Strategic Management Accounting
Volume 3, issue 1- Spring 2026- pages 1-31
Home page: https://www.smajournal.ir/

Analyzing and Ranking of Critical Success Factors in the Integration of Artificial Intelligence and Circular Economy for Achieving a Smart and Sustainable Supply Chain with the DEMATEL Approach

Mohammad Zarei Mahmoudabadi[1*], **Amirmahdi Torkzaban**

1. Associate Prof., Department of Management, Meybod University, Meybod, Iran. zarei.m@meybod.ac.ir
2. MSc. Student of Performance Management, Department of Management, Meybod University, Meybod, Iran. torkzaban@stu.meybod.ac.ir

OPEN ACCESS

Article type: Research Article

***Correspondence:**
Mohammad Zarei Mahmoudabadi
zarei.m@meybod.ac.ir

Received: December 11, 2026
Accepted: January 29, 2026
Published: Spring 2026

Citation: Zarei Mahmoudabadi, M. and Torkzaban, A. (2026). Analyzing and Ranking of Critical Success Factors in the Integration of Artificial Intelligence and Circular Economy for Achieving a Smart and Sustainable Supply Chain with the DEMATEL Approach. *Strategic Management Accounting*, *3*(1), 1-31.

Publisher's Note: MSDS stays neutral withregard to jurisdictional claims in published material and institutional affiliations.

Abstract

The purpose of this paper is to identify and analyze the Critical Success Factors (CSFs) in the integration of Artificial Intelligence (AI) and Circular Economy (CE) within the context of Smart and Sustainable Supply Chains (SSC). This research is applied in nature, with a descriptive-survey approach for data collection. The data were gathered through bibliographic studies and surveys from industry experts and academic professionals, and analyzed using the DEMATEL technique. The Critical Success Factors in the integration of AI and Circular Economy in Smart and Sustainable Supply Chains were identified across five dimensions: managerial, technological, network collaboration, process, and sustainability. The DEMATEL analysis revealed that managerial and technological dimensions are recognized as the primary causal and impactful factors, while process and sustainability dimensions are most affected by other areas. Furthermore, the network collaboration dimension plays a key mediating role between managerial and sustainability dimensions, with the highest overall correlation. The results led to the development of an integrated conceptual framework, demonstrating that the integration of AI and Circular Economy, through enhancing the managerial, technological, and network collaboration dimensions, can optimize processes, promote sustainability, and lead to the creation of a smart and resilient supply chain. This framework elucidates the causal and structural relationships between the critical success factors and provides a pathway for achieving sustainable development and competitive advantage for organizations.

Keywords: Artificial Intelligence, Circular Economy, Key Success Factors, Smart and Sustainable Supply Chain, Industry 4.0.

JEL Classification: O33; O32; M11; Q55; Q56; C44.

DOI: ***https://doi.org/10.22034/smajournal.2026.565578.1280***

INTRODUCTION

In the contemporary business environment, supply chains serve as critical systems in production, distribution, and consumption processes, playing a significant role in organizational success and competitiveness (Qiao et al., 2025). With rapid technological changes and increasing environmental and economic pressures, organizations seek solutions to improve efficiency, reduce costs, and enhance sustainability in their supply chains (Vudugula, 2025). In this context, the concept of smart supply chains has emerged, leveraging advanced technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and blockchain, providing unprecedented capabilities for optimal management of complex supply chain processes (Xu et al., 2024).

AI, with its capacity for big data analytics, accurate predictions, and real-time decision optimization, represents a key tool for supply chain transformation (Zejjari & Benhayoun, 2024). Simultaneously, the Circular Economy (CE) has emerged as a sustainable approach aimed at waste reduction, resource recovery, and product lifecycle improvement, seeking to create green and environmentally responsible supply chains (Liu et al., 2022). The integration of AI with CE within a smart supply chain framework creates unique opportunities for performance enhancement, productivity improvement, and sustainable development achievement (Raut et al., 2025).

Despite this potential, numerous challenges exist in this integration pathway requiring precise identification of Critical Success Factors (CSFs). These factors include investments in technological infrastructure, organizational leadership support, innovation culture development, stakeholder collaboration, and organizational change management (Huang et al., 2022; Yontar, 2023). Neglecting these factors can hinder the full economic and environmental realization of AI and CE projects. Previous literature has examined AI applications in supply chains (Pournader et al., 2021; Culot et al., 2024), AI in CE (Raut et al., 2025; Acerbi et al., 2021), and smart sustainable supply chains (Demir et al., 2023; Ghanbari, 2023; Karimi Takalo et al., 2024). However, few studies have systematically and multidimensionally examined the causal relationships among CSFs in AI-CE integration. This study addresses this gap by answering: (1) What are the CSFs in AI and CE integration for smart sustainable supply chains? (2) What are the causal relationships among managerial, technological, network collaboration, process, and sustainability dimensions? (3) How can DEMATEL analysis determine the causal structure among these factors?

METHODOLOGY

This research is applied in purpose and employs a descriptive-survey method for data collection. The study was conducted in two phases. First, through systematic literature review, CSFs in AI and CE integration for smart sustainable supply chains were identified across five dimensions: managerial, technological, network collaboration, process, and sustainability. These factors were validated through expert consultation. The expert panel consisted of 12 specialists with at least three years of experience in AI and information technology, supply chain and logistics, sustainability, and circular economy. Purposive and snowball sampling methods were employed, and data collection continued until theoretical saturation was achieved.

Second, the DEMATEL (Decision-Making Trial and Evaluation Laboratory) method was applied to analyze causal relationships among the identified dimensions. DEMATEL is a comprehensive tool for constructing and analyzing structural models that capture causal relationships among complex factors (Wu & Lee, 2007). Developed by Gabus and Fontela (1973), this methodology identifies interdependencies among variables and distinguishes causal from effect factors through matrix calculations, including initial average matrix, normalized direct relation matrix, total relation matrix, and calculation of R (sum of rows) and J (sum of columns) values. The R+J value indicates factor importance, while R-J determines whether a factor is causal (positive) or effect (negative). Experts rated pairwise comparisons using a 0-4 scale (0 = no influence, 4 = very high influence). Data were analyzed using Excel and MATLAB software following standard DEMATEL procedures.

RESULTS

Literature review and expert validation identified 31 CSFs across five dimensions: managerial (7 factors), technological (7 factors), network collaboration (5 factors), process (5 factors), and sustainability (7 factors). The managerial dimension encompasses top management commitment, sustainability and digital transformation strategies, innovation-oriented organizational culture, participative leadership, incentive policies, change management, and human resource empowerment. The technological dimension includes robust technological infrastructure, quality data and predictive analytics capabilities, AI algorithm development, cybersecurity, systems integration capability, open standards and modular architecture, and technology adaptability. Network collaboration comprises data sharing among stakeholders, trust and transparency, process coordination, long-term strategic partnerships, and robust legal mechanisms. The process dimension covers product lifecycle optimization, real-time data utilization, reverse logistics management, traceability capabilities, and process flexibility. The sustainability dimension includes positive environmental impacts, long-term sustainable development orientation, regulatory compliance, circular economy awareness, resource efficiency, and data-driven governance for sustainability.

DEMATEL analysis yielded the total relation matrix and calculated R, J, R+J, and R-J values for each dimension. The technological dimension (B) showed the highest R value (4.3602), indicating its strong influence on other dimensions. The managerial dimension (A) followed with R = 4.1888. The sustainability dimension (E) had the lowest R value (2.3211), indicating its high dependence on other factors. For J values (representing influence received), the process dimension (D) received the highest influence (4.2287), followed by sustainability (3.4419). The R+J values, indicating overall interaction intensity, ranked as: technological (7.7119), managerial (7.0515), process (7.4168), network collaboration (7.2306), and sustainability (5.763). The R-J values revealed: managerial (1.3261) and technological (1.0086) as positive causal factors, while network collaboration (-0.1732), process (-1.0407), and sustainability (-1.1207) emerged as negative effect factors. These results demonstrate that managerial and technological dimensions are the primary drivers in AI-CE integration, actively influencing other dimensions. Network collaboration plays a mediating role, while process and sustainability dimensions are predominantly influenced by others. The network collaboration dimension showed the highest internal connectivity, serving as a crucial bridge between managerial/technological drivers and sustainability outcomes.

CONCLUSION

This study provides a comprehensive analysis of CSFs in AI and CE integration for smart sustainable supply chains, employing DEMATEL methodology to reveal causal structures among five key dimensions. The findings demonstrate that successful integration fundamentally depends on factors rooted in managerial and technological domains, which function as system drivers shaping the transformation pathway and maturity of other dimensions. This reveals a critical gap between technological capabilities and organizational competencies—a gap that without transformational leadership, innovation culture, and structural change management, prevents AI technologies from effectively achieving circular and sustainability objectives. The findings align with prior research emphasizing management's role in technology adoption (Gaur et al., 2025) while extending understanding by conceptualizing management as an integrated system of leadership, culture, change management, and skill development. The technological dimension's causal position confirms that AI functions not as an independent technology but as a holistic enabling platform whose effectiveness depends on digital architecture coherence, consistent with Raut et al. (2025). Notably, network collaboration emerged as a mediating element with the highest internal connectivity, transferring managerial and technological effects to operational processes and sustainability outcomes—a structural reinterpretation beyond descriptive treatments in previous literature (Rehman et al., 2025). The process and sustainability dimensions, despite their fundamental importance, are predominantly influenced rather than causal, indicating that sustainability achievement depends on strategic decisions and technological investments. This contrasts with approaches viewing sustainability as a starting point driven solely by regulatory pressure.

Practically, organizations should prioritize developing future-oriented management systems with clear integration vision, supported by top management commitment and innovation culture. Technological infrastructure investment, data quality assurance, cybersecurity, and open standards adoption are essential prerequisites. Network collaboration requires trust-based mechanisms, transparent contracts, and shared digital platforms. Process reengineering toward agile, data-driven operations with smart traceability enables waste reduction and regulatory compliance. Sustainability must be embedded in strategic planning through responsible consumption culture and data-driven environmental performance monitoring. Future research should employ complex systems modeling (agent-based modeling, system dynamics), hybrid MCDM methods integrated with machine learning, digital twin development for circular process simulation, and policy simulation approaches to examine incentive effects and governance mechanisms. This study contributes to AI-CE integration literature by providing a causally validated framework revealing systemic interdependencies, offering theoretical and practical guidance for digital transformation strategies and sustainability policies at organizational and macro levels.

Contribution of Authors

All authors participated equally in all stages of the research.

Ethical Approval

This research was conducted in compliance with the principles of research ethics and informed consent of the respondents.

Sponsor

The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest.

Acknowledgements

The authors sincerely thank the expert panel members who participated in this study and generously shared their time and expertise. Their valuable insights significantly contributed to the quality and depth of this research.

References

Acerbi, F., Forterre, D. A., & Taisch, M. (2021). Role of Artificial Intelligence in Circular Manufacturing: A Systematic Literature Review. *IFAC-PapersOnLine*, *54*(1), 367–372. doi: https://doi.org/10.1016/j.ifacol.2021.08.040

Agi, M. A. N. (2022). Understanding the Enablers of Blockchain Technology Adoption in Sustainable Supply Chains: A DEMATEL-Based Analysis. *IFAC-PapersOnLine, 55*(10), 1962–1967. doi: https://doi.org/10.1016/j.ifacol.2022.09.686

Al Maazmi, A., Piya, S., & Araci, Z. C. (2024). Exploring the Critical Success Factors Influencing the Outcome of Digital Transformation Initiatives in Government Organizations. *Systems*, *12*(12), 524. https://doi.org/10.3390/systems12120524

Aladaileh, M. J., Lahuerta-Otero, E., & Aladayleh, K. J. (2024). Mapping sustainable supply chain innovation: A comprehensive bibliometric analysis. *Heliyon, 10*(7), e29157. doi:10.1016/j.heliyon.2024.e29157 https://www.cell.com/action/showPdf?pii=S2405-8440%2824%2905188-0

Asher, S., Nafees, M., & Syeda, T. (2024). Exploring the change management framework: An in-depth investigation. *MethodsX*, *13*, 102978. doi:https://doi.org/10.1016/j.mex.2024.102978

Bashynska, I., Malynovska, Y., Kolinko, N., Bielialov, T., Järvis, M., Kovalska, K., & Saiensus, M. (2024). Performance Assessment of Sustainable Leadership of Enterprise's Circular Economy-Driven Innovative Activities. *Sustainability*, *16*(2), 558. Retrieved from https://www.mdpi.com/2071-1050/16/2/558

Bashynska, I., & Prokopenko, O. (2024). Leveraging Artificial Intelligence for Circular Economy: Transforming Resource Management, Supply Chains, and Manufacturing Practices. *Scientific Journal of Bielsko-Biala School of Finance and Law*, *28*(2), 85–91. file:///C:/Users/SabaNet/Downloads/wsfip.sj2.2024.13.pdf doi:10.19192/wsfip.sj2.2024.13

Bimpizas-Pinis, M., Calzolari, T., & Genovese, A. (2022). Exploring the transition towards circular supply chains through the arcs of integration. *International Journal of Production Economics*, *250*, 108666. doi: https://doi.org/10.1016/j.ijpe.2022.108666

Brandenburg, M., Govindan, K., Sarkis, J., & Seuring, S. (2014). Quantitative models for sustainable supply chain management: Developments and directions. *European Journal of Operational Research*, *233*(2), 299–312. doi:https://doi.org/10.1016/j.ejor.2013.09.032

Brintrup, A., Kosasih, E., Schaffer, P., Zheng, G., Demirel, G., & MacCarthy, B. L. (2024). Digital supply chain surveillance using artificial intelligence: definitions, opportunities and risks. *International Journal of Production Research*, *62*(13), 4674–4695. https://doi.org/10.1080/00207543.2023.2270719

Caiado, R. G., Scavarda, L. F., Azevedo, B. D., de Mattos Nascimento, D. L., & Quelhas, O. L. (2022). Challenges and Benefits of Sustainable Industry 4.0 for Operations and Supply Chain Management—A Framework Headed toward the 2030 Agenda. *Sustainability*, *14*(2). https://doi.org/10.3390/su14020830

Chalmeta, R., & Santos-deLeón, N. (2020). Sustainable Supply Chain in the Era of Industry 4.0 and Big Data: A Systematic Analysis of Literature and Research. *Sustainability, 12*, 4108. https://doi.org/10.3390/su12104108

Chen, L., Shen, Q., Yu, X., & Chen, X. (2024). Knowledge spillovers along the sustainable supply chain of China's listed companies: The role of long-term orientation. *Journal of Innovation and Knowledge*, *9*(2). https://doi.org/10.1016/j.jik.2024.100478

Chiu, Y.-J., Chen, H.-C., Tzeng, G.-H., Shyu, J., & Shyu, G. H. (2006). Marketing strategy based on customer behaviour for the LCD-TV. *Int. J. Management and Decision Making J.Z. Int. J. Management and Decision Making*, *7*, 143–165. doi:10.1504/IJMDM.2006.009140 https://www.researchgate.net/profile/Gwo-Hshiung-Tzeng 2/publication/228633301_Marketing_strategy_based_on_customer_behaviour_for_the_LCD-TV/links/0f3175316c66fb957d000000/Marketing-strategy-based-on-customer-behaviour-for-the-LCD-TV.pdf

Culot, G., Podrecca, M., & Nassimbeni, G. (2024). Artificial intelligence in supply chain management: A systematic literature review of empirical studies and research directions. *Computers in Industry*, *162*, 104132. doi: https://doi.org/10.1016/j.compind.2024.104132

Demir, S., Gunduz, M. A., Kayikci, Y., & Paksoy, T. (2023). Readiness and Maturity of Smart and Sustainable Supply Chains: A Model Proposal. *Engineering Management Journal*, *35*(2), 181–206. https://shura.shu.ac.uk/29993/1/Kayikci-ReadinessMaturitySmart%28AM%29.pdf https://shura.shu.ac.uk/29993/

Dey, P. K., Chowdhury, S., Abadie, A., Vann Yaroson, E., & Sarkar, S. (2024). Artificial intelligence-driven supply chain resilience in Vietnamese manufacturing small- and medium-sized enterprises. *International Journal of Production Research*, *62*(15), 5417–5456. https://pure.hud.ac.uk/ws/files/56281974/Accepted_manuscript.pdf doi:10.1080/00207543.2023.2179859

Dwivedi, A., Sassanelli, C., Agrawal, D., Moktadir, M. A., & D'Adamo, I. (2023). Drivers to mitigate climate change in context of manufacturing industry: An emerging economy study. *Business Strategy and the Environment*, *32*(7), 4467–4484. doi:https://doi.org/10.1002/bse.3376

Falah, N., Falah, N., Solis-Guzman, J., & Meléndez, M. M. (2025). Contribution of circular economy levels to sustainable development goals: Literature review based on natural language processing techniques. *Sustainable Futures*, *10*, 101011. doi:https://doi.org/10.1016/j.sftr.2025.101011

Fatimah, Y. A., Govindan, K., Sasongko, N. A & ,.Hasibuan, Z. A. (2024). The critical success factors for sustainable resource management in circular economy: Assessment of urban mining maturity level. *Journal of Cleaner Production*, *469*, 143084. doi:https://doi.org/10.1016/j.jclepro.2024.143084

Francisco, M., & Linnér, B.-O. (2023). AI and the governance of sustainable development. An idea analysis of the European Union, the United Nations, and the World Economic Forum. *Environmental Science & Policy*, *150*, 103590. doi:https://doi.org/10.1016/j.envsci.2023,103590

Gabus, A., & Fontela, E. (1973). *Perceptions of the world problematique: communication procedure, communicating with those bearing collective responsibility*. https://www.scirp.org/reference/referencespapers?referenceid=1429249

Gaur, T. S., Yadav, V., Prakash, S., & Mittal, S. (2025). Investigating the key challenges in adopting Supply Chain 4.0 in the context of Indian electronics industry: a DEMATEL approach. *Journal of Global Operations and Strategic Sourcing*. https://doi.org/10.1108/JGOSS-02-2025-0010 doi:10.1108/jgoss-02-2025-0010

Geissdoerfer, M., Morioka, S. N., de Carvalho, M. M., & Evans, S. (2018). Business models and supply chains for the circular economy. *Journal of Cleaner Production*, *190*, 712–721. doi: https://doi.org/10.1016/j.jclepro.2018.04.159

Georgescu, L. P., Fortea, C., Antohi, V. M., Balsalobre-Lorente, D., Zlati, M. L., & Barbuta–Misu, N. (2025). Economic, technological and environmental drivers of the circular economy in the European Union: a panel data analysis. *Environmental Sciences Europe, 37*(1), 76. https://link.springer.com/content/pdf/10.1186/s12302-025-01119-4.pdf doi:10.1186/s12302-025-01119-4

Ghanbari, M. (2023). Presenting the smart- sustainable supply chain model based on artificial intelligence. *International Journal of Innovation in Management, Economics and Social Sciences*, *3*, 61–70. https://doi.org/10.59615/ijimes.3.4.61

Goyal, S., & Gupta, S. (2024). A comprehensive review of current techniques ,issues, and technological advancements in sustainable E-waste management. *e-Prime - Advances in Electrical Engineering, Electronics and Energy*, *9*, 100702. doi:https://doi.org/10.1016/j.prime.2024.100702

Hernandez, J. C. R., Villa-Enciso, E., Cardona-Acevedo, S., Valencia, J., & Velasquez Salas, S. (2025). Smart Innovation for a Circular Economy: A Systematic Review of Emerging Trends and the Future of AI in the Sustainable Economy. *Sustainability*, *17*(13), 5793. https://www.mdpi.com/2071-15793/13/17/050

Hori, S., & Shimizu, Y. (1999). Designing methods of human interface for supervisory control systems. *Control Engineering Practice*, *7*(11), 1413–1419. doi:https://doi.org/10.1016/S0967-0661(99)00112-4

Huang, L., Zhen, L., Wang, J., & Zhang ,X. (2022). Blockchain implementation for circular supply chain management: Evaluating critical success factors. *Industrial Marketing Management, 102*, 451–464. doi: https://doi.org/10.1016/j.indmarman.2022.02.009

Idogawa, J., Bizarrias, F., & Camara, R. (2023). Critical success factors for change management in business process management. *Business Process Management Journal, 29*. doi:10.1108/BPMJ-11-2022-0625

Karimi Takalo, S., Sharifi, H., & Bakhshi Khorde Blagh, E. (2024). Analyzing the drivers of the Smart sustainable circular supply chain using the combined methods of Dematel and adversarial interpretative structural modeling. *Industrial Management Studies*, 22(73), 241–285. doi: 10.22054/jims.2024.77945.2899 (in Persian)

Kazmi, S., Sarfraz, H., Bukhari, S., & Javed, I. (2025). Reverse Logistics in the Circular Economy Context. *The Asian Bulletin of Big Data Management*, *5*, 104–125. doi:10.62019/qegey841

Kemmner, F.-A., Legenvre, H., & Hameri, A.-P. (2025). Sharing data to implement the circular economy: the case of digital product passports. *Industrial Management & Data Systems*, 1–20. doi:10.1108/imds-04-2024-0403

Lahane, S., Kant, R., & Shankar, R. (2020). Circular supply chain management: A state-of-art review and future opportunities. *Journal of Cleaner Production*, *258*, 120859. doi: https://doi.org/10.1016/j.jclepro.2020,120859

Leyh, C., Köppel, K., Neuschl, S., & Pentrack, M. (2021). *Critical Success Factors for Digitalization Projects*.

Liou, J. J. H., Tzeng, G.-H., & Chang, H.-C. (2007). Airline safety measurement using a hybrid model. *Journal of Air Transport Management, 13*(4), 243–249. doi:https://doi.org/10.1016/j.jairtraman.2007.04.008

Liu, J., Quddoos, M. U., Akhtar, M. H., Amin, M. S., Tariq, M., & Lamar, A. (2022). Digital technologies and circular economy in supply chain management: in the era of COVID-19 pandemic. *Operations Management Research, 15*, 326–341. doi:https://doi.org/10.1007/s12063-021-00227-7

Malekzadeh, G., Kazemi, M., Lagzian, M., & Mortazavi, S. (2016). Modeling organizational intelligence using DEMATEL method in Iranian public universities. *Journal of Modelling in Management*, *11*(1), 134-153. doi;10.1108/jm2-12-2013-0062

Mohsen, S. E., Hamdan, A., & Shoaib, H. M. (2024). Digital transformation and integration of artificial intelligence in financial institutions. *Journal of Financial Reporting and Accounting*. doi:10.1108/JFRA-09-2023-0544

Morshedi, M., Hargaden, V., Papakostas, N., & Ghadimi, P. (2025). Integrating Circular Economy and Industry 4.0 within Circular Supply Chains: A Literature Review and Network Analysis Insights. *Procedia CIRP*, *135*, 768–773. doi: https://doi.org/10.1016/j.procir.2024.12.073

Movahed, A. B., Movahed, A. B., & Nozari, H. (2024). Opportunities and Challenges of Smart Supply Chain in Industry 5.0. In H. Nozari (Ed.), *Information Logistics for Organizational Empowerment and Effective Supply Chain Management* (pp. 1). Hershey, PA, USA: IGI Global. doi: https://doi.org/ 10.4018/979-8-3693-0159-3.ch006

Mridha, B., Pareek, S., Goswami, A., & Sarkar, B. (2023). Joint effects of production quality improvement of biofuel and carbon emissions towards a smart sustainable supply chain management. *Journal of Cleaner Production*, *386*, 135629. doi:https://doi.org/10.1016/j.jclepro.2022.135629

Oladapo, B. I., Olawumi, M. A., & Omigbodun, F. T. (2024). AI-Driven Circular Economy of Enhancing Sustainability and Efficiency in Industrial Operations. *Sustainability, 16*(23), 10358 .Retrieved from https://www.mdpi.com/2071-1050/16/23/10358

Panda, D., Haque, S., Frishammar, J., & Parida, V. (2025). Modularity for circular economy: Four circularity pathways for industrial firms. *Journal of Cleaner Production, 519*, 146001. doi: https://doi.org/10.1016/j.jclepro.2025.146001

Pandey, D., Nassa, V. K., Pandey, B. K., Thankachan, B., Dadheech, P., Mahajan, D. A., & George, A. S. (2024). Artificial intelligence and machine learning and its application in the field of computational visual analysis. In *Emerging Engineering Technologies and Industrial Applications* (pp. 36–57). DOI:10.4018/979-8-3693-1335-0.ch003

Pathan, M. S., Richardson, E., Galvan, E., & Mooney, P. (2023). The Role of Artificial Intelligence within Circular Economy Activities—A View from Ireland. *Sustainability. 9451, 12(15)*, Retrieved from https://www.mdpi.com/2071-1050/15/12/9451

Patidar, S., Sukhwani, V. K., & Shukla, A. C. (2023). Modeling of Critical Food Supply Chain Drivers Using DEMATEL Method and Blockchain Technology. *Journal of The Institution of Engineers (India): Series C*, *104*(3), 541–552. doi:10.1007/s40032-023-00941-0

Platon, V., Pavelescu, F.-M., Antonescu, D., Constantinescu, A., Frone, S., Surugiu, M., . . . Popa, F. (2024). New evidence about artificial intelligence and eco-investment as boosters of the circular economy. *Environmental Technology & Innovation*, *35*, 103685. doi:https://doi.org/10.1016/j.eti.2024.103685

Pournader, M., Ghaderi, H., Hassanzadegan, A., & Fahimnia, B. (2021). Artificial intelligence applications in supply chain management. *International Journal of Production Economics*, *241*, 108250. doi: https://doi.org/10.1016/j.ijpe.2021.108250

Qiao, D., Jiao, J., Khalid, N., & Ali, M. H. (2025). Supply chain concentration and corporate green innovation: Evidence from China. *Innovation and Green Development*, *4*(2), 100202. doi: https://doi.org/10.1016/j.igd.2024.100202

Raut, S., Hossain, N. U. I., Kouhizadeh, M., & Fazio, S. A. (2025). Application of artificial intelligence in circular economy: A critical analysis of the current research .*Sustainable Futures*, *9*, 100784. doi: https://doi.org/10.1016/j.sftr.2025.100784

Redko, K. (2024). Circular economy and AI empowerment in social entrepreneurship: a path to sustainability. *International Science Journal of Management, Economics & Finance. 27-35, 3,* doi: 10.46299/j.isjmef.20240303.04

Rehman, S., Mahmood, R., Abidi, N., & Yusoff, W. (2025). Integrating Smart Supply Chain with Green Practices to Enhance Sustainable Supply Chain Performance. *Operations and Supply Chain Management: An International Journal*, 1–18. doi:10.31387/oscm0600460

Saberi, S., Kouhizadeh, M., Sarkis, J., & Shen, L. (2019). Blockchain technology and its relationships to sustainable supply chain management. *International Journal of Production Research*, *57*(7), 2117–2135. doi: https://doi.org/10.1080/00207543.2018.1533261

Saruchera, F., Salimi-Zaviyeh, S.-G., & Raeesi Vanani, I. (2024). Smart Supply Chain Management. In (pp. 152–178). doi:https://doi.org/10.4324/9781032719870-11

Shokouhyar, S., Pahlevani, N., & Mir Mohammad Sadeghi, F. (2019). Scenario analysis of smart, sustainable supply chain on the basis of a fuzzy cognitive map. *Management Research Review, 43*(4), 463–496. doi: 10.1108/mrr-01-2019-0002

Sklavos, G., Theodossiou, G., Papanikolaou, Z., Karelakis, C., & Ragazou, K. (2024). Environmental, Social, and Governance-Based Artificial Intelligence Governance: Digitalizing Firms' Leadership and Human Resources Management. *Sustainability, 16*(16), 7154. Retrieved from https://www.mdpi.com/2071-1050/16/16/7154

Taghva, M. R. , Naghizadeh, M. and Naghizadeh, R. (2012). Identifying and Prioritizing Important necessities for formulation of Open Source Software Roadmap in Iran. *Business Intelligence Management Studies*, *1*(1), 1-28. https://ims.atu.ac.ir/article_1126.html?lang=en

Toșa, C., Paneru ,C. P., Joudavi, A., & Tarigan, A. K. M. (2024). Digital transformation, incentives, and pro-environmental behaviour: Assessing the uptake of sustainability in companies' transition towards circular economy. *Sustainable Production and Consumption*, *47*, 63. 643-2. doi: https://doi.org/10.1016/j.spc.2024.04.032

Trevisan, A. H., Boscarato, A., Acerbi, F., Terzi, S., & Sassanelli, C. (2025). Enhancing Circular Economy education and training for the manufacturing sector: A holistic skills framework. *Journal of Environmental Management*, *380*, 124982. doi:https://doi.org/10.1016/j.jenvman.2025.124982

Van Opstal, W., Smeets, A., & Pals, E. (2024). Aligning incentives for implementing reversible bonding as a circular economy innovation. *Business Strategy and the Environment*, *33*(8), 8017–8036. doi: https://doi.org/10.1002/bse.3904

Vudugula, S. (2025). *Sustainable smart supply chains: a review of green technologies and their impact on logisticS* (Vol. 4). doi:https://doi.org/10.63125/1fehce37

Wang, K.-H. (2025). From fear to adaptation: The dynamic impact of AI on worker behavior and technological well-being. *Social Sciences & Humanities Open*, *12*, 101951. doi:https://doi.org/10.1016/j.ssaho.2025.101951

Wei, S., Liu, W., Lin, Y., Wang, J., & Liu, T. (2023). Smart supply chain innovation model selection: exploitative or exploratory innovation? *International Journal of Logistics Research and Applications*, *26*(4), 478–497. doi: 10.1080/13675567.2021.1965104

Wu, W.-W., & Lee, Y.-T. (2007). Developing global managers' competencies using the fuzzy DEMATEL method. *Expert Systems with Applications*, *32*(2), 499–507. doi:https://doi.org/10.1016/j.eswa.2005.12.005

Xu, T., Wang, H., Feng, L., & Zhu, Y. (2024). Risk Factors Assessment of Smart Supply Chain in Intelligent Manufacturing Services Using DEMATEL Method With Linguistic q-ROF Information. *Journal of Operations Intelligence*, *2*(1), 129–152. doi:10.31181/jopi21202417

Yontar, E. (2023). Critical success factor analysis of blockchain technology in agri-food supply chain management: A circular economy perspective. *Journal of Environmental Management*, *330*, 117173. doi: https://doi.org/10.1016/j.jenvman.2022.117173

Zejjari, I., & Benhayoun, I. (2024). The use of artificial intelligence to advance sustainable supply chain: retrospective and future avenues explored through bibliometric analysis. *Discover Sustainability*, *5*. doi: 10.1007/s43621-024-00364-6

Zhou, Y. (2025). AI-driven digital circular economy with material and energy sustainability for industry 4.0. *Energy and AI*, *20*, 100508. doi:https://doi.org/10.1016/j.egyai.2