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A Review on Role of Circular Economy toward Sustainable Performance



Abstract: - In recent years, sustainability has received great attention to address the needs of today's generation while preserving natural resources for the future. The circular economy has gained prominence within this movement, focusing on reprocessing, production, and resource management to simultaneously achieve economic competitiveness and environmental sustainability. However, despite the growing emphasis on sustainability, the connection between circular economy practices and sustainable performance in manufacturing remains underexplored in current research. This paper aims to investigate and highlight emerging trends in sustainable performance, with a particular focus on the impact of the circular economy. Through an extensive review of articles published in the Web of Science database over the past decade, 105 studies were selected through an abstract screening and full-text review process. The findings indicate a growing research interest in sustainable performance and the circular economy, with a peak of 28 publications in 2023 and 21 in 2022. The most frequently evaluated dimensions of sustainable performance include environmental, social, economic, operational, and organizational factors. Building on these findings, this paper suggests several directions for future research to support sustainable growth in the manufacturing industry, with benefits extending to industry progress, national resilience, and improvements in living standards.

Keywords: Sustainable performance, Circular economy, Natural resources, Sustainable growth, Manufacturing.

I. INTRODUCTION

Today, the world is facing significant challenges related to the excessive consumption of natural resources, which threaten social, environmental, and economic sustainability [1]. In 2015, the United Nations (UN) launched the Sustainable Development Goals (SDGs), a 15-year agenda (2016-2030) that includes 17 objectives and 169 associated targets [2]. The UN's 2030 Agenda emphasizes sustainable development and encourages businesses to adopt sustainable practices, such as the circular economy [3]. As the movement for sustainable development advances, the circular economy has garnered considerable attention for its role in conserving natural resources in manufacturing [4]-[6]. The circular economy aims to maximize the use of Earth's resources, enhancing efficiency and transitioning economic development to a closed-loop production model, where industrial waste can be renewed and reused [7]. Additionally, [8]-[9] highlight that the core purpose of the circular economy is to preserve raw materials for as long as possible, thereby increasing their value and efficiency. Consequently, the concept of a circular economy has motivated businesses to innovate continuously, improving financial outcomes, ecosystem balance, social well-being, and human health and safety.

Indeed, the largest consumption of natural resources came from industrial activities in the manufacturing sector, putting increased pressure on manufacturers to demonstrate sustainable performance outcomes [11]. Furthermore, the manufacturing sector has shown a lower level of sustainable performance compared to the service and knowledge sectors [12], largely due to the substantial industrial waste it generates, including paper, plastic, solvents, oils, heavy metals, and more [13]. Many severe environmental issues—such as excessive carbon dioxide emissions, resource depletion, water and air pollution, and soil contamination—negatively impact overall sustainability [14]. Declining sustainable performance also results in a weakened competitive position among peers. Consequently, [15] suggested that manufacturing companies could leverage sustainability practices and performance associations to address intense competition and the lack of support from authorities. Numerous studies have highlighted the circular economy as a key sustainability practice to achieve desirable improvements in economic, environmental, and social performance [16]-[22]. The circular economy is intended to help firms address challenges related to waste control, pollution, climate change, and biodiversity loss [23]. For instance, many manufacturing firms are unable to reuse valuable resources that could otherwise be repurposed and must instead dispose of them in landfills, often inefficiently [24]. This perspective underscores the importance of circular resource use for sustainable performance, maximizing financial benefits while minimizing the ecological impact of by-products [25]. Nevertheless, an in-

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depth review of sustainable performance dimensions within circular economy practices remains under-researched, with limited studies in existing academic literature.

In summary, integrating circular economy practices with sustainable performance is essential. This paper further investigates the impact of the circular economy on sustainable performance, with a review focused on two main objectives: (1) identifying trends in circular economy and sustainability, and (2) exploring the future direction of sustainable manufacturing.

II. MATERIAL COLLECTION

The topic circular economy in relation to sustainable performance was chosen for this review, which involves analyzing published literature and using it as the primary source of material. The dimensions and analytical categories used in this review process are drawn from prior sustainable performance literature before analyzing the content of the selected papers. This approach has been commonly applied in numerous review papers [26]-[27]. Initially, a structured keyword search was conducted on the ISI Web of Science (WoS) database, encompassing various publishers such as Elsevier, IEEE, Springer, and Taylor & Francis, to ensure comprehensive coverage of sustainable performance in the context of a circular economy. Most of the literature from the WoS database is reliable and classified as high-quality. Furthermore, the basic search criteria required that the literature be written in English and consist of journal or conference papers. Several keywords were searched in titles, including "sustainable performance," "sustainable development," "circular economy," "circular practices," and "sustainable circular economy." Consequently, a total of 130 articles were initially selected. Next, the abstracts of these papers were reviewed to assess their relevance to the scope of the investigation. As a result, 18 articles were excluded, reducing the selection from 130 to 112, as they did not focus on the manufacturing industry. Subsequently, a full-text review of the remaining papers led to the exclusion of an additional 7 papers. In the final stage, a total of 105 articles were included in this review study.

III. RESULTS AND DISCUSSIONS

A. Year Wise Publication Details

As shown in Fig 1, it is evident that the topic of circular economy for sustainable development has garnered significant attention from scholars, with the number of related articles showing an upward trend over the past decade, from 2014 to 2024. The highest number of articles was recorded in 2023, with 28 publications, followed by 21 articles in 2022. From 2014 to 2020, the number of articles remained relatively low, not exceeding ten per year. However, there was substantial growth over the three years of 2021, 2022, and 2023. In 2024, a slight decline in the number of articles is observed, likely due to the literature collection concluding in July 2024. Overall, it can be concluded that research on sustainable performance in the context of a circular economy is significant and merits further in-depth study within the academic field.

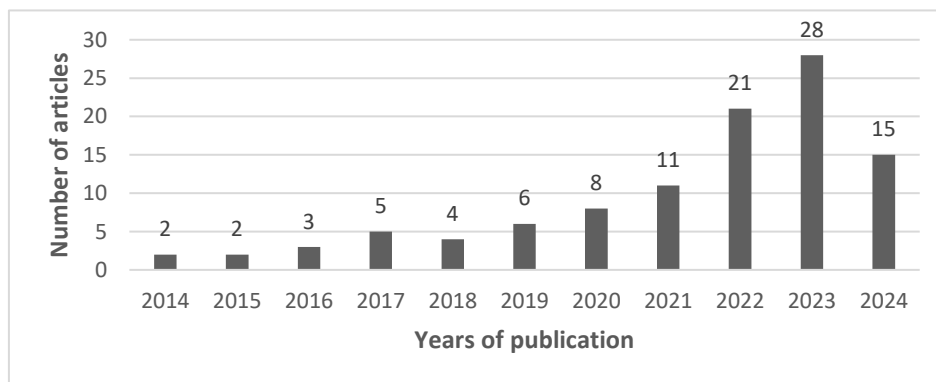


Fig 1: Number of reviewed articles with respect to publication years

B. Dimensions of Sustainable Performance

Most past studies have examined sustainable performance through the dimensions of environmental, social, and economic factors. However, some studies have also explored operational and organizational performance dimensions. The primary focus of previous articles on environmental performance has been to mitigate the negative impacts of ecological damage. As a result, many studies have concentrated on emissions of air, water, and waste, as well as the consumption of hazardous materials and energy [34], [28], [35], [36], [29], [37], [38], [31], [39], [33]. These emissions and consumption levels reveal an organization's actual sustainable performance concerning its

environmental impact. For instance, studies such as [34] and [36] found that reducing odor and solid waste emissions can significantly decrease carbon footprints, thus enhancing environmental sustainability. Meanwhile, [35] assessed energy consumption in the transportation of workforce and materials to evaluate the organization’s ability to balance energy needs with reductions in air, noise, and water pollution. Additionally, the frequency of environmental incidents—such as fires, chemical explosions, landfill overflow, and flooding—serves as another indicator for assessing environmental sustainability performance [37], [40], [33]. The suitability of practices and standards can significantly impact an organization’s environmental performance. For instance, [37] demonstrated that prioritizing green practices, while [32] showed that enhancing compliance with environmental standards, both contribute to improvements in environmental performance.

Table 1. Review of environmental performance constructs

Environmental Performance	Air emission	Water emission	Waste emission	Consumption of hazardous materials	Energy consumption	Environmental accidents	Compliance with environmental standard	Green practices
Authors (Year)								
Han & Huo (2020)			X	X	X	X		
Younis & Sundarakani (2020)	X		X	X		X		X
Agyabeng-Mensah et al. (2020)	X			X	X			X
Habib et al. (2021)	X		X	X	X	X		
Duque-Urbe et al. (2023)	X	X	X	X				
Belhadi et al. (2022)	X	X	X	X				
Afum et al. (2023)			X	X	X	X		
Osei et al. (2023)	X		X		X		X	
Ahmad et al. (2023)	X		X		X			X
Le (2023)			X		X			X
Rodríguez-Espíndola et al. (2022)			X		X		X	
Neri et al. (2021)		X	X	X	X	X		
Fu et al. (2022)								
Bag et al. (2020)				X			X	

The item with the highest frequency in social performance was occupational safety, used to assess and evaluate sustainability impacts. Several studies have recognized social performance sustainability as a measure of workplace safety protection for employees [34], [41], [37], [40]. Additionally, [29] measured occupational safety by implementing a structured framework in collaboration with an occupational risk management administrator. Meanwhile, the second most frequently discussed aspect of social sustainability performance was employee job satisfaction. For example, [31] highlighted that job satisfaction is influenced by organizational efforts, such as competitive wages, benefits, well-being programs, employee engagement, and other personal incentives. Therefore, previous research has concluded that achieving high social sustainability performance relies on an organization’s consistent effort to enhance employee job satisfaction [29], [42], [33]. Furthermore, studies such as [4] and [39] assessed both employee job satisfaction and training and development, emphasizing their importance in promoting sustainable efficiency and productivity. Community health and support were also evaluated, with metrics including public complaints [31] and the quality of life in surrounding areas [34], to maintain social development within an

organization. A few articles examined individual awareness of rights and entitlements; for instance, [35] measured social sustainability through the level of information shared about actual financial conditions.

Table 2. Review of social performance constructs

Social Performance	Employee job satisfaction	Employee training and development	Stakeholder welfare	Community support	Community health	Occupational safety	Workplace facilities	Awareness of claims and rights
Authors (Year)								
Han & Huo (2020)			X		X	X		X
Younis & Sundarakani (2020)	X							
Agyabeng-Mensah et al. (2020)	X				X	X		
Duque-Urbe et al. (2023)	X		X		X	X		
Belhadi et al. (2022)				X	X	X	X	
Afum et al. (2023)					X	X		X
Osei et al. (2023)	X	X		X		X		
Ahmad et al. (2023)			X			X	X	X
Le (2023)	X			X				
Rodríguez-Espíndola et al. (2022)			X	X		X	X	
Neri et al. (2021)	X		X	X	X	X		
Bag et al. (2020)	X	X				X		

Profit growth is undoubtedly the most critical indicator for evaluating economic sustainability performance. As shown in Table 3(A) and (B), it represents the highest proportion, at 87%, across 15 past studies [34], [28], [35], [36], [29], [30], [40], [43], [31], [39], [32], [33], [44]. This emphasis on profit growth reflects its widespread use in previous research as a measure of financial efficiency over time [34], [44]. For instance, [33] assessed average profit and growth over the last three years to ensure sustained economic health in organizations. Another significant measure of economic sustainability is financial return metrics, including return on investment (ROI), return on sales (ROS), return on assets (ROA), and return on equity (ROE). As discussed in [31], these metrics have specific focuses: ROA examines the returns on invested resources, ROS assesses operational activity returns, and ROE measures equity returns. Table 3(A) and (B) reveal that ROI and ROS were analyzed more frequently than ROA and ROE. In contrast, studies like [37] and [34] concentrated solely on ROI, underlining its role in providing long-term financial gains through sustainable practices. In terms of economics, ROS and ROE support manufacturers in decision-making by analyzing gross revenues [39], [32], [33], lost sales, and profit margins for shareholders [31]. Metrics like market share growth and earnings per share (EPS) are also valuable for evaluating sustainability. However, different studies approach these metrics uniquely; for example, [28] and [31] examine market share from market and customer perspectives, while EPS is viewed through an economic lens [37]. Overall, many of these studies address costs and expenses related to sustainable operations, such as waste management and water treatment, which can significantly impact an organization’s economic performance [30], [37], [32].

Table 3(A). Review of economic performance constructs

Economic / Financial Performance	Profit growth	Return on investment (ROI)	Return on sales (ROS)	Return on assets (ROA)	Return on equity (ROE)	Market share	Earnings per share	Turn over	Cost and expenses
Authors (Year)									
Han & Huo (2020)	X	X	X			X			
Younis & Sundarakani (2020)	X		X			X			X
Agyabeng-Mensah et al. (2020)	X	X	X	X	X		X		
Habib et al. (2021)		X					X		X

Table 3 (B). Review of economic performance constructs

Economic / Financial Performance	Profit growth	Return on investment (ROI)	Return on sales (ROS)	Return on assets (ROA)	Return on equity (ROE)	Market share	Earnings per share	Turn over	Cost and expenses
Authors (Year)									
Yu et al. (2021)	X	X	X			X			
Duque-Uribe et al. (2023)	X		X			X			
Belhadi et al. (2022)	X				X				X
Afum et al. (2023)	X	X				X			
Osei et al. (2023)	X	X	X						X
Ahmad et al. (2023)	X						X		X
Le (2023)	X					X			
Rodríguez-Espíndola et al. (2022)	X							X	X
Neri et al. (2021)	X	X	X	X	X		X		X
Fu et al. (2022)	X		X						
Bag et al. (2020)					X			X	X

In contrast, previous literature rarely examines sustainable performance from an organizational perspective. According to [45], organizational sustainability encompasses environmental, social, and economic performances, and thus scholars often avoid analyzing it separately to prevent duplication of measurements. Table 4 shows that the most frequently cited indicator of sustainable organizational performance is company reputation [33], [28], [31], as it significantly impacts public perception.

Table 4. Review of organizational performance constructs

Organizational performance	Company reputation	Use of tech	Foreign invest	Collaboration and integration
Authors (Year)				
Younis & Sundarakani (2020)	X			
Agyabeng-Mensah et al. (2020)	X			
Neri et al. (2021)	X	X	X	X
Fu et al. (2022)				X

The final dimension of sustainable performance in this study is operational performance, which focuses on evaluating the entire production and operation process, including lead time, product design, and quality. Generally, many consumers prioritize product quality and design, making these two key indicators of operational performance [33]. Additionally, customer loyalty is considered an important measure of operational performance, as it ensures consistent company sales through high purchasing intent. Studies such as [28]-[29] and [32] have used customer loyalty to assess whether a company achieves high operational performance over the long term.

Table 5. Review of organizational performance constructs

Operational performance	Lead time	Customer loyalty	Customer satisfaction	Product quality	Position of market place	Product design
Authors (Year)						
Younis & Sundarakani (2020)	X			X	X	X
Agyabeng-Mensah et al. (2020)		X				
Rodríguez-Espíndola et al., (2022)		X	X			
Fu et al. (2022)			X	X	X	X
Duque-Uribe et al. (2023)		X				

IV. FUTURE DIRECTION

B. The Call for a Balanced Triple Bottom Line (TBL) Approach

Traditional researches have primarily examined sustainability performance through the lenses of financial strength and competitiveness. Over the past decade, however, firms have increasingly recognized the importance of stakeholders, community interests, and environmental concerns, leading to the addition of environmental and social performance components to create "sustainable corporate performance" within the triple bottom line (TBL) framework [46]-[47]. As noted in [48], the TBL approach emphasizes that profit must be integrated with environmental and social outcomes. The TBL framework consists of three key pillars: economic sustainability, which aims to maintain liquidity and revenue; social sustainability, which supports individual and community well-being; and environmental sustainability, which promotes responsible resource use to benefit both present and future generations [14]. Achieving sustainable performance with positive impacts requires a balanced emphasis on all three pillars [49].

Despite its importance, integrated research on TBL’s impact on sustainable performance remains limited. For example, [50] focused solely on economic sustainability, while [51]-[52] examined only environmental aspects. Furthermore, [53] argues that a comprehensive approach to sustainable practices requires the inclusion of economic, social, and environmental pillars to effectively evaluate an organization’s sustainability. By adopting the TBL framework, organizations can simultaneously enhance profitability, environmental conservation, and social equity [54]. Each of dimensions as ‘people, planet, profit’ are able to exert a distinct influence on society, ecosystems, and organizations. In summary, future research should delve deeper into this area and develop more holistic measurement approaches that balance all aspects of the TBL framework

B. The Call for Supply Chain Management Context

The results in the discussion section reveal that past studies have emphasized the importance of sustainable measurement across entire business operations but have not focused specifically on functional areas such as supply chain management. According to [55] and [56], supply chain management can address sustainability opportunities, risks, and barriers from both business and value-chain perspectives by linking upstream and downstream stakeholders in boundary management, thereby enhancing sustainable performance. For example, collaboration between supply chain partners can create favorable conditions for implementing green business practices, such as the circular economy [57]. Furthermore, green supply chain collaboration—characterized by mutual trust and cooperation between supply chain stakeholders—aims to achieve economic, environmental, and social alignment.

Consequently, there is strong encouragement to expand research in supply chain management to add value to sustainable initiatives.

V. CONCLUSION

Since environmental concerns become increasingly critical for business success, thus both developed and developing nations are making efforts to enhance sustainable performance through strategies such as the circular economy model. This paper presents a review of circular economy practices in relation to sustainable performance, with a particular focus on the manufacturing industry. The analysis concludes that there is a growing trend in the implementation of circular economy principles for sustainable development, as evidenced by a substantial increase in related literature from 2014 to 2024. Additionally, this paper reviews the dimensions of sustainable performance, finding that the focus on environmental, social, and economic measurements is more prevalent than on operational and organizational aspects. Consequently, two suggestions are proposed for future studies: enhancing the balance within the triple bottom line (TBL) approach and developing a supply chain management framework. In summary, this paper can be valuable for advancing the research agenda on sustainable growth and provides insights for policymakers on sustainable strategies that support long-term financial success, environmental health, safety, and social equity.

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REFERENCES

- [1] Farooque, M., Zhang, A., Liu, Y., & Hartley, J. L. (2022). Circular supply chain management: Performance outcomes and the role of eco-industrial parks in China. *Transportation Research Part E: Logistics and Transportation Review*, 157. <https://doi.org/10.1016/j.tre.2021.102596>
- [2] United Nations (2015), "Transforming our world: the 2030 agenda for sustainable development", available at: <https://doi.org/10.1163/157180910X12665776638740>
- [3] Van der Waal, J. W., & Thijssens, T. (2020). Corporate involvement in sustainable development goals: Exploring the territory. *Journal of Cleaner Production*, 252, 119625
- [4] Bag, S., Dhamija, P., Bryde, D. J., & Singh, R. K. (2022). Effect of eco-innovation on green supply chain management, circular economy capability, and performance of small and medium enterprises. *Journal of Business Research*, 141, 60–72. <https://doi.org/10.1016/j.jbusres.2021.12.011>
- [5] Karmaker, C. L., Aziz, R. Al, Ahmed, T., Misbauddin, S. M., & Moktadir, M. A. (2023). Impact of industry 4.0 technologies on sustainable supply chain performance: The mediating role of green supply chain management practices and circular economy. *Journal of Cleaner Production*, 419.
- [6] Sahu, A., Agrawal, S., & Kumar, G. (2023). Triple bottom line performance of manufacturing Industry: A value engineering approach. *Sustainable Energy Technologies and Assessments*, 56. <https://doi.org/10.1016/j.seta.2023.103029>
- [7] Centobelli, P., Cerchione, R., Esposito, E., Passaro, R., & Shashi. (2021). Determinants of the transition towards circular economy in SMEs: A sustainable supply chain management perspective. *International Journal of Production Economics*, 242. <https://doi.org/10.1016/j.ijpe.2021.108297>
- [8] Dey, P. K., Malesios, C., Chowdhury, S., Saha, K., Budhwar, P., & De, D. (2022). Adoption of circular economy practices in small and medium-sized enterprises: Evidence from Europe. *International Journal of Production Economics*, 248. <https://doi.org/10.1016/j.ijpe.2022.108496>
- [9] Joensuu, T., Edelman, H., & Saari, A. (2020). Circular economy practices in the built environment. *Journal of cleaner production*, 276, 124215
- [10] Ogunmakinde, O. E., Egbelakin, T., & Sher, W. (2022). Contributions of the circular economy to the UN sustainable development goals through sustainable construction. *Resources, Conservation and Recycling*, 178, 106023
- [11] Hermundsdottir, F., & Aspelund, A. (2022). Competitive sustainable manufacturing - Sustainability strategies, environmental and social innovations, and their effects on firm performance. *Journal of Cleaner Production*, 370. <https://doi.org/10.1016/j.jclepro.2022.133474>
- [12] Malek, J., & Desai, T. N. (2022). Investigating the role of sustainable manufacturing adoption in improving the organizational performance. *Technology in Society*, 68. <https://doi.org/10.1016/j.techsoc.2022.101940>
- [13] Shaharudin, M. R., Zailani, S., Tan, K. C., Cross, J., & Hotrawaisaya, C. (2023). Fostering closed-loop supply chain orientation by leveraging strategic green capabilities for circular economy performance: empirical evidence from Malaysian electrical and electronics manufacturing firms. *Environment, Development and Sustainability*. <https://doi.org/10.1007/s10668-022-02832-3>

- [14] Khan, I. S., Ahmad, M. O., & Majava, J. (2021). Industry 4.0 and sustainable development: A systematic mapping of triple bottom line, Circular Economy and Sustainable Business Models perspectives. In *Journal of Cleaner Production* (Vol. 297). Elsevier Ltd. <https://doi.org/10.1016/j.jclepro.2021.126655>
- [15] Malesios, C., De, D., Moursellas, A., Dey, P. K., & Evangelinos, K. (2021). Sustainability performance analysis of small and medium sized enterprises: Criteria, methods and framework. *Socio-Economic Planning Sciences*, 75, 100993
- [16] Schmidt, C. V. H., Kindermann, B., Behlau, C. F., & Flatten, T. C. (2021). Understanding the effect of market orientation on circular economy practices: The mediating role of closed-loop orientation in German SMEs. *Business strategy and the environment*, 30(8), 4171-4187
- [17] Mallick, P. K., Salling, K. B., Pigosso, D. C. A., & McAloone, T. C. (2024). Towards a circular economy: Development of a support tool for designing reverse logistics systems. *Journal of Environmental Management*, 351. <https://doi.org/10.1016/j.jenvman.2023.119819>
- [18] Salesa, A., León, R., & Moneva, J. M. (2023). Airlines practices to incorporate circular economy principles into the waste management system. *Corporate Social Responsibility and Environmental Management*, 30(1), 443-458. <https://doi.org/10.1002/csr.2365>
- [19] Sassanelli, C., Urbinati, A., Rosa, P., Chiaroni, D., & Terzi, S. (2020). Addressing circular economy through design for X approaches: A systematic literature review. *Computers in industry*, 120, 103245
- [20] Calzolari, T., Genovese, A., & Brint, A. (2022). Circular Economy indicators for supply chains: A systematic literature review. *Environmental and Sustainability Indicators*, 13. <https://doi.org/10.1016/j.indic.2021.100160>
- [21] Malhotra, G. (2023). Impact of circular economy practices on supply chain capability, flexibility and sustainable supply chain performance. *International Journal of Logistics Management*. <https://doi.org/10.1108/IJLM-01-2023-0019>.
- [22] Triguero, Á., Moreno-Mondéjar, L., & Sáez-Martínez, F. J. (2023). Circular economy and firm performance: The influence of product life cycle analysis, upcycling, and redesign. *Sustainable Development*, 31(4), 2318-2331. <https://doi.org/10.1002/sd.2509>
- [23] Schroeder, P., Anggraeni, K., & Weber, U. (2019). The relevance of circular economy practices to the sustainable development goals. *Journal of Industrial Ecology*, 23(1), 77-95
- [24] Sharma, G. D., Thomas, A., & Paul, J. (2021). Reviving tourism industry post-COVID-19: A resilience-based framework. *Tourism management perspectives*, 37, 100786
- [25] Dubey, R., Gunasekaran, A., & Childe, S. J. (2019). Big data analytics capability in supply chain agility: The moderating effect of organizational flexibility. *Management Decision*, 57(8), 2092-2112
- [26] Seuring, S., & Gold, S. (2012). Conducting content-analysis based literature reviews in supply chain management. *Supply chain management: An international journal*, 17(5), 544-555
- [27] Kamble, S. S., Gunasekaran, A., & Gawankar, S. A. (2020). Achieving sustainable performance in a data-driven agriculture supply chain: A review for research and applications. In *International Journal of Production Economics* (Vol. 219, pp. 179-194). Elsevier B.V. <https://doi.org/10.1016/j.ijpe.2019.05.022>
- [28] Agyabeng-Mensah, Y., Afum, E., & Ahenkorah, E. (2020). Exploring financial performance and green logistics management practices: Examining the mediating influences of market, environmental and social performances. *Journal of Cleaner Production*, 258. <https://doi.org/10.1016/j.jclepro.2020.120613>
- [29] Duque-Urbe, V., Sarache, W., & Gutiérrez, E. V. (2023). Design and validation of a structured instrument to assess the influence of sustainable supply chain management practices on sustainable performance in hospitals. *International Journal of Lean Six Sigma*. <https://doi.org/10.1108/IJLSS-02-2023-0040>
- [30] Fu, Q., Rahman, A. A. A., Jiang, H., Abbas, J., & Comite, U. (2022). Sustainable Supply Chain and Business Performance: The Impact of Strategy, Network Design, Information Systems, and Organizational Structure. *Sustainability (Switzerland)*, 14(3). <https://doi.org/10.3390/su14031080>
- [31] Neri, A., Cagno, E., Lepri, M., & Trianni, A. (2021). A triple bottom line balanced set of key performance indicators to measure the sustainability performance of industrial supply chains. *Sustainable Production and Consumption*, 26, 648-691. <https://doi.org/10.1016/j.spc.2020.12.018>
- [32] Rodríguez-Espíndola, O., Cuevas-Romo, A., Chowdhury, S., Díaz-Acevedo, N., Albores, P., Despoudi, S., Malesios, C., & Dey, P. (2022). The role of circular economy principles and sustainable-oriented innovation to enhance social, economic and environmental performance: Evidence from Mexican SMEs. *International Journal of Production Economics*, 248. <https://doi.org/10.1016/j.ijpe.2022.108495>
- [33] Younis, H., & Sundarakani, B. (2020). The impact of firm size, firm age and environmental management certification on the relationship between green supply chain practices and corporate performance. *Benchmarking*, 27(1), 319-346. <https://doi.org/10.1108/BIJ-11-2018-0363>
- [34] Afum, E., Issau, K., Agyabeng-Mensah, Y., Baah, C., Dacosta, E., Essandoh, E., & Agyenim Boateng, E. (2023). The missing links of sustainable supply chain management and green radical product innovation between sustainable entrepreneurship orientation and sustainability performance. *Journal of Engineering, Design and Technology*, 21(1), 167-187. <https://doi.org/10.1108/JEDT-05-2021-0267>
- [35] Ahmad Amouei, M., Valmohammadi, C., & Fathi, K. (2023). Developing and validating an instrument to measure the impact of digital supply chain activities on sustainable performance. *Journal of Enterprise Information Management*, 36(4), 925-951. <https://doi.org/10.1108/JEIM-12-2021-0520>

- [36] Belhadi, A., Kamble, S., Gunasekaran, A., & Mani, V. (2022). Analyzing the mediating role of organizational ambidexterity and digital business transformation on industry 4.0 capabilities and sustainable supply chain performance. *Supply Chain Management*, 27(6), 696–711. <https://doi.org/10.1108/SCM-04-2021-0152>
- [37] Habib, M. A., Bao, Y., Nabi, N., Dulal, M., Asha, A. A., & Islam, M. (2021). Impact of strategic orientations on the implementation of green supply chain management practices and sustainable firm performance. *Sustainability (Switzerland)*, 13(1), 1–21. <https://doi.org/10.3390/su13010340>
- [38] Kavandi, H., & Jaana, M. (2020). Factors that affect health information technology adoption by seniors: A systematic review. *Health and Social Care in the Community*, 28(6), 1827–1842. <https://doi.org/10.1111/hsc.13011>
- [39] Osei, M. B., Papadopoulos, T., Acquaye, A., & Stamati, T. (2023). Improving sustainable supply chain performance through organisational culture: A competing values framework approach. *Journal of Purchasing and Supply Management*, 29(2). <https://doi.org/10.1016/j.pursup.2023.100821>
- [40] Han, Z., & Huo, B. (2020). The impact of green supply chain integration on sustainable performance. *Industrial Management and Data Systems*, 120(4), 657–674. <https://doi.org/10.1108/IMDS-07-2019-0373>
- [41] Bag, S., Wood, L. C., Xu, L., Dhamija, P., & Kayikci, Y. (2020). Big data analytics as an operational excellence approach to enhance sustainable supply chain performance. *Resources, Conservation and Recycling*, 153. <https://doi.org/10.1016/j.resconrec.2019.104559>
- [42] Le, T. T. (2022). How humane entrepreneurship fosters sustainable supply chain management for a circular economy moving towards sustainable corporate performance. *Journal of Cleaner Production*, 368. <https://doi.org/10.1016/j.jclepro.2022.133178>
- [43] Le, T. T. (2023). Linking big data, sustainable supply chain management and corporate performance: the moderating role of circular economy thinking. *International Journal of Logistics Management*, 34(3), 744–771. <https://doi.org/10.1108/IJLM-01-2022-0011>
- [44] Yu, Y., Zhang, J. Z., Cao, Y., & Kazancoglu, Y. (2021). Intelligent transformation of the manufacturing industry for Industry 4.0: Seizing financial benefits from supply chain relationship capital through enterprise green management. *Technological Forecasting and Social Change*, 172. <https://doi.org/10.1016/j.techfore.2021.120999>
- [45] Althnayan, S., Alarif, A., Bajaba, S., & Alsabban, A. (2022). Linking environmental transformational leadership, environmental organizational citizenship behavior, and organizational sustainability performance: A moderated mediation model. *Sustainability*, 14(14), 8779
- [46] Camilleri, M. A., Troise, C., Strazzullo, S., & Bresciani, S. (2023). Creating shared value through open innovation approaches: Opportunities and challenges for corporate sustainability. *Business Strategy and the Environment*, 32(7), 4485–4502. <https://doi.org/10.1002/bse.3377>
- [47] de Souza Barbosa, A., da Silva, M. C. B. C., da Silva, L. B., Morioka, S. N., & de Souza, V. F. (2023). Integration of Environmental, Social, and Governance (ESG) criteria: their impacts on corporate sustainability performance. In *Humanities and Social Sciences Communications* (Vol. 10, Issue 1). Springer Nature. <https://doi.org/10.1057/s41599-023-01919-0>
- [48] Negri, M., Cagno, E., Colicchia, C., & Sarkis, J. (2021). Integrating sustainability and resilience in the supply chain: A systematic literature review and a research agenda. *Business Strategy and the Environment*, 30(7), 2858–2886. <https://doi.org/10.1002/bse.2776>
- [49] Chowdhury, S., Dey, P. K., Rodríguez-Espíndola, O., Parkes, G., Tuyet, N. T. A., Long, D. D., & Ha, T. P. (2022). Impact of Organisational Factors on the Circular Economy Practices and Sustainable Performance of Small and Medium-sized Enterprises in Vietnam. *Journal of Business Research*, 147, 362–378. <https://doi.org/10.1016/j.jbusres.2022.03.077>
- [50] Pfister, P., & Lehmann, C. (2023). Returns on digitisation in SMEs—a systematic literature review. *Journal of Small Business & Entrepreneurship*, 35(4), 574–598
- [51] Al-Shetwi, A. Q. (2022). Sustainable development of renewable energy integrated power sector: Trends, environmental impacts, and recent challenges. *Science of The Total Environment*, 822, 153645
- [52] Javid, M., Haleem, A., Singh, R. P., Suman, R., & Rab, S. (2021). Role of additive manufacturing applications towards environmental sustainability. In *Advanced Industrial and Engineering Polymer Research* (Vol. 4, Issue 4, pp. 312–322). KeAi Communications Co. <https://doi.org/10.1016/j.aiepr.2021.07.005>
- [53] Yadegaridehkordi, E., Foroughi, B., Iranmanesh, M., Nilashi, M., & Ghobakhloo, M. (2023). Determinants of environmental, financial, and social sustainable performance of manufacturing SMEs in Malaysia. *Sustainable Production and Consumption*, 35, 129–140
- [54] Kuo, T. C., Chen, K. J., Shiang, W. J., Huang, P. B., Otieno, W., & Chiu, M. C. (2021). A collaborative data-driven analytics of material resource management in smart supply chain by using a hybrid Industry 3.5 strategy. *Resources, Conservation and Recycling*, 164, 105160
- [55] Andalib Ardakani, D., Soltanmohammadi, A., & Seuring, S. (2023). The impact of customer and supplier collaboration on green supply chain performance. *Benchmarking*, 30(7), 2248–2274. <https://doi.org/10.1108/BIJ-12-2020-0655>
- [56] Sudusinghe, J. I., & Seuring, S. (2022). Supply chain collaboration and sustainability performance in circular economy: A systematic literature review. *International Journal of Production Economics*, 245. <https://doi.org/10.1016/j.ijpe.2021.108402>
- [57] Fontoura, P., & Coelho, A. (2022). How to boost green innovation and performance through collaboration in the supply chain: Insights into a more sustainable economy. *Journal of Cleaner Production*, 359. <https://doi.org/10.1016/j.jclepro.2022.132005>