-023-10374-w>
- Dahur, A. J., Sediyo, E., & Widodo, A. P. (2023). Analisis Faktor-Faktor Kesuksesan Penerapan Enterprise Resource Planning Terhadap Kinerja Organisasi. *Journal of Information Technology*, 8(1), 22–33.
- Gambo, E., & Matthew, G. (2025). *Integrating AI, Cloud Computing, and Big Data to Optimize Enterprise Resource Planning (ERP) Systems*. January.
- Gopal, P. R. C., Rana, N. P., Krishna, T. V., & Ramkumar, M. (2022). Impact of big data analytics on supply chain performance: an analysis of influencing factors. *Annals of Operations Research*, 333(2–3), 769–797. <https://doi.org/10.1007/s10479-022-04749-6>
- Gupta, S., Qian, X., Bhushan, B., & Luo, Z. (2019). Role of cloud ERP and big data on firm performance: a dynamic capability view theory perspective. *Management Decision*, 57(8), 1857–1882. <https://doi.org/10.1108/MD-06-2018-0633>

- Ivanović, T., & Marić, M. (2021). Application of modern Enterprise Resource Planning (ERP) systems in the era of digital transformation. *Strategic Management*, 26(4), 28–36. <https://doi.org/10.5937/straman2104028i>
- James, B. A., Putri, E. E. L., Ramadhan, M. L., & Wijonarko, P. (2024). Implementasi Enterprise Recource Planning ( ERP ) SMART MINING pada INDUSTRI PERTAMBANGAN BATU BARA di PT XYZ. *JURNAL KAJIAN TEKNIK ELEKTRO*, 2(September), 116–120.
- Katragadda, S. M., & Eedupuganti, A. (2024). Big Data and its Impact on Demand-Driven Material Requirements Planning. *International Journal of Science and Research Archive*, 13(2), 1–9. <https://doi.org/10.59160/ijscm.v13i2.6233>
- Lara-pérez, J. A., Canibe-cruz, F., & Rubio, P. R. (2024). SCIENTIFIC MAPPING OF BUSINESS INTELLIGENCE AND ENTERPRISE RESOURCE PLANNING FROM 2003 TO 2022. *Business Management Journal*, September, 21–37. <https://doi.org/10.58861/tae.bm.2024.3.02>
- Liu, J., & Fu, S. (2024). Financial big data management and intelligence based on computer intelligent algorithm. *Scientific Reports*, 14(1), 1–18. <https://doi.org/10.1038/s41598-024-59244-8>
- Lu, S. (2020). ERP Curriculum Innovation System Based on Big Data and Information Technology. *Journal of Physics: Conference Series*, 1574(1). <https://doi.org/10.1088/1742-6596/1574/1/012100>
- Majstorovic, V., Stojadinovic, S., Lalic, B., & Marjanovic, U. (2022). ERP in Industry 4.0 Context. *IFIP International Conference on Advances in Production Management Systems (APMS)*, 0–8.
- Maka, S. R., Jha, K. M., Chinta, P. C. R., Moore, C. S., Katnapally, N., & Sadaram, G. (2023). AI-Powered Big Data and ERP Systems for Autonomous Detection of Cybersecurity Vulnerabilities. *Nanotechnology Perceptions*, 1, 46–64.
- Mandava, H. (2024). The use of contemporary Enterprise Resource Planning (ERP) technologies for digital transformation. *Journal of Artificial Intelligence and Big Data*, 4(1), 31–35. <https://doi.org/10.31586/jaibd.2024.881>
- Marsudi, A. S., & Pambudi, R. (2021). The Effect of Enterprise Resource Planning (ERP) on Performance with Information Technology Capability as Moderating Variable. *Journal of Economics, Business, & Accountancy Ventura*, 24(1), 1–11. <https://doi.org/10.14414/jebav.v24i1.2066>
- Mohasseb, A. M. A. (2024). The Impact of Big Data Predictive Analytics on Firm Performance: The Role of Cloud ERP and Business Intelligence Integration. *Scientific Journal for Financial and Commercial Studies and Research*, 5(1), 917–947. <https://doi.org/10.21608/cfdj.2024.329290>
- Morawiec, P., & Sołtysik-Piorunkiewicz, A. (2022). Cloud Computing, Big Data, and Blockchain Technology Adoption in ERP Implementation Methodology. *Sustainability (Switzerland)*, 14(7), 1–21. <https://doi.org/10.3390/su14073714>

- Muchlis, M., Agustia, D., & Narsa, I. M. (2021). Pengaruh Teknologi Big Data Terhadap Nilai Perusahaan Melalui Kinerja Keuangan Perusahaan Di Bursa Efek Indonesia. *EKUITAS (Jurnal Ekonomi Dan Keuangan)*, 5(2), 139–158. <https://doi.org/10.24034/j25485024.y2021.v5.i2.4928>
- Mwangi, F. N., Kinyua, D. L., & Muriithi, Dr, J. (2022). Change Management and Implementation of Enterprise Resource Planning Systems in Africa: A Case of Coca-Cola Central. *Journal of Human Resource and Leadership*, 2(1), 18–24.
- Nasim, R., Ullah, H., Rizvi, S. S., Abbasi, A., Khan, S., Riaz, R., & Paul, A. (2020). A cloud-based enterprise resource planning architecture for women's education in remote areas. *Electronics*, 9(11), 1–17. <https://doi.org/10.3390/electronics9111758>
- Noor, M. M. (2023). *The Importance of Big Data to ERP In The Public Sector In The Importance of Big Data to ERP In The Public Sector In Malaysia. June 2021*, 0–7.
- Novikov, S. V., & Sazonov, A. A. (2020). Improving the enterprise resource planning system based on digital modules of the “industry 4.0” concept. *Espacios*, 41(5), 27.
- Odamea, D., Kofi, A., & Boateng, A. (2021). Examining the Relationship Between Enterprise Resource Planning (ERP) Implementation: The Role of Big Data Analytics Capabilities and Firm Performance. *African Conference on Information Systems and Technology*, 12, 0. <https://digitalcommons.kennesaw.edu/acist/2021/allpapers/3>
- Oranefo, P. C., Eke, C., & Egbunike, C. F. (2024). Factors Affecting Cloud ERP and Big Data Analytics (BDA) Adoption in Nigeria: Perception of Accountants in Nigeria. *Journal of Comprehensive Business Administration Research*, 1(June), 124–134. <https://doi.org/10.47852/bonviewjcbar42022284>
- Qadri, R. A., & Dino. (2022). Pengaruh Manajemen Rantai Pasok Berbasis Sistem ERP dalam Meningkatkan Kinerja Suatu Organisasi/Perusahaan. *Jurnal Pendidikan Tambusai*, 6(2), 9854–9858.
- Sastrodiharjo, I., & Khasanah, U. (2023). Is it the end of enterprise resource planning? evidence from Indonesia state-owned enterprises (SOEs). *Cogent Business and Management*, 10(2). <https://doi.org/10.1080/23311975.2023.2212499>
- Strang, K. D., & Sun, Z. (2022). ERP Staff versus AI recruitment with employment real-time big data. *Discover Artificial Intelligence*, 2(1). <https://doi.org/10.1007/s44163-022-00037-1>
- Sulaksono, A., & Nursyamsi, J. (2022). PERKEMBANGAN ERP BIDANG INDUSTRI MANUFAKTUR ERA TRANSFORMASI DIGITAL. *Jurnal Akuntansi Dan Manajemen Bisnis*, 2(2), 106–119.
- Tongsuksai, S., Mathrani, S., & Weerasinghe, K. (2023). Influential Characteristics and Benefits of Cloud ERP Adoption in New Zealand SMEs: A Vendors' Perspective. *IEEE Access*, 11(February), 23956–23979. <https://doi.org/10.1109/ACCESS.2023.3254500>
- Yang, L. (2023). Research on the application of big data technology in enterprise project management. *Applied Mathematics and Nonlinear Sciences*, 8(2), 3383–3392.

- Zeebaree, S. R. M., Salim, B. W., Zebari, R. R., Shukur, H. M., Abdulraheem, A. S., Abdulla, A. I., & Mohammed, S. M. (2020). Enterprise resource planning systems and challenges. *Technology Reports of Kansai University*, 62(4), 1885–1894.
- Zerbino, P., Aloini, D., Dulmin, R., & Mininno, V. (2021). Why enterprise resource planning initiatives do succeed in the long run: A case-based causal network. *PLoS ONE*, 16(12 December), 1–25. <https://doi.org/10.1371/journal.pone.0260798>
- Zhao, Y. (2024). Development of big data assisted effective enterprise resource planning framework for smart human resource management. *PLoS ONE*, 19(5), 1–28. <https://doi.org/10.1371/journal.pone.0303297>