

Guest editorial: Technological impact on organizational sustainability

Technological advances have shaped the landscape of organizational processes and strategies, while their adoption has resulted in both challenges and opportunities, which in turn have affected the operations of organizations and their commitment to sustainable development. In the current research landscape, researchers and practitioners alike recognize the crucial role that technology plays in driving organizational sustainability. The literature has explored, for example, how different technologies such as artificial intelligence, blockchain, big data analytics, and the Internet of Things can enhance (Parmentola *et al.*, 2022) organizational efficiency, reduce environmental footprints and contribute to overall sustainable practices (e.g. Cucchiella *et al.*, 2024; Del Río Castro *et al.*, 2021; Guandalini, 2022). For instance, Ogbeibu *et al.* (2024) highlighted that an organization's ability to design and deploy AI systems (or other advanced technologies) enhances its capacity to adopt environmentally sustainable practices, including recycling, cleaner production, resource conservation and sustainable consumption. Similarly, Madanaguli *et al.* (2024) outlined how artificial intelligence-driven sustainability initiatives can boost environmental performance by increasing process efficiency, extending product and service lifecycles, minimizing defects, strengthening customer relationships and more. Additionally, Zheng *et al.* (2020) introduced a pipeline digital twin designed to simulate leakage scenarios, thereby improving safety and safeguarding the environment.

Nevertheless, certain gaps still exist in our understanding of the interactions between technology adoption and sustainability within organizations. Some areas that require further research include the investigation of socio-technical aspects, the identification of specific contingency factors or challenges faced by organizations in different sectors, and the development of frameworks for measuring the impact of technology on organizational sustainability (Saunila *et al.*, 2019; Szalkowski and Johansen, 2024). Moreover, while existing research highlights the positive contributions of technology to sustainability (such as lowering carbon emissions, reducing waste, optimizing resource efficiency and enhancing workplace safety) (Tsolakis *et al.*, 2023), it is crucial to acknowledge the potential negative effects on environmental and social aspects. For instance, the environmental impact of technology production, the ethical considerations related to data privacy and the potential job displacements due to automation (Dieste *et al.*, 2024; Kinowska and Sienkiewicz, 2023) are research areas that require further exploration.

This special issue aims to explore the multifaceted relationship between technology and organizational sustainability. It focuses particularly on the management of organizational processes in technology implementation and how this affects organizational sustainability. We invited academics and practitioners to contribute empirical papers based on a variety of qualitative and quantitative methodologies. Case studies were encouraged to demonstrate transformation and the diverse impacts of technology on the sustainability initiatives of organizations. Thus, this special issue examines how technologies shape and enhance organizational sustainability. It focuses on innovative strategies and tech-driven practices that help different types of businesses achieve long-term environmental, social and economic goals. Contributions highlight real-world cases, theoretical insights, and future trends at the intersection of technology and sustainable development.

Overview of the papers in the special issue

The first paper by Bruni *et al.* (2025) focuses on the possibility of exploiting new technologies by renewing business models (BMs) to achieve greater sustainability in the agri-food sector,



in accordance with what is defined by SDG 2 of the 2030 Agenda. The study starts with an in-depth review of the literature that highlights, first of all, how no attention has been paid to the specific case of business models in the agri-food sector; furthermore, the mechanisms linking the adoption of new technologies to sustainability are not very clear. For this purpose, the authors analyze 13 case studies of companies that have successfully introduced new business models. The authors built on Eisenhardt's case study method (Eisenhardt, 1989), while to select significant case studies, they turned to five experts from the Italian agri-food sector. The study conducted allowed them to clarify the interdependencies between sustainability and technology for each case study, from which it was possible to extrapolate a framework that combines the driver and the locus (for example, internal and/or external to the company). This framework defines general criteria, useful for entrepreneurs as well as for policymakers.

In the second paper by [Vijayakumar and Davidova \(2025\)](#), the authors focus their attention on the Baltic States and the circular economy. They contribute to addressing a research gap that shows how, despite the existence of many studies linking these two areas, the involvement of technological innovation hubs has not been adequately studied. As a result of this gap, these innovation hubs are unable to effectively promote the circular economy. The research by [Vijayakumar and Davidova \(2025\)](#), therefore, having identified the key factors that influence innovation hubs and the circular economy, aims to provide an enhanced understanding for the creation of sustainable economic models. The methodology used is quantitative—a survey of employees from various small and medium-sized enterprises operating in the Baltic States, randomly selected from national business registers. The results of their study show that in technological innovation hubs where the latest digital technologies—such as artificial intelligence, the Internet of Things, and blockchain—are used, company resources are utilized more sustainably, waste is minimized, and the supply chain becomes more transparent, enabling the implementation of circular practices. Furthermore, the presence of technological infrastructure appears to facilitate company-level data collection and analysis, thereby improving management and operational efficiency. In addition, highly qualified personnel in the fields of circular economy and technology can contribute significantly to the implementation of circular practices.

The third article in this special issue, by [Yang et al. \(2025\)](#), highlights how the role of digital innovation in promoting sustainability has, in fact, been largely neglected in current research. For this reason, taking Chinese companies as a reference, the authors of this paper analyzed the impact of digital technologies on the green transition of these companies. For this purpose, they used a sample of 28,697 annual observations of Chinese companies listed on the stock exchange with Class A shares, from 2008 to 2021. Among the main results is the finding that digitalization plays a crucial role in eco-friendly technological progress. For example, the use of digital solutions enables green product innovation and leads to cost reduction; it also improves methods of collaboration and data sharing among companies, while the possibility of creating digital scenarios and simulations represents an important support mechanism. Finally, this research reveals that the effect of firms' digital orientation (FDO) on corporate green innovation is more evident in firms with political connections, in those operating in regions with a low level of financial technology, and in state-owned firms.

The fourth study by [Ghouse et al. \(2025\)](#) examines the non-linear impact of productive capacity on organizational sustainability in Next-11 (N-11) countries, with environmental, social and governance (ESG) factors as moderators. Using panel ARDL methodology with PMG specifications, the research analyzes data from 2000 to 2023, measuring organizational sustainability through total patent applications. The study highlights the importance of optimizing productive capacity and integrating ESG principles in order to achieve sustainable organizational practices. More specifically, their findings show that productive capacity has an inverted U-shaped impact on organizational sustainability. Initially, increased capacity boosts sustainability, but excessive capacity leads to inefficiencies and resource depletion, reducing sustainability. In addition, the paper provides actionable insights for policymakers to foster innovation, resilience and long-term economic growth in emerging economies, which are as

follows: promote ESG integration (encourage ESG-driven innovations through tax incentives, subsidies, and ESG performance benchmarks), stabilize exchange rates (implement monetary policies and financial interventions to reduce volatility), support energy transition (build renewable energy infrastructure, offer green technology incentives, and enforce stricter regulations on fossil fuel usage), educate leaders (train business leaders on ESG principles to align productive capacity with sustainability goals).

The fifth paper, by [Rashad et al. \(2025\)](#), explores sustainable competitiveness through a configurational analysis of entrepreneurship and innovation systems. Using fuzzy-set qualitative comparative analysis (fsQCA) on data from 126 countries between 2013 and 2022, the study identifies four mechanisms that contribute to sustainable competitiveness. The research introduces a new theoretical perspective on sustainability, redefining sustainable development as sustainable competitiveness. Achieving effective operational competence is essential for maintaining balance across sustainability dimensions and ensuring accurate outcomes. To support this, the study identifies six key antecedent conditions — research and development, knowledge diffusion, new business density, investment, infrastructure and the business environment — as integral components of an economy’s entrepreneurship development system. These elements collectively address the critical transition from sustainable development to sustainable competitiveness. The study demonstrates that sustainable competitiveness can be achieved through specific configurations of entrepreneurial and innovation factors, offering actionable insights for fostering a sustainable future.

Concluding remarks on future research

The relationship between technology and organizational sustainability is multifaceted, offering both opportunities and challenges. While existing research has made significant strides in understanding how technologies like artificial intelligence, blockchain, big data analytics and Internet of Things contribute to sustainability, several gaps remain that warrant further exploration.

Future research should focus on the following areas:

- (1) **Socio-technical aspects:** Investigate the interplay between social and technical factors in technology adoption and their impact on sustainability. This includes understanding how organizational culture, employee engagement and leadership influence the integration of sustainable technologies.
- (2) **Sector-specific challenges:** Explore contingency factors and challenges faced by organizations in different industries, such as agri-food, manufacturing and services, to develop tailored strategies for technology-driven sustainability.
- (3) **Framework development:** Create robust frameworks for measuring the impact of technology on organizational sustainability, considering both positive contributions and potential negative effects, such as environmental costs of technology production and ethical concerns like data privacy.
- (4) **Negative consequences:** Examine the “dark side” of technology adoption, including job displacement due to automation, resource depletion and ethical dilemmas, to mitigate adverse effects while maximizing sustainability benefits.
- (5) **Circular economy and innovation hubs:** Study the role of technological innovation hubs in promoting circular economy practices, particularly in under-researched regions, to enhance resource efficiency and waste reduction.
- (6) **Digital innovation and green transition:** Analyze the role of digital technologies in corporate green innovation, focusing on their ability to drive eco-friendly progress, cost reduction and improved collaboration.

- (7) **Emerging economies and ESG integration:** Investigate the impact of productive capacity and ESG principles on sustainability in emerging economies, identifying optimal strategies for balancing growth and resource efficiency.
- (8) **Sustainable competitiveness:** Redefine sustainability through the lens of sustainable competitiveness, exploring configurations of entrepreneurship, infrastructure, R&D, and knowledge diffusion that drive innovation and economic growth.

By addressing these areas, future research can provide actionable insights for policymakers, practitioners, and academics to foster innovation, resilience and long-term sustainability across diverse organizational contexts.

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