

Going Beyond Performance: Leveraging Socioeconomic and Environmental Outcomes from Digital Innovation

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Abstract

Digital innovation has traditionally been evaluated through its contribution to organizational performance, efficiency, and competitive advantage. However, the pervasive diffusion of digital technologies has expanded their impact far beyond organizational boundaries. This paper argues that a broader perspective is needed – one that also evaluates digital innovation according to its socioeconomic and environmental outcomes. Drawing on the concepts of ubiquitous digital ecosystems, sociotechnical systems, and climate adaptation, the paper examines how digital technologies reshape interactions among organizations, societies, and natural ecosystems. It further discusses the paradoxical nature of digital innovation and highlights opportunities for leveraging digital technologies to support climate adaptation and sustainable development. The paper concludes by advocating an outcome-oriented approach to digital innovation that prioritizes equitable, resilient, and sustainable futures.

Keywords: Digital Innovation, Digital Ecosystems, Socioeconomic Outcomes, Climate Adaptation, Sustainability

1. Introduction

For decades, digital innovation has been primarily associated with performance gains. Research and practice have traditionally focused on how information technologies improve organizational efficiency, optimize business processes, enhance productivity, and generate competitive advantage (Melville et al., 2004). While these outcomes remain important, the rapid proliferation of digital technologies has expanded their influence

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far beyond organizational boundaries. Today, digital innovations shape how individuals interact, how societies function, and how organizations engage with broader environmental challenges.

The increasing urgency of global challenges – including inequality, resource constraints, and the need for climate adaptation – requires a broader perspective on digital innovation. Rather than evaluating technologies solely through the lens of performance and efficiency, it is increasingly important to understand how they contribute to socioeconomic and environmental outcomes. Digital innovation should not simply be assessed by what it enables organizations to do better, but also by how it affects people, communities, institutions, and ecosystems. As George et al. (2021) argue, digital technologies can play a critical role in addressing broader sustainability challenges. Building on this perspective, this paper advocates a shift from a performance-centric view of digital innovation toward an outcome-oriented perspective that recognizes the role of digital technologies in shaping more equitable, resilient, and sustainable futures.

2. From Performance Gains to Socioenvironmental Outcomes

Much of the information systems literature has focused on the relationship between technology investments and organizational performance. The dominant questions have revolved around productivity improvements, process optimization, cost reductions, and organizational transformation. While these contributions have generated valuable insights, they provide only a partial understanding of the broader consequences of digital innovation.

The widespread diffusion of digital technologies has fundamentally altered the scale and scope of technological impact. Digital innovations increasingly influence social interactions, institutional arrangements, labor markets, educational systems, and environmental practices. Consequently, focusing exclusively on organizational outputs risks overlooking the broader outcomes generated by technological change.

A key distinction must therefore be made between outputs and outcomes. Outputs typically refer to immediate organizational benefits such as efficiency gains, improved decision-making, or increased productivity. Outcomes, by contrast, encompass the longer-term social, economic, and environmental consequences generated through the adoption and use of digital technologies. From this perspective, the value of innovation extends

beyond organizational performance to include contributions to social wellbeing, environmental stewardship, and economic resilience.

This shift requires moving beyond an exclusive focus on technological artifacts and toward a deeper understanding of the disruptions technologies create within broader systems. The most important question is no longer whether a technology improves performance, but rather how it transforms the conditions under which individuals, organizations, and societies operate.

3. The Emergence of Ubiquitous Digital Ecosystems

The contemporary digital environment differs substantially from previous generations of information technology. Historically, computing was characterized by fixed locations, limited connectivity, and clearly defined organizational boundaries. The diffusion of the internet, advances in wireless telecommunications, systems miniaturization, cloud computing, and declining technology costs have transformed this landscape.

The result is the emergence of ubiquitous digital ecosystems characterized by pervasive connectivity across time and space. Digital technologies are no longer confined to specific locations or devices; they are embedded within everyday activities, organizational processes, and physical environments. These ecosystems increasingly blur the boundaries between physical and digital realities.

Three characteristics are particularly important in understanding the transformative potential of these ecosystems. First, digitalization decouples function from form, enabling information, services, and processes to exist independently of physical constraints. Second, ubiquity and embeddedness allow technologies to become integrated into everyday life, creating continuous interaction between individuals and digital systems. Third, network effects and generativity facilitate new forms of value creation by enabling actors to combine resources, knowledge, and capabilities in novel ways (Yoo et al., 2010).

As a result, digital ecosystems are increasingly cyber-physical, connected, embedded, and computationally intelligent. These characteristics create unprecedented opportunities for innovation while simultaneously expanding the reach and consequences of technological change.

4. Expanding the Boundaries of Sociotechnical Systems

Traditional sociotechnical perspectives emphasize the interaction between technologies, organizational structures, and human actors. While this perspective remains valuable, the growing societal influence of digital technologies suggests that the boundaries of sociotechnical systems must be expanded. Digital ecosystems increasingly span organizational, social, and environmental domains, creating new forms of interaction between actors, technologies, and institutions (Baskerville et al., 2020).

Organizations do not operate in isolation. They exist within broader social contexts and are ultimately embedded within natural ecosystems. Consequently, digital innovation should be understood as occurring within interconnected organizational, societal, and environmental systems. True digital value emerges not simply from technological capabilities, but from the alignment between these different layers of the ecosystem.

This broader perspective highlights the importance of considering where technologies are designed, where they are deployed, and how they are ultimately used. Digital solutions developed in one context are frequently implemented in environments characterized by different cultural, institutional, and socioeconomic conditions. Understanding these contextual differences is critical for maximizing positive outcomes and avoiding unintended consequences.

The rapid diffusion of digital technologies also creates new forms of technological dependence. As societies increasingly rely on digital affordances to perform everyday activities, individuals may gradually lose skills that were previously essential. Simultaneously, digital technologies reshape the capabilities required to participate effectively in economic and social life. These dynamics raise important questions about digital literacy, inclusion, and the emergence of new forms of inequality.

5. Digital Innovation, Paradoxes, and Climate Adaptation

The transformative potential of digital technologies is accompanied by a series of important paradoxes. Technologies designed to augment human capabilities may also automate tasks previously performed by people. Digital platforms that increase openness and participation may simultaneously concentrate power and control. Innovations that generate value for users and communities may also create mechanisms through

which value is disproportionately appropriated by a limited number of actors.

These tensions are particularly visible in emerging technologies such as artificial intelligence and social media platforms. The same technologies that facilitate communication, learning, and problem-solving can also contribute to misinformation, manipulation, discrimination, and the amplification of existing inequalities. As digital systems become increasingly capable of influencing individual behaviors and societal outcomes, understanding these paradoxes becomes essential.

At the same time, digital innovation offers significant opportunities to address environmental challenges and support climate adaptation efforts. Many environmental problems are characterized by deficiencies in information, coordination, communication, trust, and access. Digital technologies can help address these gaps by improving observation, analysis, and decision-making capabilities (Matos, 2025).

The growing availability of connected sensors, data analytics, artificial intelligence, and cloud-based infrastructures enables organizations and communities to better understand environmental conditions, identify opportunities for intervention, and implement scalable responses. Emerging models such as Decarbonization-as-a-Service illustrate how digital innovations can support organizations in measuring emissions, identifying mitigation opportunities, and pursuing net-zero objectives. More broadly, digital technologies can contribute to climate adaptation by improving understanding, facilitating engagement among stakeholders, and enabling new forms of entrepreneurial action.

6. Conclusion

The rapid development of ubiquitous digital ecosystems is creating unprecedented levels of disruption across organizations, societies, and natural environments. While the performance benefits of digital innovation remain important, they are no longer sufficient as the primary measure of value.

Digital technologies increasingly influence socioeconomic and environmental outcomes, creating both opportunities and risks. Maximizing their contribution requires moving beyond narrow performance metrics toward a broader understanding of how innovations affect individuals, communities, institutions, and ecosystems. Rather than embracing or rejecting technological change, scholars and practitioners should develop

more holistic approaches that recognize the interconnected nature of organizational, social, and environmental systems.

The future of digital innovation lies not simply in improving performance, but in creating meaningful outcomes that contribute to a more equitable, resilient, and sustainable world.

References

- Baskerville R., Myers M. D., & Yoo Y. (2020). Digital first: The ontological reversal and new challenges for information systems research, *MIS Quarterly*, 44(2), pp. 509-523.
- George G., Merrill R. K., & Schillebeeckx S. J. D. (2021). Digital sustainability and entrepreneurship: How digital innovations are helping tackle sustainable development challenges, *Entrepreneurship Theory and Practice*, 45(5), pp. 999-1027.
- Matos M. (2025). Innovation drivers in climate adaptation, *Journal of Environmental Studies and Sciences*, 15, pp. 35-54.
- Melville N., Kraemer K., & Gurbaxani V. (2004). Information technology and organizational performance: An integrative model of IT business value, *MIS Quarterly*, 28(2), pp. 283-322.
- Yoo Y., Henfridsson O., & Lyytinen K. (2010), The new organizing logic of digital innovation: An agenda for information systems research, *Information Systems Research*, 21(4), pp. 724-735.