

BEYOND TECHNOLOGY: UNPACKING ORGANIZATIONAL BARRIERS IN AI-DRIVEN FINANCIAL DECISION SUPPORT SYSTEMS - A SYSTEMATIC REVIEW AND BIBLIOMETRIC ANALYSIS

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ABSTRACT

This systematic literature review examines organizational barriers in AI-driven decision support systems (AI-DSS) adoption within financial services through bibliometric and thematic analysis. Following PRISMA 2020 guidelines, 183 articles were screened, yielding 67 high-quality publications (2019-2024) for analysis. Keyword co-occurrence analysis using VOSviewer identified ten core concepts forming four distinct clusters: implementation challenges (barriers, implementation, systematic review, clinical decision support), financial sector applications (artificial intelligence, financial services, banking), organizational adoption dynamics (adoption, organizational), and healthcare sector transferability. Findings reveal a critical research-practice gap: while "artificial intelligence" dominated with 63 occurrences, "barriers" (23) and "adoption" (22) surpassed sector specific keywords, indicating a paradigm shift from technical capabilities toward organizational challenges. Temporal analysis shows emerging focus on organizational factors (average publication year 2024.00 vs. 2022.78 for financial services). However, absence of granular barrier constructs (culture, leadership, skills) and limited cross-sectoral knowledge transfer from healthcare CDSS literature represent conceptual underdevelopment. Results underscore that organizational readiness—not technical sophistication—constitutes the primary adoption constraint, requiring integrated change management strategies alongside technology deployment.

Key words: artificial intelligence; decision support systems; organizational barriers; financial services; bibliometric analysis

INTRODUCTION

Financial institutions are projected to invest USD 97 billion in artificial intelligence (AI) technologies by 2027 (World Economic Forum, 2025). Despite this substantial investment, 74% of organizations struggle to generate and scale value from AI initiatives, revealing a significant implementation gap in AI-Driven Financial Decision Support Systems (AI-DSS) (Boston Consulting Group, 2024). This paradox underscores the need to examine organizational factors beyond technological capability.

AI-DSS applications have demonstrated strong potential to automate banking operations and improve efficiency (Accenture, 2024), while successful implementations enhance forecasting accuracy, fraud detection, and operational performance (Siddiqui, 2025). Conversely, implementation failures may lead to resource inefficiencies, regulatory risks, loss of customer trust, and competitive disadvantages.

Existing AI adoption research in financial services largely focuses on technological performance (Černevičienė & Kabašinskas, 2024; Cao, 2021), user acceptance (Hentzen et al., 2021; Meng et al., 2025), and regulatory or ethical considerations (Mennella et al., 2024; Vatankhah et al., 2024). However, organizational mechanisms influencing AI-DSS implementation remain fragmented, despite evidence that most failures stem from people- and process-related challenges (Boston Consulting Group, 2024; McKinsey, 2024). Prior reviews also tend to adopt narrow or technology-centric perspectives (Lee et al., 2023; Smit et al., 2023).

To address this gap, this study systematically identifies organizational barriers to AI-DSS adoption and maps research trends and knowledge structures through bibliometric analysis using VOSviewer. By integrating systematic review and bibliometric approaches, the study contributes to AI adoption theory and offers practical insights for effective AI-DSS implementation in financial services.

METHOD

This study used a systematic literature review following PRISMA 2020 (Page et al., 2021) combined with bibliometric analysis using VOSviewer 1.6.19 (Van Eck & Waltman, 2010). A search through Consensus.app (October 5, 2025) yielded 183 articles (2019-2024). A three-stage selection process: (1) quality screening excluding 100 Tier 4 articles (unindexed/predatory journals), (2) title/abstract screening based on AI/ML criteria,

financial services context, and organizational perspectives, yielded 83 potential articles, and (3) full-text assessment with a score of $\geq 6/10$ points (journal quality, rigor, relevance, and citation impact), yielding 67 final articles. Data extraction included bibliographies and keywords (42 articles without keywords were manually extracted using standardized terminology). VOSviewer analysis included keyword co-occurrence (minimum 5 occurrences), temporal overlay, and network metrics. Organizational barriers were coded using Braun and Clarke's (2006) thematic analysis.

RESULTS AND DISCUSSION

Keyword co-occurrence analysis of 67 articles identified ten core concepts that shaped The research landscape of AI-driven decision support systems adoption. The distribution of these keywords is divided into four clusters. different thematic (Table 1), with measurable network characteristics (Table 2).

Table 1. Distribution of Keywords by Research Cluster

Cluster	Colour	Keyword	Total Appearances	Average Year Publication	Thematic Interpretation
1	Red	barriers, implementation, systematic review, clinical decision support	43	2023.21	Implementation challenges and systematic methodological approaches
2	Green	artificial intelligence, financial services, banking	77	2022.85	AI applications in the context of the sector finance
3	Blue	adoption, organizational	27	2023.75	Adoption dynamics and factor organizational
4	Yellow	healthcare	6	2023.83	Health sector (transferability methodological)

Table 2. Keyword Network Metrics

Indikator	Value	Interpretation
Total keywords analysis	10	Focus with coverage limited conceptual
Total appearances cumulative	153	Representation of research concentration the core concept
Average link of keywords	5	Moderate connectivity between concept
Average link of strength	26.3	Moderate intensity of association
Temporal range publication	2022.60 – 2024 .00	Up to date literature (range 1.4 years)
Number of cluster identified	4	Thematic fragmentation with limited integration
Centralized keywords	artificial intelligence (63 occurrences, link strength 83)	The dominance of AI discourse ascore technology

The keyword "artificial intelligence" dominates with 63 occurrences and a total link strength of 83, connected with nine other keywords (Table 3). This central position confirms that the discussion about AI is a common thread that binds various research streams, in line with Cubric's (2020) observation that AI adoption has become a cross-sectoral phenomenon that requires a multidisciplinary approach.

Table 3. Keyword Metrics in Co-occurrence Analysis

Keyword	Cluster	Occurrences	Amount links	Strength of total links	Average year publication
artificial intelligence	2	63	9	83	2023.17
barriers	1	23	7	50	2023.09
adoption	3	22	7	42	2023.5
implementation	1	9	6	19	2023.33
financial services	2	9	3	14	2022.78
clinical decision support	1	6	5	12	2023
healthcare	4	6	4	10	2023.83
banking	2	5	2	7	2022.6
organizational	3	5	4	10	2024
systematic review	1	5	5	13	2023.4

Bibliometric analysis reveals a clear shift in research focus from technological capabilities toward implementation dynamics. The keywords "barriers" (23 occurrences; link strength 50) and "adoption" (22 occurrences; link strength 42) appear more frequently than "financial services" and "banking," indicating growing scholarly attention to organizational challenges. This pattern is consistent with Kar and Kushwaha (2021) and

industry evidence showing that 74% of organizations struggle to scale AI value due to non-technical barriers (Boston Consulting Group, 2024), as visualized in Figure 1.

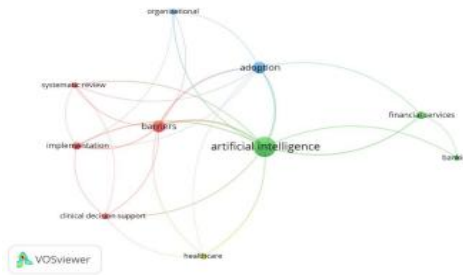


Figure 1. Data Overlay Results Using VOSviewer

Cluster analysis (Table 1) further supports this trend. The first cluster emphasizes barriers and implementation, frequently adopting systematic review methodologies to synthesize empirical evidence across sectors (Nair et al., 2024; Rajab et al., 2023; Pushpakumara & Ahsan, 2025). The presence of “clinical decision support” highlights cross-domain learning, as studies in healthcare identify implementation challenges comparable to financial AI-DSS, particularly in high-risk decision contexts requiring user trust and facing professional resistance (Wang et al., 2023; Bertl et al., 2023; Abell et al., 2023).

The second cluster links artificial intelligence with financial services and banking but reveals limited sector-specific adoption research, despite substantial AI investment in finance (World Economic Forum, 2025). This paradox aligns with Herrmann and Masawi (2022), who noted the dominance of technical perspectives over organizational adoption processes. The third cluster connects adoption with organizational factors, reflecting an emerging recognition of non-technical determinants such as managerial perceptions and organizational resistance (Marocco et al., 2024; Boooyse & Scheepers, 2023). The fourth cluster, focused on healthcare, remains relatively isolated, despite transferable insights on large-scale AI implementation (Scott et al., 2024; Pinsky et al., 2024).

Temporal analysis (Table 3) indicates a narrow publication window (2022–2024), suggesting that this research domain is still at an early stage. While sector-specific themes appeared earlier, organizational factors have gained prominence more recently, supporting the view that AI adoption requires comprehensive organizational transformation rather than mere technology integration (Agrawal et al., 2021). Persistent attention to barriers reflects their enduring relevance, as psychological and institutional constraints evolve more slowly than technical capabilities (Ivchik, 2024).

Network metrics (Table 2) show moderate connectivity, indicating partial integration of research themes but limited cross-domain interaction. The absence of keywords such as culture, leadership, change management, trust, and ethics highlights limited conceptual granularity and the lack of a standardized taxonomy of barriers, a methodological limitation previously identified by Cubric (2020). Comparative analysis with prior bibliometric studies (Table 4) shows that this study adopts a more focused approach, concentrating on core organizational themes, which may indicate sharper analytical focus or reflect the continued immaturity of the literature.

Table 4. Comparison with Previous Bibliometric Studies

Aspect	This Study (2025)	Cubric (2010)	Lee et al. (2023)
Final number of articles	67	81 reviews	138
Publication period	2019-2024	Until 2019	Until 2022
Sector focus	Financial services + transferable	Cross-sectoral	General organization
Number of main keywords	10	15	70 themes
Dominant theme	Barriers, adoption, organizational	Organizational, technological, environmental	70 diverse themes
Key findings	Shift to organizational factors (2024)	Equal emphasis 3 dimensions	Fragmented landscape
Network density	0,56 (moderate)	Not reported	Not reported

The cluster analysis reveals structural gaps between financial AI research (Cluster 2), organizational adoption (Cluster 3), and implementation barriers (Cluster 1), indicating a fragmented knowledge structure that reinforces Baabdullah’s (2024) critique of technological determinism in AI research. Rather than forming an integrated adoption framework, existing studies tend to separate technological development from organizational and behavioral dynamics.

These findings suggest that AI adoption in financial services should be reconceptualized as an organizational transformation process rather than a purely technological upgrade. In this context, organizational readiness and perceived relative advantage emerge as stronger predictors of adoption than technical compatibility, supporting empirical evidence reported by Yang and Jin (2025).

From an applied perspective, this fragmentation implies that financial institutions are unlikely to realize scalable value from AI-DSS investments unless organizational alignment, change management, and capability development are addressed alongside technological deployment.

REFERENCES

- Abell, B., Naicker, S., Rodwell, D., Donovan, T., Tariq, A., Baysari, M., Blythe, R., Parsons, R., & McPhail, S. (2023). Identifying barriers and facilitators to successful implementation of computerized clinical decision support systems in hospitals: A NASSS framework-informed scoping review. *Implementation Science*, 18(1), 52. <https://doi.org/10.1186/s13012-023-01287-y>
- Accenture. (2024). *The age of AI: Banking's new reality*. Retrieved from <https://www.accenture.com/content/dam/accenture/final/accenture-com/document-2/Accenture-Age-AI-Banking-New-Reality.pdf>
- Agrawal, A., Gans, J., & Goldfarb, A. (2021). AI adoption and system-wide change. *NBER Working Paper*, w28811. <https://doi.org/10.3386/W28811>
- Arakelyan, G. (2024). Exploring financial transformation: Key factors of AI's impact on banking systems. *ALTERNATIVE*, 3, 89-106. <https://doi.org/10.55528/18292828-2024.3-89>
- Baabdullah, A. (2024). The precursors of AI adoption in business: Towards an efficient decision-making and functional performance. *International Journal of Information Management*, 75, 102745. <https://doi.org/10.1016/j.ijinfomgt.2023.102745>
- Bertl, M., Ross, P., & Draheim, D. (2023). Systematic AI support for decision-making in the healthcare sector: Obstacles and success factors. *Health Policy and Technology*, 12(2), 100748. <https://doi.org/10.1016/j.hlpt.2023.100748>
- Bin-Nashwan, S. A., & Li, J. Z. (2025). What shapes AI adoption in financial service-oriented contexts? The game changing role of innovation climate. *Information Discovery and Delivery*, 53(2), 199-215. <https://doi.org/10.1108/idd-12-2024-0199>
- Boston Consulting Group. (2024). *AI adoption in 2024: 74% of companies struggle to achieve and scale value*. BCG Press Release. Retrieved from <https://www.bcg.com/press/24october2024-ai-adoption-in-2024-74-of-companies-struggle-to-achieve-and-scale-value>
- Booyse, D., & Scheepers, C. (2023). Barriers to adopting automated organisational decision-making through the use of artificial intelligence. *Management Research Review*, 46(10), 1344-1361. <https://doi.org/10.1108/mrr-09-2021-0701>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Cao, L. (2021). AI in finance: Challenges, techniques, and opportunities. *ACM Computing Surveys (CSUR)*, 54(3), 1-38. <https://doi.org/10.1145/3502289>
- Černevičienė, J., & Kabašinskas, A. (2024). Explainable artificial intelligence (XAI) in finance: A systematic literature review. *Artificial Intelligence Review*, 57(5), 1-41. <https://doi.org/10.1007/s10462-024-10854-8>
- Cubic, M. (2020). Drivers, barriers and social considerations for AI adoption in business and management: A tertiary study. *Technology in Society*, 62, 101257. <https://doi.org/10.1016/j.techsoc.2020.101257>
- Finkelstein, J., Gabriel, A., Schmer, S., Truong, T. T., & Dunn, A. (2024). Identifying facilitators and barriers to implementation of AI-assisted clinical decision support system in an electronic health record system. *Journal of Medical Systems*, 48(1), 104. <https://doi.org/10.1007/s10916-024-02104-9>
- Frank, D. A., Chrysochou, P., Mitkidis, P., Otterbring, T., & Ariely, D. (2024). Navigating uncertainty: Exploring consumer acceptance of artificial intelligence under self-threats and high-stakes decisions. *Technology in Society*, 79, 102732. <https://doi.org/10.1016/j.techsoc.2024.102732>
- Giebel, G., Raszke, P., Nowak, H., Palmowski, L., Adamzik, M., Heinz, P., Tokic, M., Timmesfeld, N., Brunkhorst, F., Wasem, J., & Blase, N. (2024). Problems and barriers related to the use of AI-based clinical decision support systems: Interview study. *Journal of Medical Internet Research*, 26, e63377. <https://doi.org/10.2196/63377>
- Hassan, A. (2024). Factors driving artificial intelligence adoption in South Africa's financial services sector. *Academic Journal of Interdisciplinary Studies*, 13(5), 173-189. <https://doi.org/10.36941/ajis-2024-0173>
- Hentzen, J.K., Hoffmann, A., Dolan, R., & Pala, E. (2021). Artificial intelligence in financial customer-facing services: A systematic literature review and agenda for future research. *International Journal of Bank Marketing*, 40(6), 1299-1336. <https://doi.org/10.1108/ijbm-09-2021-0417>
- Herrmann, H., & Masawi, B. (2022). Three and a half decades of artificial intelligence in banking, financial services, and insurance: A systematic evolutionary review. *Strategic Change*, 31(6), 659-677. <https://doi.org/10.1002/jsc.2525>
- Ivchik, V. (2024). Overcoming barriers to artificial intelligence adoption. *Three Seas Economic Journal*, 5(4), 21- 29. <https://doi.org/10.30525/2661-5150/2024-4-3>
- Kar, A., & Kushwaha, A. (2021). Facilitators and barriers of artificial intelligence adoption in business: Insights from opinions using big data analytics. *Information Systems Frontiers*, 25(4), 1351-1374.

- <https://doi.org/10.1007/s10796-021-10219-4>
- Kumari, B., Kaur, J., & Swami, S. (2022). Adoption of artificial intelligence in financial services: A policy framework. *Journal of Science and Technology Policy Management*, 15(2), 289-312. <https://doi.org/10.1108/jstpm-03-2022-0062>
- Lee, M. C. M., Scheepers, H., Lui, A. K. H., & Ngai, E. (2023). The implementation of artificial intelligence in organizations: A systematic literature review. *Information & Management*, 60(4), 103816. <https://doi.org/10.1016/j.im.2023.103816>
- Liao, X., Yao, C., Jin, F., Zhang, J., & Liu, L. (2024). Barriers and facilitators to implementing imaging-based diagnostic artificial intelligence-assisted decision-making software in hospitals in China: A qualitative study using the updated Consolidated Framework for Implementation Research. *BMJ Open*, 14(9), e084398. <https://doi.org/10.1136/bmjopen-2024-084398>
- Marocco, S., Barbieri, B., & Talamo, A. (2024). Exploring facilitators and barriers to managers' adoption of AI based systems in decision making: A systematic review. *AI*, 5(4), 2515-2541. <https://doi.org/10.3390/ai5040123>
- Marzouki, A., Chouikh, A., Mellouli, S., & Haddad, R. (2023). Barriers and actions for the adoption and use of artificial intelligence in the public sector. *Proceedings of the 16th International Conference on Theory and Practice of Electronic Governance*, 314-321. <https://doi.org/10.1145/3614321.3614334>
- McKinsey. (2024). *The state of AI: How organizations are rewiring to capture value*. McKinsey Quarterly. Retrieved from <https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai>
- Meng, K., Mahapatra, M., & Xiao, J. J. (2025). Artificial intelligence and consumer financial behavior: A systematic literature review and agenda for future research. *Journal of Consumer Behaviour*, 24(1), e2497. <https://doi.org/10.1002/cb.2497>
- Mennella, C., Maniscalco, U., De Pietro, G., & Esposito, M. (2024). Ethical and regulatory challenges of AI technologies in healthcare: A narrative review. *Heliyon*, 10(4), e26297. <https://doi.org/10.1016/j.heliyon.2024.e26297>
- Mkhize, T., Oosterwyk, G., & Kautondokwa, P. (2023). Examining the barriers and enablers of AI adoption in a multimedia organization. *EPiC Series in Computing*, 98, 142-151. <https://doi.org/10.29007/mgdl>
- Nair, M., Svedberg, P., Larsson, I., & Nygren, J. (2024). A comprehensive overview of barriers and strategies for AI implementation in healthcare: Mixed-method design. *PLOS ONE*, 19(8), e0305949. <https://doi.org/10.1371/journal.pone.0305949>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. J., Mulrow, J. D., ... & Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- Petitgand, C., Motulsky, A., Denis, J., & Régis, C. (2020). Investigating the barriers to physician adoption of an artificial intelligence-based decision support system in emergency care: An interpretative qualitative study. *Studies in Health Technology and Informatics*, 270, 1001-1005. <https://doi.org/10.3233/SHTI200312>
- Pinsky, M., Bedoya, A., Bihorac, A., Celi, L., Churpek, M., Economou-Zavlanos, N., Elbers, P., Saria, S., Liu, V., Lyons, P., Shickel, B., Toral, P., Tscholl, D., & Clermont, G. (2024). Use of artificial intelligence in critical care: Opportunities and obstacles. *Critical Care*, 28(1), 113. <https://doi.org/10.1186/s13054-024-04860-z>
- Pushpakumara, T. D. C., & Ahsan, F. J. (2025). Artificial intelligence adoption in service industries: A systematic literature review of key drivers, barriers, challenges, and strategies. *International Journal of Innovative Science and Research Technology*, 10(3), 1490-1503. <https://doi.org/10.38124/ijisrt/25mar1490>
- Qureshi, N. I., Choudhuri, S. S., Nagamani, Y., Varma, R., & Shah, R. (2024). Ethical considerations of AI in financial services: Privacy, bias, and algorithmic transparency. *2024 International Conference on Knowledge Engineering and Communication Systems (ICKECS)*, 1, 1-6. <https://doi.org/10.1109/ICKECS61492.2024.10616483>
- Reddy, S. (2024). Generative AI in healthcare: An implementation science informed translational path on application, integration and governance. *Implementation Science*, 19(1), 28. <https://doi.org/10.1186/s13012-024-01357-9>
- Rjab, A. B., Mellouli, S., & Corbett, J. (2023). Barriers to artificial intelligence adoption in smart cities: A systematic literature review and research agenda. *Government Information Quarterly*, 40(1), 101814. <https://doi.org/10.1016/j.giq.2023.101814>
- Ryll, L., Barton, M. E., Zhang, B., McWaters, R., Schizas, E., Hao, R., Bear, K., Preziuso, M., Seger, E., Wardrop, R., Rau, P., Debata, P., Rowan, P., Adams, N., Gray, M., & Yerolemu, N. (2020). Transforming paradigms: A global AI in financial services survey. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3532038>
- Scott, I., Van Der Vegt, A., Lane, P., McPhail, S., & Magrabi, F. (2024). Achieving large-scale clinician adoption of AI-enabled decision support. *BMJ Health & Care Informatics*, 31(1), e100971. <https://doi.org/10.1136/bmjhci-2023-100971>

- Siddiqui, H. A., Khan, A., & Shaikh, S. (2025). Unveiling barriers and enablers: A study on AI adoption in business management. *Journal of Social & Organizational Matters*, 4(1), 179-195. <https://doi.org/10.56976/jsom.v4i1.179>
- Smit, D., Eybers, S., & van der Merwe, A. (2023). Exploring the social and technical factors in organisational AI adoption: A systematic literature review. *EPiC Series in Computing*, 94, 156-171. <https://doi.org/10.29007/8tgz>
- Siddiqui, N. A. (2025). Optimizing business decision-making through AI-enhanced business intelligence systems: A systematic review of data-driven insights in financial and strategic planning. *Strategic Data Management and Innovation*, 2(1), 1-28. <https://doi.org/10.71292/sdmi.v2i01.21>
- Turksen, U., Benson, V., & Adamyk, B. (2024). Legal implications of automated suspicious transaction monitoring: Enhancing integrity of AI. *Journal of Banking Regulation*, 25(3), 233-248. <https://doi.org/10.1057/s41261-024-00233-2>
- Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523-538. <https://doi.org/10.1007/s11192-009-0146-3>
- Vatankhah, S., Bamshad, V., Arıcı, H., & Duan, Y. (2024). Ethical implementation of artificial intelligence in the service industries. *The Service Industries Journal*, 44(11-12), 789-815. <https://doi.org/10.1080/02642069.2024.2359077>
- Wang, L., Zhang, Z., Wang, D., Cao, W., Zhou, X., Zhang, P., Liu, J., Fan, X., & Tian, F. (2023). Human-centered design and evaluation of AI-empowered clinical decision support systems: A systematic review. *Frontiers in Computer Science*, 5, 1187299. <https://doi.org/10.3389/fcomp.2023.1187299>
- World Economic Forum. (2025). *Artificial intelligence in financial services*. WEF White Paper Series. Geneva: World Economic Forum.
- Yang, P., & Jin, S. (2025). Does AI adoption in financial management enhance corporate risk resilience? *IEEE Access*, 13, 66211-66227. <https://doi.org/10.1109/ACCESS.2025.3560397>