International Journal of Management Analytics (IJMA)
Vol. 4 , No. 2 April 2026: 275-288

Building Resilient and Sustainable Supply Chains: An Integrated Framework of Digital Technologies, Lean-Agile Operations, and Human Capabilities

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A R T I C L E I N F O

Keywords: Digital Technologies, Lean-Agile Operations, Human Capabilities

Received: 20, February
Revised: 15, March
Accepted: 21, April

A B S T R A C T

The digital transformation and implementation of industrial technologies, including Artificial Intelligence (AI), Internet of Things (IoT), Blockchain, and cloud computing, are enhancing sustainability performance in the manufacturing and supply chain industries. In addition to improving operational effectiveness and resource optimization, these technologies help improve accountability and transparency and satisfy environmental, social, and governance (ESG) requirements. The goal of this study is to determine how supply chain resilience and sustainability may be achieved through the integration of digital technologies, lean-agile operations, and human resource capabilities. 58 articles found on scienceDirect were examined as part of the systematic literature review study methodology. The study's findings demonstrate how firms may concurrently boost competitiveness, chain resilience, and sustainable performance by integrating digital technologies, lean-agile manufacturing, and HR skills. In order to accomplish long-term sustainability goals, this study also highlights the need for harmonization with agile-lean operational techniques and human resource capabilities in addition to technological investment.

DOI: https://doi.org/10.59890/ijma.v4i2.402
ISSN: 3021-8985
https://dmimultitechpublisher.my.id/index.php/ijma

INTRODUCTION

The global business environment has changed fundamentally in the last few decades. Businesses are being evaluated on their environmental, social, and governance (ESG) performance in addition to their net profit and market share (Anis & Avrilia, 2024). A number of factors, including as growing consumer awareness, pressure from investors looking for long-term value, and stricter government restrictions on environmental issues, are driving this paradigm shift. Manufacturing and logistics companies have been prompted to undertake a major redesign of their supply chain systems due to changes in an increasingly complicated business environment, quicker digital transformation, and growing focus on sustainability. The amount of research on sustainability performance measurement doubled between 2014–2017 and 2018–2021, indicating a growing emphasis on all-encompassing sustainability indicators (Dauerer, 2025). Companies are now compelled by this trend to include sustainability ideas into their core strategies.

Companies that take a comprehensive approach to sustainability typically have superior operational resilience and are more competitive in the face of market unpredictability (Qureshi et al., 2025). Constructing supply chains that are sustainable from an environmental, social, and economic standpoint in addition to being able to withstand external shocks (Liza et al., 2025). Although it is difficult, companies can succeed in their efforts to attain sustainability. The company must consider a number of things. The company will achieve optimal sustainability if these aspects are well managed.

Increased supply chain efficiency, flexibility, visibility, and agility have all been linked to digital transformation. In the supply chain ecosystem, digital technologies like big data analytics, Internet of Things (IoT), artificial intelligence (AI), blockchain, and cloud computing have been shown to improve decision-making accuracy, inventory optimization, and cross-organizational cooperation (Jing & Fan, 2024). Supply chain performance is significantly improved by digital transformation, according to empirical findings. By lowering costs, improving decision-making, and enhancing goods and services, digital transformation can enhance product quality, market response, production and planning efficiency and accuracy, traceability, and visibility of product flows, all of which improve supply chain performance (Jing & Fan, 2024).

Lean and agile are just as crucial as technology. It has been demonstrated that implementing lean and agile practices is essential to creating a supply chain that is responsive and effective, cutting waste, expanding the value stream, and accelerating adaptations to shifts in consumer demand. Digital technology and a lean-agile methodology combine to produce synergies that can meet contemporary operational demands (Liza et al., 2025; Mohaghegh & Größler, 2025). In order to achieve sustainable business performance, lean and agile strategies have been highlighted as an integrated approach. Lean Manufacturing is one of the most pertinent operational strategies to promote sustainability.

Lean Manufacturing, which was inspired by the Toyota production method, aims to eradicate all waste in the manufacturing process (Fortuny-Santos et al., 2025).

Defects, overproduction, waiting, transportation, inventory, movement, and overprocessing are the eight categories of waste that are typically recognized (Qureshi et al., 2025). Lean has historically focused on increasing productivity and cutting expenses, both of which have a direct impact on profitability. Nonetheless, it has been demonstrated that the lean concept and sustainability principles work well together in a contemporary setting. Lean manufacturing and environmental performance have a significant, positive, and moderate association, according to a thorough meta-analysis of 29 empirical research published between 2001 and 2022 (Fortuny-Santos et al., 2025). Waste elimination lowers energy use, raw material usage, and waste emissions in addition to saving money. Therefore, lean serves as a catalyst to help companies reach their sustainability objectives through operational effectiveness.

Human resource competencies, including both technical and interpersonal skills, are essential to the success of the shift to a digitized, lean, and agile supply chain. The resilience and durability of supply chains are determined by visionary leadership, ongoing training, organizational culture flexibility, and cross-functional cooperation. Green innovation and environmental sustainability can be promoted by integrating digital technology with Green Human Resource Management (GHRM) using justice principles. In order to successfully deploy the adopted technology, it is strategically important to strengthen HR competencies (Haldorai et al., 2025). The deployment of contemporary technology without human oversight and control will undoubtedly be problematic.

This study is expected to provide a scholarly contribution to the development of accounting and taxation literature by empirically examining the relationship between corporate governance mechanisms and corporate tax policy in the context of a developing country. The novelty of this research lies in the integration of three key corporate governance mechanisms within a single empirical model, using the Effective Tax Rate (ETR) as the primary proxy, as well as its focus on industrial sector companies over a recent observation period that reflects post-pandemic conditions. In addition, this study is expected to offer practical implications for regulators, investors, and corporate management in enhancing the effectiveness of corporate governance in order to minimize tax avoidance practices and improve tax compliance.

Despite the tremendous growth of the literature on digital transformation, lean and agile operations, and sustainable supply chains, there is still a dearth of study examining the comprehensive integration of these three aspects with the human capacities dimension. In order to address the issues of volatility, uncertainty, complexity, and ambiguity (VUCA) in the contemporary business environment, this study highlights the significance of an integrated model that can simultaneously build a robust and sustainable supply chain. Current study frequently concentrates on only a few of the elements of agility and human capabilities. In actual business operations, these three components complement one another and operate in concert to accomplish supply chain sustainability and resilience. Additionally, the majority of empirical research is carried out in rich nations with advanced technology infrastructure, whereas developing nations confront particular difficulties including scarce resources and the

digital divide. Practically speaking, this study will address the need for business transformation in the digital age by highlighting the need of efficiency, agility, sustainability, and growing HR capabilities as critical components for creating a robust and sustainable supply chain.

RESEARCH METHOD

Each This study is qualitative and employs a literature review methodology. Instead of gathering field data firsthand, this approach makes use of a variety of reliable and pertinent literary sources, including books, research reports, scientific journals, and official documents pertaining to the subject of the study. A literature review, according to Snyder (2019), attempts to find, assess, and summarize the findings of earlier studies in order to have a thorough grasp of a phenomenon or research problem. This approach was selected because it allows researchers to consolidate fragmented evidence across multiple sources, establish research gaps, and provide evidence-based recommendations for practitioners and future researchers.

major multidisciplinary academic database covering journals, book chapters, and review articles across management, engineering, business, and technology fields. ScienceDirect was chosen as the primary database because it contains a robust collection of peer-reviewed publications on supply chain management, digital transformation, lean manufacturing, and sustainability topics. Articles were restricted to the publications period 2021-2025 to capture recent and contemporary research that reflects the current state of knowledge in rapidly evolving fields of digitalizations and sustainability. This timeframe was chosen because sustainability performance measurement research significantly increased in volume after 2017, and the adoption of industry 4.0 technologies in supply chains has accelerated markedly since 2020.

Table 1 shows that 58 papers that satisfied the researcher's criteria were included in the literature study.

Table 1. Stages of Article Selection

Stages	Description	Total
1st	Type "lean manufacturing" and "sustainability" into Sciencedirect.com.	2.728 Articles
2nd	Choose research articles according to their type.	2.028 Articles
3rd	Select English-language articles.	2.024 Articles
4th	Select open-access papers based on the type of access.	798 Articles
5th	Select articles published in 2021-2025.	426 Articles
6th	Select articles covering the topics of Business, Management, and Accounting.	58 Articles

Source: Data Processed (2026

RESULT AND DISCUSSION

Article Characteristics

Table 2. Year Publication

Years of Publication	Total
2021	6
2022	8
2023	10
2024	25
2025	9

Source: Data Processed (2026)

Table 3. Articles's Journals

Name of Journal	Total	Name of Journal	Total
Journal of Building Engineering,	1	International Journal of Hospitality Management	1
Digital Business	2	Journal of International Management	1
European Management Journal	1	International Journal of Project Management	1
Digital intelligence as a partner of emotional intelligence in business administration,	1	Technological Forecasting and Social Change	10
International Journal of Operations & Production Management	1	Technovation	3
Journal of Business Venturing	1	Journal of Innovation & Knowledge	4
She Ji: The Journal of Design, Economics, and Innovation	1	Data Science and Management	1
Business Horizons	1	Technology in Society	3
Transportation Research Part E: Logistics and Transportation Review	2	Cleaner Logistics and Supply Chain	14
Marketing Strategy Journal	1	Journal of Business Research	3
Technological Forecasting and Social Change,	2	European Research on Management and Business Economics	1
Journal of Industrial Information Integration	2	International Journal of Hospitality Management	1

Source : Data Processed (2026)

Table 4. Articles's Authors

Research Methods	Total	Authors
Qualitative	19	(Anzolin & O'Sullivan, 2025; Clausen, 2023; Franzè et al., 2024; Gonzalez-Cabello et al., 2024; Julie et al., 2024; Kayikci et al., 2022; Kumar & Kotler, 2024; Lin & Chen, 2024; Maheshwari et al., 2023; Nayak et al., 2022; Oh et al.,

		2024; Orero-Blat et al., 2021; Papachristos et al., 2024; Sadeghiani et al., 2022; Salvadorinho et al., 2024; Sarkar & Mateus, 2022; Tavana et al., 2021; Williams et al., 2021; Woodfield et al., 2023)
Quantitative	24	(Ali et al., 2024; Amin et al., 2025; Camel et al., 2025; Cerar et al., 2022; Faludi et al., 2023; Ferrazzi et al., 2025; Hao et al., 2024; Harfeldt-Berg, 2024; Hariyani et al., 2024; Huong Tran et al., 2025; Jabber et al., 2024; Javed et al., 2024; S. Kamble et al., 2023; S. S. Kamble et al., 2021; Kofi Opoku et al., 2023; Li et al., 2024; Mohammad et al., 2024; Nakandala et al., 2024; Peron et al., 2025; Roy et al., 2024; Sadeghi et al., 2022; Saleheen & Habib, 2023; Wiengarten et al., 2024; Zhou & Shan, 2023)
SLR	11	(Dohale et al., 2024; Gatell & Avella, 2024; Govindan et al., 2022, 2024; Kayikci et al., 2025; Moshood et al., 2024; Perdomo-Verdecia et al., 2022; Stefano et al., 2023; Varriale et al., 2025; Yeke, 2023; Zahraee et al., 2022)
Bibliometric	4	(Alvarez-Meaza et al., 2021; Armenia et al., 2024; Cantoni et al., 2024; Guo et al., 2025)

Source: Data Processed (2026)

Digital Transformation and Technology as Advocates for Sustainability

essential catalysts for sustainability transitions (Lin & Chen, 2024; Papachristos et al., 2024; Varriale et al., 2025). In addition, it generates sustainability for the future and modifies business dynamics (Nayak et al., 2022). Adoption of digital technology offers creative ways to maximize resource utilization, lower carbon emissions, and improve operational transparency in the face of climate change issues and stakeholder demands for ethical business practices. Organizations may incorporate sustainable practices into their operations in a number of essential ways thanks to digital transformation. Digital technology's effects can boost creativity in order to thrive in the face of social and environmental challenges in addition to increasing operational efficiency.

Research demonstrates that technical maturity greatly promotes sustainable circumstances (Clausen, 2023), as digital transformation necessitates expertise to handle technological challenges. Blockchain, Digital Twins, Additive Manufacturing, and Big Data analytics are examples of Industry 4.0 technologies that are significantly expanding the use of Sustainable Supply Chain Management (SSCM), particularly in developing nations (Jabber et al., 2024). Industry 4.0 technology will boost competitiveness, particularly in the supply chain, which will impact businesses' long-term viability and go beyond meeting customer demands (Govindan et al., 2022). AI is changing the foundations of system design (Armenia et al., 2024), and green technological innovation encourages ecological sustainability by lowering the negative ecological footprint in all areas when paired with environmental regulations and the use of renewable energy (Javed et al., 2024).

Optimizing energy use requires the application of contemporary technologies like machine learning and artificial intelligence (AI). Companies can use this technology

to forecast and examine trends in energy use. In addition, it has the ability to recognize and address flaws. Additionally, cloud computing plays a major role in lowering carbon emissions. Because cloud providers employ renewable energy and data centers are more efficient, switching to cloud services can reduce carbon emissions by up to 88%. By giving real-time visibility into energy and other resource consumption, IoT technology also makes resource management more effective. Companies can readily monitor and assess operational activities directly with real-time information, and they will develop proactive measures that ensure sustainability.

Blockchain technology provides ways to improve supply chains' accountability and transparency. By tracking items from the point of origin to the final customer, this technology enables companies to confirm that raw materials are sourced ethically and adhere to sustainability regulations. The data generated can serve as a guarantee that the company can adopt sustainable practices in both its operational activities and supplier selection. Remote work is made possible by digital technology, which has major advantages for social and environmental sustainability. Even though neither employees nor management are aware of it, this work system offers global advantages. Remote work systems can save energy consumption and carbon emissions by eliminating the need to travel. The sustainability of the global ecosystem is significantly impacted by the relationship between ESG and digital technology. In order to ensure that digital solutions not only increase productivity but also have long-term good effects on the environment and society, organizations must match technology expenditures with ESG objectives.

Achieving global sustainability targets is made possible in large part by technology and digital transformation. Technologies, ranging from AI and IoT to blockchain and cloud computing, provide creative ways to maximize resources, lower emissions, boost transparency, and promote ethical business practices. Organizations may meet stakeholder expectations and regulatory obligations, produce long-term value, and contribute to a more sustainable future that protects the world's ecosystems by properly integrating digital technology and sustainability plans. Consequently, companies need to invest in technology because of its critical role in attaining sustainability (Franzè et al., 2024). To improve relationships with supply chain partners, such as suppliers, customers, and stakeholders, organizations must increase their usage of digital platforms (Jabber et al., 2024).

Lean Manufacturing and Management System

Lean manufacturing and modern management systems are essential for promoting industrial sustainability. The lean manufacturing idea is centered on the company operations that can reduce waste and production activities that fall short of customer expectations. The efficient use of raw materials, time, and energy is given top priority by this approach, which directly lowers carbon emissions and industrial waste. From a waste reduction tool, lean manufacturing has developed into an all-encompassing company culture based on values, concepts, and behaviors that promote ongoing progress (Gatell & Avella, 2024).

In order to monitor target attainment and environmental implications, a lean supporting management system can undoubtedly be put into place by integrating

quality and environmental management. By automating operational tasks and enabling quantifiable data analysis, the advancement of smart manufacturing can greatly contribute to sustainability. This can influence the speed and accuracy of making data-driven judgments. If every department in the organization supports a good management system, it can succeed flawlessly. When all departments are involved, a work culture that is consistent with the sustainable goals will be strengthened.

The adoption of cutting-edge technology is facilitated by the synergy of agile, lean, and exploitative learning (Nakandala et al., 2024). Organizations are more likely to adopt cutting-edge technologies when they can make the most of their current capabilities while reacting quickly to market signals. It has been demonstrated that the elements of lean and agile manufacturing that are most closely associated with environmental sustainability are also most pertinent to smart manufacturing. This demonstrates how smart manufacturing may build a far more robust framework to support sustainable production (Harfeldt-Berg, 2024). Lean leadership is essential in fostering a culture of continuous improvement, and supply chain management offers a vital supporting infrastructure for the application of lean manufacturing (Gatell & Avella, 2024). An essential prerequisite for thoroughly evaluating efficacy is measuring supply chain performance. A Supply Chain Performance Measurement framework is necessary since traditional performance measurement in manufacturing using a comprehensive approach has proven to be insufficient (Saleheen & Habib, 2023).

Agile and lean strategies that integrate information technology, lean construction, and project management have been shown to be the best for enhancing sustainable supply chain performance and assisting businesses in becoming resilient in challenging circumstances (Li et al., 2024). According to research Li et al., (2024), performance improvement solutions that prioritize cutting overall project costs, boosting continuous efficiency, and getting rid of waste are well aligned with the lean construction management ideology. Developing nations negotiating the complexities of supply chains can benefit greatly from integrated initiatives, which improve industrial capacity to promote resilience and sustainability at the same time (Roy et al., 2024). The low-carbon transition is primarily driven by the smart manufacturing paradigm's improved industrial structure and spillover effects (Zhou & Shan, 2023) .

Lean manufacturing and digital-based management systems are key pillars in creating an ecosystem for industrial production that is effective, productive, and ecologically sustainable. The combination of the two results in operations that are transparent, flexible, and make a substantial contribution to long-term sustainability. Lean manufacturing-based operational operations cannot be dismissed as insignificant; production activities demonstrate the achievement of sustainability. Companies will directly promote the development of sustainability if they are able to employ the appropriate production system and adhere to sustainability principles.

Human Resources-Employee Capabilities

The development of human resources (HR) is becoming a significant factor in determining long-term performance results. The main pillars of digital transformation and organizational sustainability are human resources and competences. HR plays a key role in the success of sustainable strategies in the digital age, acting not only as a

process implementer but also as a catalyst for innovation and adaptability. Employers must prioritize hiring workers with specialized skills, put in place stringent hiring and selection procedures to guarantee proper job placement, provide continual training to improve capabilities, provide equal opportunities, and guarantee promotional fairness—all of which have the potential to have a major impact on performance (Mohammad et al., 2024).

Human resources that are flexible, adaptable, and capable of using and developing the newest technology are necessary for a sustainable digital transition. To prepare them for strategic problems in a disruptive period, human resource development include education, digital training, boosting soft skills, and bolstering an innovative mindset. Digital intelligence and emotional intelligence must be integrated and coordinated in the modern workplace. Even while workers must be able to control their emotions and comprehend those of others (Yeke, 2023), digital intelligence could be just as useful for managing digital resources and devices. This integration addresses the reality that employee collaboration is still crucial for managing, directing, and sharing digital devices and resources, even though work processes are becoming more digitalized and remote work solutions are becoming more common.

In addition to boosting productivity, mapping HR capabilities and funding leadership and digital training are crucial for maintaining the company innovation's relevance in the global marketplace. An organization's resilience, growth, and long-term value creation are mostly determined by its people resources. Professional knowledge highlights the strategic significance of workforce development and is one of the most important aspects impacting the implementation of sustainability (Dohale et al., 2024). By learning from past mistakes, seasoned business owners maximize resources and use digital tools to organize their business more successfully than less seasoned ones. Entrepreneurs are better able to use cause and effect links in a setting that is changing quickly thanks to experience from prior learning (S. Kamble et al., 2023).

According to research Oh et al., (2024), elements that propel innovation include trust, equity commitment, company capability, proactiveness, redundancy of alliance resources, and domain segmentation. Initiatives to lower carbon emissions are aided by service innovation. Collaboration, automation, data-driven decision making, and ongoing learning are essential to the future of business operations. Today's technologies are not just boosting productivity but also radically changing organizational operations. The key to a successful digital transformation and long-term adoption of lean manufacturing methods is strategic investment in human resource and capability development. Human resources that are skilled and flexible help businesses be creative, effective, and fiercely competitive in the face of global challenges and swift technological advancements

Technology Integration, Lean-Agile Manufacturing, and Human Resources Capabilities

Integration of technology, lean manufacturing, and HR is a critical partnership for achieving sustainability in modern industry. These three things will complement

one another, resulting in operational operations that are efficient, flexible, and sustainable.

Technology is a motivator for lean manufacturing deployment and maximum human resource empowerment. Lean manufacturing provides a framework that focuses on value creation and waste removal, while HR acts as a driver of innovation, technology users, and lean manufacturing execution in accordance with a commitment to sustainability principles.

According to research Ali et al., (2024), textile companies benefit from a holistic approach that combines Green Human Resource Management (GHRM), Green Supply Chain Management (GSCM), and workplace productivity. Research in the agricultural sector shows that service innovation and technology platforms significantly reduce carbon emissions and advance sustainable agricultural practices (Camel et al., 2025). Apparel industry research by Dohale et al., (2024) identified professional expertise, legislation and certification, technology acceptance, availability of decarbonization methods, adequate carbon offsetting, green supply chain initiatives, financial investments for net zero, and short-term targets as highly influential drivers of carbon neutrality implementation.

AI-based supply chain development cannot be considered as a standalone issue; creating and maintaining an ethical AI supply chain necessitates an integrated approach that considers environmental and social sustainability considerations. A comprehensive sustainability strategy must incorporate supply chain strategy while acknowledging environmental management and sustainability as distinct but interconnected areas. Sustainable shared value creation activities must coincide with investments in digital connection. Yeke (2023) stated that the coordination and integration of emotional intelligence and digital intelligence illustrate the necessity of integration, indicating that no one type of intelligence is considered superior, but rather complementary.

Organizations that can make the most of their current resources while reacting quickly to market signals are more likely to adopt cutting-edge technologies. Technology adoption is positively impacted by the mix of agile, lean principles, and exploitative learning, demonstrating the advantages of investing in HR capabilities for technology deployment. Technology-based frameworks guarantee operational effectiveness and promote human resource development in the digital age (Oh et al., 2024)

CONCLUSION

Technology and digital transformation enable the deployment of lean manufacturing while also promoting sustainability. The use of technologies such as AI, IoT, Blockchain, and cloud computing improves operational efficiency, lowers carbon emissions, promotes transparency, and reinforces responsible business practices. Furthermore, the introduction of lean manufacturing and contemporary management systems supports sustainability efforts by reducing waste, high productivity, and increasing value for consumers. The development of flexible, creative, and technologically proficient people resources is essential for the success of sustainability. Human resources with high competencies and the ability to react to technological changes will be the major driving force behind the success of digital transformation and lean manufacturing implementation. Integration of technology, lean-agile manufacturing, and human resource capabilities provides a synergy that creates an efficient, resilient, and sustainable industrial system.

Companies can increase their investment in sustainable digital technology that is expressly tied to carbon reduction, energy efficiency, and supply chain improvement initiatives. Second, companies can combine lean manufacturing practices with smart manufacturing principles and environmental management systems to decrease waste, control product quality, and help mitigate negative environmental impacts. Finally, companies can develop HR policies that correspond with sustainability ideals and encourage ethical behaviour when using technology. Companies that manage technology integration with lean manufacturing and human resource development might potentially achieve cost efficiency, quality improvement, supply chain resilience, and a stronger long-term reputation in front of stakeholders.

REFERENCES

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Ali, S. R., Al masud, A., Hossain, M. A., Islam, K. M. Z., & Shafiul Alam, S. M. (2024). Weaving a greener future: The impact of green human resources management and green supply chain management on sustainable performance in Bangladesh's textile industry. *Cleaner Logistics and Supply Chain*, *10*, 100143. https://doi.org/https://doi.org/10.1016/j.clscn.2024.100143

Alvarez-Meaza, I., Zarrabeitia-Bilbao, E., Rio-Belver, R.-M., & Garechana-Anacabe, G. (2021). Green scheduling to achieve green manufacturing: Pursuing a research agenda by mapping science. *Technology in Society*, *67*, 101758. https://doi.org/https://doi.org/10.1016/j.techsoc.2021.101758

Amin, M. Al, Chakraborty, A., & Baldacci, R. (2025). Industry 5.0 and green supply chain management synergy for sustainable development in Bangladeshi RMG industries. *Cleaner Logistics and Supply Chain*, *14*, 100208. https://doi.org/https://doi.org/10.1016/j.clscn.2025.100208

Anis, I., & Avrilia, V. (2024). Analyzing Impact of ESG Principles on Performance: A Perspective from Sustainability Balanced Scorecard. *Jurnal Akuntansi Dan Keuangan Indonesia*, *21*(1), 5.

Anzolin, G., & O'Sullivan, E. (2025). Innovation intermediaries in the digital transformation process. A comparative case study of research and technology organisations in the US and the UK. *Technovation*, *142*, 103200. https://doi.org/https://doi.org/10.1016/j.technovation.2025.103200

Armenia, S., Franco, E., Iandolo, F., Maielli, G., & Vito, P. (2024). Zooming in and out the landscape: Artificial intelligence and system dynamics in business and management. *Technological Forecasting and Social Change*, *200*, 123131. https://doi.org/https://doi.org/10.1016/j.techfore.2023.123131

Camel, A., Belhadi, A., Kamble, S., Wetzels, M., & Touriki, F. E. (2025). Servitizing for sustainability: Leveraging technology-enabled platforms and service innovation for carbon reduction in Africa's Agri-Food Sector: A dynamic capabilities perspective. *Journal of Business Research*, *189*, 115166. https://doi.org/https://doi.org/10.1016/j.jbusres.2024.115166

Cantoni, F., Ricciardi, A., Bisogni, P. G., & Zsifkovits, H. (2024). The unravelled role of soft skills in the logistics and supply chain management field. *Journal of Innovation & Knowledge*, *9*(4), 100615. https://doi.org/https://doi.org/10.1016/j.jik.2024.100615

Cerar, J., Dimitrova, M., & Nell, P. C. (2022). Fostering operational management "Best Practices" in subsidiary plants in the Western Balkans: The role of MNC home-country environment and resource allocation. *Journal of International Management*, *28*(2), 100918. https://doi.org/https://doi.org/10.1016/j.intman.2021.100918

Clausen, P. (2023). Towards the Industry 4.0 agenda: Practitioners' reasons why a digital transition of shop floor management visualization boards is warranted. *Digital Business*, *3*(2), 100063. https://doi.org/https://doi.org/10.1016/j.digbus.2023.100063

Dauerer, A. (2025). A Systematic Literature Review of Performance Measurement Systems and the integration of ESG factors. *Environmental and Sustainability Indicators*, 100746.

Dohale, V., Kamble, S., Ambilkar, P., Gold, S., & Belhadi, A. (2024). An integrated MCDM-ML approach for predicting the carbon neutrality index in manufacturing supply chains. *Technological Forecasting and Social Change*, *201*, 123243. https://doi.org/https://doi.org/10.1016/j.techfore.2024.123243

Faludi, J., Acaroglu, L., Gardien, P., Rapela, A., Sumter, D., & Cooper, C. (2023). Sustainability in the Future of Design Education. *She Ji: The Journal of Design, Economics, and Innovation*, *9*(2), 157–178. https://doi.org/https://doi.org/10.1016/j.sheji.2023.04.004

Ferrazzi, M., Costa, F., Frecassetti, S., & Portioli-Staudacher, A. (2025). Unlocking synergies in lean manufacturing for enhanced environmental performance: a cross-sector investigation through fuzzy DEMATEL. *Cleaner Logistics and Supply Chain*, *15*, 100219. https://doi.org/https://doi.org/10.1016/j.clscn.2025.100219

Govindan, K., Demartini, M., Formentini, M., Taticchi, P., & Tonelli, F. (2024).

Harfeldt-Berg, M. (2024). Environmental sustainability from a decoupling point perspective. *Cleaner Logistics and Supply Chain*, *13*, 100181. https://doi.org/https://doi.org/10.1016/j.clscn.2024.100181

Hariyani, D., Hariyani, P., Mishra, S., & Kumar Sharma, M. (2024). Stakeholders'

Javed, A., Rapposelli, A., Khan, F., Javed, A., & Abid, N. (2024). Do green technology innovation, environmental policy, and the transition to renewable energy matter in times of ecological crises? A step towards ecological sustainability. *Technological Forecasting and Social Change*, *207*, 123638. https://doi.org/https://doi.org/10.1016/j.techfore.2024.123638

Julie, S., Potter, A., & Geng, R. (2024). Examining the effects of stakeholder forces on sustainable practices in the Bangladeshi garment industry. *Cleaner Logistics and Supply Chain*, *12*, 100162. https://doi.org/https://doi.org/10.1016/j.clscn.2024.100162

Kamble, S., Rana, N. P., Gupta, S., Belhadi, A., Sharma, R., & Kulkarni, P. (2023). An effectuation and causation perspective on the role of design thinking practices and digital capabilities in platform-based ventures. *Technological Forecasting and Social Change*, *193*, 122646. https://doi.org/https://doi.org/10.1016/j.techfore.2023.122646

Kamble, S. S., Belhadi, A., Gunasekaran, A., Ganapathy, L., & Verma, S. (2021). A large multi-group decision-making technique for prioritizing the big data-driven circular economy practices in the automobile component manufacturing industry. *Technological Forecasting and Social Change*, *165*, 120567. https://doi.org/https://doi.org/10.1016/j.techfore.2020.120567

Kayikci, Y., Ali, M. R., Khan, S. A., & Ikpehai, A. (2025). Examining dynamics of hydrogen supply chains. *Technological Forecasting and Social Change*, *215*, 124101. https://doi.org/https://doi.org/10.1016/j.techfore.2025.124101

Moshood, T. D., Rotimi, J. O. B., Shahzad, W., & Bamgbade, J. A. (2024). Infrastructure digital twin technology: A new paradigm for future construction industry. *Technology in Society*, *77*, 102519. https://doi.org/https://doi.org/10.1016/j.techsoc.2024.102519

Nakandala, D., Elias, A., & Hurriyet, H. (2024). The role of lean, agility and learning ambidexterity in Industry 4.0 implementations. *Technological Forecasting and Social Change*, *206*, 123533. https://doi.org/https://doi.org/10.1016/j.techfore.2024.123533

Nayak, R., George, M., Haq, I. U., & Pham, H. C. (2022). Sustainability benefits of RFID technology in Vietnamese fashion supply chain. *Cleaner Logistics and Supply Chain*, *5*, 100086. https://doi.org/https://doi.org/10.1016/j.clscn.2022.100086

Qureshi, K. M., Mewada, B. G., Yadav, A., Almakayeel, N., Alghamdi, S. Y., &

Saleheen, F., & Habib, M. M. (2023). Embedding attributes towards the supply chain performance measurement. *Cleaner Logistics and Supply Chain*, *6*, 100090. https://doi.org/https://doi.org/10.1016/j.clscn.2022.100090

Salvadorinho, J., Ferreira, C., & Teixeira, L. (2024). A technology-based framework to foster the lean human resource 4.0 and prevent the great resignation: The talent management lift. *Technology in Society*, *77*, 102510. https://doi.org/https://doi.org/10.1016/j.techsoc.2024.102510

Sarkar, S., & Mateus, S. (2022). Value creation using minimal resources – A meta-synthesis of frugal innovation. *Technological Forecasting and Social Change*, *179*, 121612. https://doi.org/https://doi.org/10.1016/j.techfore.2022.121612

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, *104*, 333–339.

Tavana, M., Shaabani, A., Di Caprio, D., & Bonyani, A. (2021). An integrated group fuzzy best-worst method and combined compromise solution with Bonferroni functions for supplier selection in reverse supply chains. *Cleaner Logistics and Supply Chain*, *2*, 100009. https://doi.org/https://doi.org/10.1016/j.clscn.2021.100009

Williams, T. A., Zhao, E. Y., Sonenshein, S., Ucbasaran, D., & George, G. (2021).

Zahraee, S. M., Shiwakoti, N., & Stasinopoulos, P. (2022). Agricultural biomass supply chain resilience: COVID-19 outbreak vs. sustainability compliance, technological change, uncertainties, and policies. *Cleaner Logistics and Supply Chain*, *4*, 100049. https://doi.org/https://doi.org/10.1016/j.clscn.2022.100049

Zhou, S., & Shan, F. (2023). Discovery of innovation effect and spillover effect: Evidence from intelligent manufacturing promoting low-carbon development. *Journal of Innovation & Knowledge*, *8*(3), 100383. https://doi.org/https://doi.org/10.1016/j.jik.2023.100383