

Digital transformation and sustainability: embracing a “lights and shadows” perspective

Digital Transformation (DT) and its relationship with sustainability has become a central issue for several societal actors, such as governments [1], economic institutions [2], and consultancy companies [3]. Besides, also the recent management literature, has focused on systematically revising all the issues related to the intersection between DT and sustainability [4].

The latest literature about DT and its relationships with the three main dimensions of sustainability, namely economic, environmental, and societal [5], has mainly approached it focusing mainly on the positive consequences of DT, supporting the existence of positive cross-fertilization effects between DT and sustainability, and suggesting that DT can have a positive impact on all the sustainability dimensions [6]. Besides, the managerial literature related to the interplay between DT and organizational issues, such as structures and processes [7], work organization and employment [8], and business model [9], has also provided evidence of positive effects.

However, given the relevance that all the societal actors assign to DT for creating a more sustainable society, it is critical to not forget the possible “shadows” of DT and the adoption of related technologies in terms of sustainability-related outcomes. A limited number of studies address the issue of how DT and new digital technologies may hinder sustainability outcomes [10]. However, in each sustainability dimension, concurrent “lights and shadows” can be found, and they have to be managed carefully to reach a positive balance between benefits and drawbacks.

For instance, considering the economic dimension, digitalization is associated with increased productivity and entrepreneurship [11]; however, the other side of the coin is that DT, particularly the automation related to it, may lead to job displacement, particularly in industries heavily reliant on manual labor. However, research that has embraced a “lights and shadows” perspective on DT has come out with interesting results about mixed effects depending on the different types of new technologies introduced [12].

Some concurrent “lights and shadows” can also be spotted focusing on the environmental dimension. For example, the development of digital infrastructure has an environmental cost that seems to be outweighed by resource consumption reduction [13]. However, the environmental impact of DT has to be further investigated, considering the increasing environmental costs of DT-related wastes [14] and pollution-related behaviors [15].

Concerning the social dimension of sustainability, DT provides access to a wealth of information and educational resources, and it contributes to democratizing knowledge, enabling learning opportunities for people worldwide. Conversely, it raises the issue of the digital divide or the gap between those who have access to digital technologies and those who do not. This can exacerbate existing societal inequalities, limiting opportunities for those without access to the internet or digital devices, and there is a recent call to increase academic research on this issue [16].

The present track claims for a more holistic approach, or what we call a “lights and shadows” perspective, to DT to better analyze its consequences in terms of economic, environmental, and societal sustainability. Therefore, this track wants to attract both advanced work-in-progress and full research papers that examine the positive, negative, and particularly mixed effects of DT over the three dimensions of sustainability.

Track main topics

The track welcomes both theoretical and empirical advanced work-in-progress and full research papers based on quantitative, qualitative, or mixed methods. Topics of potential interest encompass, though are not restricted to:

- What are DT's positive, negative, or controversial impacts on economic, environmental, and societal sustainability?

The XXI Conference of the Italian Chapter of AIS

- What comprehensive and holistic assessment framework can be developed to evaluate the overall sustainability impact of DT initiatives, considering the interplay between economic, environmental, and societal dimensions?
- What managerial practices can be deployed to foster the positive effects and counterbalance the possible negative impact of DT on sustainability?
- Could the differences in DT level and digital infrastructure widen the economic, environmental, or social gaps across different countries or regions?
- How does DT contribute to both increased entrepreneurship and potential job displacement and what factors influence the balance between these two outcomes in different industries?
- How does the adoption of DT contribute to the resilience of organizations, and what are the potential vulnerabilities that organizations may face during the process?
- How can organizations effectively manage the environmental impact of DT-related (e.g., wastes and pollution-related behaviors), and what best practices can be established to minimize negative consequences?
- What strategies and interventions can be implemented to bridge the digital divide and ensure that the benefits of DT in terms of access to information and education are more inclusive?
- To what extent does digital literacy impact the ability of individuals to participate in and benefit from the digital economy, and how can initiatives be developed to enhance digital inclusivity?
- What are the possible consequences of DT on sustainable societal growth (namely on interpersonal relations, gender inclusiveness, institutions, culture, attitudes, etc.)? Could the DT foster negative social dynamics (e.g., polarization, echo chambers)?
- How does DT have to be managed to support more sustainable development?

References

1. European Commission: A Green and Digital Transformation of the EU. (2021).
2. World Bank: Green Digital Transformation: How to Sustainably Close the Digital Divide and Harness Digital Tools for Climate Action. (2023).
3. Majster, M., Samyn, J., Debray, V.: Digital & Sustainability: the new convergence. Arthur D. Little (2023).
4. Guandalini, I.: Sustainability through digital transformation: A systematic literature review for research guidance. *Journal of Business Research*. 148, 456–471 (2022). <https://doi.org/10.1016/j.jbusres.2022.05.003>.
5. Krajnc, D., Glavič, P.: How to compare companies on relevant dimensions of sustainability. *Ecological Economics*. 55, 551–563 (2005). <https://doi.org/10.1016/j.ecolecon.2004.12.011>.
6. Brenner, B., Hartl, B.: The perceived relationship between digitalization and ecological, economic, and social sustainability. *Journal of Cleaner Production*. 315, 128128 (2021). <https://doi.org/10.1016/j.jclepro.2021.128128>.
7. Kretschmer, T., Khashabi, P.: Digital Transformation and Organization Design: An Integrated Approach. *California Management Review*. 62, 86–104 (2020). <https://doi.org/10.1177/0008125620940296>.
8. Braña, F.-J.: A fourth industrial revolution? Digital transformation, labor and work organization: a view from Spain. *J. Ind. Bus. Econ.* 46, 415–430 (2019). <https://doi.org/10.1007/s40812-019-00122-0>.
9. Broccardo, L., Zicari, A., Jabeen, F., Bhatti, Z.A.: How digitalization supports a sustainable business model: A literature review. *Technological Forecasting and Social Change*. 187, 122146 (2023). <https://doi.org/10.1016/j.techfore.2022.122146>.
10. Niehoff, S.: Aligning digitalisation and sustainable development? Evidence from the analysis of worldviews in sustainability reports. *Bus Strat Env.* 31, 2546–2567 (2022). <https://doi.org/10.1002/bse.3043>.
11. Ghazy, N., Ghoneim, H., Lang, G.: Entrepreneurship, productivity and digitalization: Evidence from the EU. *Technology in Society*. 70, 102052 (2022). <https://doi.org/10.1016/j.techsoc.2022.102052>.
12. Fossen, F.M., Sorgner, A.: New digital technologies and heterogeneous wage and employment dynamics in the United States: Evidence from individual-level data. *Technological Forecasting and Social Change*. 175, 121381 (2022). <https://doi.org/10.1016/j.techfore.2021.121381>.
13. Kopp, T., Lange, S.: The Climate Effect of Digitalization in Production and Consumption in OECD Countries. In: *CEUR Workshop Proceedings*. pp. 1–11 (2019).
14. Jabbour, C.J.C., Colasante, A., D’Adamo, I., Rosa, P., Sassanelli, C.: Comprehending e-waste limited collection and recycling issues in Europe: A comparison of causes. *Journal of Cleaner Production*. 427, 139257 (2023). <https://doi.org/10.1016/j.jclepro.2023.139257>.
15. Muñoz-Villamizar, A., Velázquez-Martínez, J.C., Haro, P., Ferrer, A., Mariño, R.: The environmental impact of fast shipping ecommerce in inbound logistics operations: A case study in Mexico. *Journal of Cleaner Production*. 283, 125400 (2021). <https://doi.org/10.1016/j.jclepro.2020.125400>.
16. Lythreathis, S., Singh, S.K., El-Kassar, A.-N.: The digital divide: A review and future research agenda. *Technological Forecasting and Social Change*. 175, 121359 (2022). <https://doi.org/10.1016/j.techfore.2021.121359>.

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Short bio	Paul Pierce is Senior Lecturer at the Department of Informatics of the Lund University. His research is focused around digitalization, or more accurately on ICTs as enablers of success or the catalysts to even faster failures. He tries to understand this by investigating how ICTs are deployed within the field of Smart Cities. Another avenue is understanding digitalization within our society and how ICTs as well as the digitalization of our society at large will affect both the private citizen and the corporations. He belongs to the Future Light research project which is focused on how we can leverage Smart City initiatives in order to create a better grid system, be that for transportation, lighting, waste water treatment or just better communication.
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