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Abstract: *In this issue, we examine the theme of 'Transformation and Technology', exploring how technological innovations are permeating and radically reshaping all areas of life. This editorial introduces a range of articles that examine both the opportunities and challenges of this ongoing transformation. From digitalization in the workplace and artificial intelligence in healthcare, the contributions illustrate how new technologies are driving societal change and how businesses, institutions, and individuals can actively shape this evolution. The aim of this series is to provide a comprehensive overview of current developments and debates, discussing diverse perspectives and approaches essential for building a forward-thinking society.*

Keywords: Digital transformation, human-machine integration, orgachines, technology, transformation.

1. Digital transformation and 'Orgachines'

Digital transformation has become a central concern for decision-makers across organizational landscapes, as rapid technological advancements continue to redefine industries, influence strategic priorities, and transform everyday business operations (Tabrizi et al., 2019; Konlechner et al. 2018). Over the past two decades, technology has evolved from a supportive function to a core driver of business and organizational innovation. This technological shift has facilitated the digitalization of products and processes, giving rise to new business models, value propositions, and organizational forms that are reshaping traditional corporate identities (Wessel et al., 2021; Yoo et al., 2010). Thus, digital transformation is no longer a singular process but an ongoing journey that demands organizations continually to adapt, develop new capabilities, re-evaluate structures, and innovate in response to an evolving technological environment.

Among these technological advancements, artificial intelligence (AI) has emerged as a transformative tool within organizational contexts that is increasingly used to support or even substitute human decision-making (Hanelt et al., 2020; Meske et al., 2020; Vial, 2019). AI algorithms are integrated into a variety of organizational domains, including recruitment, financial transactions, logistics, forecasting, and strategic planning. The application of AI is changing various organizational processes, including the identification of qualified job applicants, the management of large-scale financial operations, the anticipation of market trends, and the optimization of complex logistics (Kellogg et al., 2020; von Krogh, 2018). As organizations become more reliant on these technologies, the integration of human and machine decision-making capabilities has resulted in a more complex and interwoven dynamic, wherein the boundaries between human cognition and machine intelligence are becoming increasingly blurred.

This blurring of boundaries signals the advent of "hybrid entities" within organizations, which are structures and processes that integrate human expertise and technological precision into a unified operational framework. To elucidate this transition, this special issue introduces the concept of "Orgachines", a metaphorical term that describes the profound integration of human and technological capabilities within organizational structures. Orgachines reflect a novel paradigm of collaboration, wherein human cognition and AI-driven machine intelligence interact symbiotically to enhance productivity, decision-making, and innovation. The concept of "Orgachines" signals the transformative impact of digital transformation on organizational behavior, encouraging scholars to investigate how human and technological elements are jointly influencing organizational outcomes.

2. Chances and challenges of human-machine integration

The pervasive integration of AI and digital technologies is having a significant impact on critical organizational activities, including problem-solving, decision-making, operational routines, and the pursuit of innovation. These activities form the core of organizational functioning, allowing businesses to respond effectively to changes in their environment, to anticipate future challenges, and to maintain competitive advantage (Brusoni, 2005; Miron-Spektor et al., 2018; Nickerson & Zenger, 2004). In predictable and structured contexts, AI has the potential to facilitate more accurate decision-making (Berman, 2012; Glikson & Woolley, 2020). However, reliance on AI also introduces certain constraints, which limit the freedom and flexibility often associated with human intuition, creativity, and improvisation. As AI becomes more deeply embedded in organizational decision-making processes, the human capacity for tolerance, intuition, and adaptive problem-solving may become marginalized, potentially reducing the organization's ability to react flexibly in uncertain or novel situations (Kellogg et al., 2020).

The integration of human and machine intelligence poses significant challenges that require careful consideration. The concurrent deployment of human decision-making, predictive analytics, and data-driven algorithms necessitates meticulous supervision to forestall unintended consequences, such as the reinforcement of existing biases or the undermining of human autonomy (Zuboff, 2015). As machines become more prominent in decision-making roles, issues related to governance, accountability, transparency, and fairness are becoming a central focus of both organizational and academic discourse. The increased involvement of machines in critical processes underscores the necessity for an ethical framework that governs the implementation of AI in organizational decision-making, with the aim of averting potential issues and fostering sustainable human-machine collaboration (Martin, 2019).

The existing literature on heuristics (Loock & Hinnen, 2015) and rule-based decision-making (Bingham & Eisenhardt, 2011) has extensively examined both individual and organizational approaches to effective decision-making. However, a notable gap in understanding remains with regard to the interaction of these frameworks with the increasingly algorithm-driven decisions integrated within organizational IT systems. The potential of AI to foster innovation and the manner in which established organizational routines should adapt in the context of AI-driven decision-making remains an open question that has yet to be sufficiently explored (Haefner et al., 2021). Similarly, the ways in which novel digital technologies are reshaping organizational structures and decision-making processes are in the early stages of academic inquiry, underscoring the need for further investigation into the specific implications of AI on organizational structures and processes (Murray et al., 2021).

3. Purpose and contribution of this issue

This special issue seeks to explore the evolving landscape of "Orgachines" within the broader context of digital transformation. By examining the integration of human cognition and machine intelligence, the articles in this issue aim to shed light on how this convergence is reshaping organizational structures, decision-making processes, and human-machine collaboration. The advancement and proliferation of "Orgachines" depend on organizations' ability to strategically integrate AI and related technologies to create a balanced, complementary relationship between human and machine capabilities. This balance calls for the development of strategies that enable innovation while ensuring that technological advancements remain aligned with organizational goals and human-centered values. A successful integration of human expertise and machine intelligence necessitates a nuanced approach that respects the strengths and limitations of both parties, fostering an environment in which collaboration, transparency, and accountability are prioritized.

In light of the pressing challenges and opportunities presented by digital transformation, this special issue aims to contribute to the ongoing conversation on Orgachines and the convergence of human and machine intelligence. This issue will investigate how digital transformation and AI are reshaping the foundational aspects of organizations, from structures and routines to problem-solving and innovation processes. By presenting a range of perspectives on the integration of AI and organizational activities, the articles within this issue seek to advance understanding of the complex dynamics between human and machine intelligence in a rapidly evolving digital landscape.In light of the significant challenges and opportunities presented by digital transformation and the rapid evolution of digital technologies, this special issue makes a

contribution to the ongoing conversation on Orgachines and the convergence of human and machine intelligence. By examining the ways in which digital transformation and AI are influencing the fundamental structures and processes of organizations, including structures and routines, problem-solving, and innovation, the articles in this issue contribute to our understanding of the complex dynamics between human and machine intelligence within an increasingly digital organizational landscape.

In their paper, "*How Does Artificial Intelligence Promote Change and Stability of Organizational Routines? The Role of Automation and Augmentation*", Christian Mahringer, Anja Danner-Schröder, Gordon Müller-Seitz, and Birgit Renzl elucidate the role of AI in connection with change and stability within organizations. From the perspective of organizational routines, the authors posit that AI can facilitate various mechanisms that promote change or stability in these routines. Some of these mechanisms are associated with automation, while others are linked to augmentation. With regard to the promotion of changes in organizational routines, Mahringer and colleagues propose that AI facilitates the mechanisms of capacitating and reframing actions. In contrast, the mechanisms of shielding and adhering are conducive to stability. The argument is made that these mechanisms can occur simultaneously. In conclusion, the combination of automation and augmentation results in a duality rather than a dualism.

The article "*From Half-Truths to Situated Truths: Exploring Situatedness in Human-AI Collaborative Decision-Making*" by Bijona Troqe, Nicolette Lakemond, and Gunnar Holmberg examines the role of AI in decision-making processes within a medical context. The authors underscore the situated nature of decision-making within organizational contexts, drawing upon the example of AI-assisted breast cancer diagnosis scenarios at St. Göran's hospital in Stockholm, Sweden. As Troqe and colleagues elaborate, breast cancer processes are in effect reliant on incomplete information; an observation they label "half-truths." The advent of artificial intelligence has led to a shift in the equation, resulting in the emergence of "situated truths," as posited by the authors. This situatedness can be characterized by three key features: framing, sensemaking, and temporality. The concept of "framing" pertains to the collaborative decision-making process between radiologists and an algorithm trained to detect cancer. The temporal aspect becomes

evident when it is observed that the algorithm initially proposes suggestions, and it is only subsequently that joint decisions are made. Ultimately, the concept of shared sensemaking underscores the intricate interconnection between the radiologists and the algorithm. As time progresses, the algorithmic capabilities continue to evolve, facilitating enhanced interactions, joint discussions, and informed decision-making between radiologists and the algorithm. In light of these three pivotal elements, the prospect of personalized medicine is becoming increasingly feasible, giving rise to a novel decision-making terrain between humans, artificial intelligence, and the specific context.

The article "*Doing Business in the Digital Age: Towards an Adjusted Resource-Based Model*" by Johann Valentowitsch, Fabian Kianpour, Theresa Fritz, and Wolfgang Burr examines the manner in which contemporary companies engage in business activities and challenge the fundamental structures of industries and workflows. The authors posit that the advent of digitalization has rendered the traditional resource-based theory obsolete, necessitating an adaptation of the very tenets of the theory itself. A review of the literature reveals that the adoption of new IT technologies and the use of data present challenges to the traditional conceptualization of the resource-based view. The paper thus aims to explore potential avenues for further developing the resource-based framework in the context of digital transformation. Accordingly, the authors put forth a revised modeling framework that no longer prioritizes the attainment of a long-term sustainable competitive advantage. Instead, it emphasizes the constant adaptation and modification of resource configurations to maintain a short-term competitive edge. The authors contend that this comprehensive reframing of the resource-based explanatory model is imperative to more accurately reflecting the contemporary reality of the digital age.

In their article "*Exploring Organizational 'ImperfAction': Understanding Practice Changes and Tensions in the Course of Digital Transformation*", Natalie Mahlert and Martin Gersch introduce a novel construct, "ImperfAction," with the aim of enhancing the comprehension of change processes. The advent of digital transformation (DT) has resulted in significant alterations to organizational structures, encompassing alterations to strategic orientation, technological infrastructure, operational procedures, and organi-

zational culture. This prompts a reevaluation of established practices and the emergence of new or modified practices, which in turn drive digital transformation (DT). The extant literature underscores the pivotal role of tensions as catalysts for organizational practice changes. However, the authors posit that there is a paucity of nuanced understanding of the practice alterations and their driving forces within the context of digital transformation. In order to gain insight into the ways in which digital transformation affects organizational practices, and to identify the specific forces that drive these changes, the authors draw on practice theory and the concept of tensions. The authors introduce "ImperfAction," a concept signifying how performative imperfections drive practice changes during DT, based on a qualitative interview pre-study and an in-depth case study. The authors contribute to the discourse on DT by shedding light on the nuanced roles that tensions and "imperfAction" play in reconfiguring organizational practices. This advances our understanding of the multifaceted nature of DT.

The paper "*Digital orbit of collective action: switching between inclusive and exclusive modes of ICT in FridaysForFuture*" examines the role of Information and Communication Technologies (ICTs) in collective action, distinguishing between ICT-supported and ICT-based forms. ICT-supported forms enhance accessibility and scale but do not fundamentally alter organizational structures. In contrast, ICT-based forms significantly transform how movements operate. Case studies such as the Arab Spring and the anti-WTO protests in Seattle illustrate how the internet and social media facilitate the coordination of large-scale protests. The research highlights the paradoxical dynamics within ICT-based organizing, which combines openness and accessibility with necessary control mechanisms. This tension creates challenges for social movements, including information overload, low participation rates, and "slacktivism." Furthermore, ICTs can complicate decision-making and benefit not only movements but also their opponents. Despite these challenges, ICT-based forms have the potential to fundamentally alter the organization and execution of collective actions, calling for new theoretical frameworks to understand these transformative effects.

The paper "*Types of human-AI role development - Benefits, harms and risks of AI-based assistance from the perspective of professionals in radiology*" by Uta Wilkens, Valentin Langholf and M. Dewey examines how classic work roles

change when AI is introduced. They were studying radiology work in the Charité as an use case for AI-supported solutions through analyzing survey data and interviews. The data led to a comprehensive model differentiating two typical human-AI role concepts: AI-embracing human-AI role concept and AI-ambivalent human-AI role concept. Interestingly, both human-AI concepts are based on the same set of antecedents albeit with varying degrees of intensity, such as overall attribution of AI, AI literacy, former experiences with AI and perceived technological impact on change of the overall job design. AI-ambivalent human-AI role concepts lead to role taking against AI, which means that AI implementation is undermined and AI is not enacted in the work process. In contrast, AI-embracing human-AI role concepts strengthen role making with AI, which means that AI implementation is incorporated in the role concept and AI is enacted in the work process.

References

Berman, S. J. (2012). Digital transformation: Opportunities to create new business models. Strategy & Leadership, 40(2), 16–24.

Bingham, C. B., & Eisenhardt, K. M. (2011). Rational heuristics: The 'simple rules' that strategists learn from process experience. Strategic Management Journal, 32(13), 1437–1464.

Brusoni, S. (2005). The limits to specialization: Problem solving and coordination in 'modular networks. Organization Studies, 26(12), 1885–1907.

Glikson, E., & Woolley, A. (2020). Human trust in artificial intelligence: Review of empirical research. Academy of Management Annals, 14 (2), 627–660.

Haefner, N., Wincent, J., Parida, V., & Gassmann, O. (2021). Artificial intelligence and innovation management: A review, framework, and research agenda. Technological Forecasting and Social Change, 162, 120392.

Hanelt, A., Bohnsack, R., Marz, D., & Antunes, C. (2020). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. Journal of Management Studies, 58(5), 1159–1197.

Kellogg, K. C., Valentine, M. A., & Christin, A. (2020). Algorithms at work: The new contested terrain of control. Academy of Management Annals, 14(1), 366–410.

Konlechner, S., Müller, B., & Güttel, W. H. (2018). A dynamic capabilities perspective

on managing technological change: A review, framework and research agenda. International Journal of Technology Management, 76(3-4), 188–213.

Loock, M., & Hinnen, G. (2015). Heuristics in organizations: A review and a research agenda. Journal of Business Research, 68(9), 2027–2036.

Martin, K. (2019). Ethical implications and accountability of algorithms. Journal of Business Ethics, 160(4), 835–850.

Meske, C., Kissmer, T., & Stieglitz, S. (2020). Bridging formal barriers in digital work environments–Investigating technology-enabled interactions across organizational hierarchies. Telematics and Informatics, 48, 101342.

Miron-Spektor, E., Ingram, A., Keller, J., Smith, W. K., & Lewis, M. W. (2018). Microfoundations of organizational paradox: The problem is how we think about the problem. Academy of Management Journal, 61(1), 26–45.

Murray, A., Rhymer, J., & Sirmon, D. (2021). Humans and technology: Forms of conjoined agency in organizations. Academy of Management Review, 46(3), 552–571.

Nickerson, J. A., & Zenger, T. R. (2004). A knowledge-based theory of the firm—The problem-solving perspective. Organization Science, 15(6), 617–632.

Tabrizi, B., Lam, E., Girard, K., & Irvin, V. (2019). Digital transformation is not about technology. Harvard Business Review, 13, 1–6.

Vial, G. (2019): Understanding digital transformation: A review and a research agenda. Journal of Strategic Information Systems, 28(2), 118–144.

von Krogh, G. (2018). Artificial intelligence in organizations: New opportunities for phenomenon-based theorizing. Academy of Management Perspectives, 4, 404–409.

Wessel, L., Baiyere, A., Ologeanu-Taddei, R., Cha, J., & Blegind-Jensen, T. (2021). Unpacking the difference between digital transformation and IT-enabled organizational transformation. Journal of the Association for Information Systems, 22(1), 102–129.

Yoo, Y., Henfridsson, O. & Lyytinen, K. (2010). The new organizing logic of digital innovation: An agenda for information systems research. Information Systems Research, 21, 724–735.

Zuboff, S. (2015). Big other: Surveillance capitalism and the prospects of an information civilization. Journal of Information Technology, 30(1), 75–89.

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