

Editorial

From Digital to AI Transformation for Sustainability

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1. Introduction

Sustainability and its connection to digital technology have attracted significant interest in business [1–3]. There are several definitions of sustainability [4]. In this article, we take a broad view that includes environmental, social, and economic sustainability strategies and related terms, such as social responsibility, and business and technology for good.

Early research on information systems with regard to environmental sustainability explores applications, capabilities, processes, and business value [5–7]. For instance, Ref. [8] proposes a research agenda and systems approach, arguing that information systems (ISs) can shape environmental beliefs, enable sustainable organizational processes, and improve environmental and economic performance.

More recently, digital transformation has been an important theme in business research [9–11], and a subset of the literature seeks to understand the relationship between digital transformation and sustainability. Ref. [12] focuses on how analytics can help address societal challenges. Other research focuses on corporate digital responsibility [13,14], which adds a technology focus to traditional corporate social responsibility (CSR). Another article [15] focuses on technology acceptance for environmental sustainability. Ref. [16] discusses the relationship between organizational culture, digitalization, and environmental sustainability in small enterprises. Digital transformation may also have a negative environmental impact [17], for instance, in energy consumption by data centers or e-waste. Ref. [18] argues that firms should seek to design sustainable business models to maximize the impact of their digital transformation strategy. Refs. [19,20] propose a research agenda for ISs and the circular economy, a production model that eliminates waste. Other researchers call for a research agenda that addresses digital sustainability [21,22] and tackles societal grand challenges [23].

Technology comes in waves, and waves within waves, with a fractal-like structure. The most consequential wave of our time is AI—there are various waves within AI itself, with generative AI reaching its peak. Previously, AI was one of the many technologies enabling digital transformation. AI is today's primary technology driving business transformation, which is apparent in business practice. Therefore, the research focus has shifted from digital to AI transformation, and this shift is welcome, because it is providing clarity and focus.

Such a focus is essential because the trajectory of future transformation will crucially depend on the trajectory of AI progress. For instance, if artificial general intelligence (AGI) is achieved in the near future, business as we know it today will be radically different in the future. On the other hand, if progress is slow or another AI winter emerges, the transformation will be slow and relatively predictable.

Consequently, the most crucial theme of our exploration is the relationship between AI transformation and sustainability. How does AI enable or sometimes hinder sustainability [24–27]? How can we provide an integrated view of AI transformation and sustainability?

Connecting sustainability with AI, it is crucial to understand that sustainability can help set the direction and goals of AI transformation. AI transformation alone has no well-defined direction, so sustainability priorities can help firms set the direction. AI



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transformation can play an essential enabling role in achieving a firm's sustainability goals, either environmental or socioeconomic, and can create value for all stakeholders. Moreover, an emphasis on sustainability creates innovation incentives [28] and new funding sources for AI transformation.

Platforms [29–35] can play an essential role in this context, because they can leverage network effects and AI feedback loops [36] or data-enabled learning [37]. As Tirole [38] notes: “The quest for the common good, therefore, involves constructing institutions to reconcile, as far as possible, the interests of the individual with the general interest” (p. 3). Digital platforms for the common good fulfill this role because they bring together diverse stakeholders to maximize social value [39]. Digital platforms can foster development [40–45], the circular economy [46], sustainability-oriented innovation [47], and financial inclusion [48,49]. Firms could launch new platforms, perhaps in partnership with other stakeholders, or join other platforms.

On the other hand, given the challenges posed by platforms, any debate on AI and sustainability should include AI's direction or redirection [50]. An open discussion about the direction and redirection of AI to achieve responsible AI transformation could be facilitated by a well-designed digital platform. For instance, how could AI help us move away from surveillance-based platform business models that monetize user labor and private data?

Another observation from our exploration is that the actual literature on sustainability is much broader than the literature using the sustainability label. Therefore, we need to work to capture and integrate all of these ideas and insights. In addition, future research should pursue the rigorous modeling and analysis of the links between AI transformation and sustainability and take a multi-level systemic approach to provide concrete policy recommendations. A thorough exploration of sustainable futures enabled by AI is needed. We also need a comprehensive analysis of the role of AI algorithms in competition settings due to the increased complexity and unintended consequences of the interaction between multiple algorithms. Moreover, we are possibly at a transformation inflection point and need studies that comprehensively map related business models, mechanisms, opportunities, and pitfalls across industries. The study of system transitions is another significant direction [51–53]. While the firm is the primary level of analysis in this short exploration, research is also needed at other levels, such as the ecosystem, industry, and economy.

2. Special Issue Articles

The call for papers for the Special Issue entitled “Platforms and Digital Transformation for Sustainability” appeared in April 2020. The initial title was “Platforms and Digital Transformation for the Common Good”. The Special Issue closed in the second half of 2023 and published six research articles.

The call was motivated by the observation that the world faces many messy “grand challenges” and “wicked problems” related to environmental, societal, and economic sustainability. The United Nations has defined seventeen Sustainable Development Goals that require complementary action by multiple stakeholders [54]. How could we mitigate or solve some of those complex problems by leveraging the power of digital platforms and digital transformation? The Special Issue called for research on platforms, digital transformation, and social impacts, emphasizing the notion of the common good. How can technology be used for good? It emphasized using digital technologies that enable innovative business models, strategies, and initiatives to contribute to the common good and development. Examples include artificial intelligence (AI), robotics, big data, Internet of Things (IoT), blockchain, Web3, and other emerging or exponential technologies. Moreover, it sought articles that address well-defined challenges, adhere to high-quality research standards, and contribute novel business and policy insights. Interdisciplinary research and research that appreciates the complexity of business and social and economic systems were most encouraged. The articles published in the Special Issue are discussed here.

The article by Madkhali and Sithole (2023) explores the role of information technology in supporting sustainability efforts in Saudi Arabia and discusses related policy matters.

Two of the articles are related to sustainability reporting. The article by Moodaley and Telukdarie (2023) reviews the academic literature on sustainability reporting and artificial intelligence with a particular emphasis on greenwashing. The article by Cakir, Aerni et al. (2023) proposes a novel sustainability rating and reporting system called esg2go, which is particularly useful to SMEs. Through an online platform, a firm can view its relative performance across ten key areas and use that to meet various reporting requirements.

Another review article focuses on artificial intelligence. The article by Espina-Romero and coauthors (2023) is a bibliometric study that explores the industrial sectors most affected by AI.

When it comes to digital platforms, openness is a crucial platform feature [55–60]. The article by Fu, Sun, and Lee (2023) constructs a platform openness index and evaluates the openness of more than twenty digital platforms in China.

Higher education faces many challenges [61,62], but it plays a crucial role in sustainable development. The article by Steingard and Rodenburg (2023) focuses on the social impact of research in business schools. It outlines a new qualitative model for academic publishing called “publish and prosper”.

In summary, the Special Issue published six articles that deploy a variety of methodologies to provide beneficial insights for leaders and policymakers. Moreover, the Special Issue offers a global perspective, as the authors’ institutions span the globe: Australia, Canada, China, Colombia, Ecuador, Peru, Saudi Arabia, Switzerland, South Africa, and the USA.

3. Conclusions

This short article connects sustainability with AI transformation and contributes to an emerging research agenda that integrates these two themes. Our observations have implications for both managers and the field of business education. Managers must become system thinkers and effectively manage complexity. They should design integrated strategies that leverage the complementarities of sustainability and AI transformation. In this context, sustainability helps identify goals, and AI enables the achievement of these goals and the optimization of the overall system performance. Lastly, our proposal has implications for the field of business education, as it calls for students with a deep understanding of AI technologies and strategies, sustainability opportunities, and the skills to integrate these themes to maximize both business value and impact.

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List of Contributions

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