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Managing digital transformation (revisited): some reflections

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Abstract

The present chapter situates within the burgeoning debate about the role of innovation in societal progress, particularly on the intricate and multifaced relationship between workers and technology led by the digitalization of work. The digital area involves revisiting work and employment with job sectors using technology as the means for work, businesses, and organizations realizing ventures through technology. Moreover, digitalization is not only reimagining how work is performed (e.g., remote work, augmentation, advanced automation, collaborative robotics, machine learning, artificial intelligence, etc.) but also leading to revisiting workers' relationships with work, organizations, and society. The disparate aspects of the digitalization of work echo the imperative for reflections on its definitions and implications. In parallel with the revisitation of work and employment in the

digital era, the chapter revisits the role of human resources management. It proposes a series of reflections on what it means and what it takes to manage digital transformation. It does so by assuming a human-centric perspective that emphasizes the centrality of humans (workers) in digital transformation. Firstly, the chapter argues that the role of human resources in change management is the nexus between workers and organizations. It then discusses the role of leaders in driving this revolution and the role of organizational culture as a means for supporting workplace transformation. It concludes by reflecting on talent acquisition and workers' training and education as fundamental processes to develop the required skills in the workforce.

Introduction

The digital transformation or the digitalization of the workplace¹ has a strong grip among scholars and practitioners. Unsurprisingly, interest in the idea and possibilities of the digital transformation of the workplace has increased significantly. This is due to the idea that the potential of workplace digitalization escalates across multiple levels, i.e., from the organization to the individual employee, characterized by low costs, increased resources, and a re-framing of work activities. This idea brings a broad rhetoric on the potential capacities of technologies to create efficient ways of working and organizing in which discourses around the digitalization of the workplace are marked by ideas of new products, services, new forms of work, and new jobs (Adner et al., 2019; Trittin-Ulbrich et al., 2021).

However, this ever-extending view of the digitalization of the workplace, which is apt to identify its positive sides, reminds us of a series of unanswered questions on the centrality of humans in the workplace beyond business models. The digitalization of the workplace has been occurring in private and public organizations and in small to large enterprises, which are inherently characterized by different personnel and different job-related tasks (Karsten, 2021). Without exception, this implies that the digitalization of the workplace also presents potential problematic or unexpected effects for individuals and organizations. For example, professionals might be concerned about the actual benefits of digitalization, or others might misunderstand the inclusion of new technologies in the workplace, which can ultimately generate resistance. Contrary to a more optimistic rhetoric apt to celebrate the

¹ The present intellectual work is the result of the research activities realized by a small group of early-career Italian scholars in organizational psychology. The group has worked over the last two years on the topic of Industry 4.0/Industry 5.0 in order to tackle HR managers with indications on how to manage digital innovation. More details about the research activities can be provided by the authors upon request.

positive sides of digitalization, a human-centric approach to the phenomenon requires us to enquire about potential negative implications to support organizations in this transition (EC, 2021; Leng et al., 2022). Ultimately, the surge of interest in the digitalization of the workplace also provides the impetus for understanding how we can realize a human-centric approach that can guarantee the centrality of the individual in the ever-expanding transition to the work of the future.

This chapter aims to contribute to a human-centric digital transformation by shedding new light on digital innovation management. Notably, with this chapter, we aim to explore what it means and what it takes *to humanize* digital transformation from one specific angle, namely, human resources (HR) management, and specifically to examine the possibilities of managing digital transformation while caring for the centrality of the individual. To reach our overreaching aim, we engaged in an intellectual endeavor that combines the literature with the authors' knowledge and research experience². Indeed, the present chapter aimed to provide a conceptual framework and an operational model capable of guiding both researchers and practitioners in the delicate transition to digital HR management processes. For this reason, the privileged standpoint of HR managers has been adopted, given the key role they could play within organizations in fostering a human-centric approach to digital innovation. HR management represents how organizations strategically operate to coordinate and support people within the organizations. Beyond business models and profit-centric policies that guide a particular organization, HR management relates to how people live within the organization and ultimately respond to organizational policies and changes, e.g., workplace digitalization. When considering the impetus for a human-centric approach, we need to refer to how people can be treated within the transition. With this objective in mind, it becomes possible to identify the elements and the ways in which HR professionals can protect, value, and sustain employees. Ultimately, we propose a possible revisitation of HR management in the digital workplace following the paradigm of human centrality (see EC, 2021; Leng et al., 2022; Du Plooy et al., 2024).

In the rest of the chapter, we proceed as follows. We begin by presenting an overview of the current trends in the digitalization of the workplace. This background helps us to frame

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the context of the present chapter while providing the impetus for understanding the role of HR management. Second, we present five specific elements and advance a broad theoretical model for realising a human-centric approach. We finish the chapter by presenting implications to inspire research and practice.

Digital transformation of the workplace

Implementing new digital technologies in work environments, broadly identified as the digital transformation of the workplace, relates to all the different levels of an organization (e.g., task, individual, and organizational level) and runs parallel to the digital transformation of society in general. This phenomenon extends beyond the boundaries of a single organization and reflects a broader societal shift towards an increasingly digital world. This alignment with societal digital trends underscores the interconnected nature of technological progress and its profound impact on work structures, employee behavior, and organizational cultures. Digital transformation is therefore not just an isolated endeavor of a particular organization but a reflection of a larger, ongoing evolution in how society operates and interacts with technology. As organizations integrate advanced technologies into their workflows, this has an impact at all level — from individual tasks to broader organizational strategies. Snow et al. (2017) argued that digital organizations can be effectively designed using “actor-oriented” principles, resulting in highly engaged and productive workplaces. This approach is particularly relevant as this transformation encompasses changes in organizational structures, informal work relationships, culture, and managerial leadership and triggers a paradigm shift in workplace behavior management. Digitalization has significantly impacted organizational behavior, leading to a paradigm shift in workplace management that has both positive and negative effects on employee behavior (Kaur, 2021). Among the positive effects, we can mention: enhanced productivity and efficiency, as ICTs are known to streamline processes and improve performance outcomes (Annapurna et al., 2019); improved job satisfaction and reduced technostress as digital leadership and the adoption of digital tools in the workplace can positively affect employee creativity and job crafting, leading to higher levels of job satisfaction (Zhu et al., 2022;) as well as promoting positive work experiences and well-being through an effective organizational safety culture (Brivio, 2018), and increased autonomy. This allows employees greater control over their work and potentially improves their work experience and outcomes (Cijan et al., 2019). On the other hand, among the adverse effects of digitalization, we can find: technostress and well-being issues as a result of constant connectivity and the pressure to keep up with rapidly

changing technologies (Brivio et al., 2018); reduced job resources, although health-promoting leadership can help mitigate these risks, the overall impact on stress and resource availability can be significant (Bregenzer & Jimenez, 2021); and instability and economic risks, as the introduction of digital technologies, especially those related to artificial intelligence and machine learning, can lead to instability in labour relations and new social, economic, and psychological risks in the workplace, which may negatively affect employees' health and well-being (Morandini et al., 2023). The challenges related to digitalization require organizations to follow a multi-level approach, focusing on individual, group, and organizational factors in order to adapt to technological change and maintain competitiveness (Trenerry et al., 2021). Specifically, this involves individual factors such as technology adoption, attitudes, skills, workplace resilience, well-being, group factors like communication and collaboration, and organizational factors like leadership and culture. These changes lead to increased competition, cooperation, and pressure on organizations to develop new capabilities and transform their cultures, in parallel with the digital transformation of society in general.

In the workplace, digitalization appears to be a paradigmatic aspect of *modern working cultures*. This shift is marked by the transition to more flexible, agile work environments and the massive use of smart technologies. As a result, traditional work models are rapidly being replaced by innovative approaches like remote working and online meetings, redefining the workspace concept (Kugler, 2022). The digitization of procedures has streamlined operations, enabling efficiency and scalability that were previously unattainable. Furthermore, technology is no longer just a tool but has evolved into a 'co-worker', with AI and machine learning becoming an integral part of many tasks and processes (Morandini et al., 2023). This digital metamorphosis has led to a profound transformation in work culture, emphasizing flexibility, connectivity, and continuous adaptation. Employees now navigate a work environment where boundaries are fluid, collaboration is virtual, and learning is continuous. This evolution underscores a broader societal shift towards digital integration, significantly altering how we understand and engage with our work.

The paradigmatic aspect of digitalization derives from this series of evolutionary changes in the world of work and serves as a space for the renewal of the lived experience of working. This paradigm shift in the workplace necessitates reevaluating how work is experienced and organized, emphasizing the role and importance of HR management. In this new digital landscape, HR professionals are tasked with navigating the complexity of a

technology-driven work environment. They play a crucial role in aligning organizational strategies with the evolving needs of a digitally adept workforce. This includes managing the logistical aspects of remote and flexible work arrangements and fostering a culture that embraces change and innovation. HR's role extends to ensuring that employees are equipped with the necessary digital skills and competencies, while supporting the psychological and ergonomic challenges posed by the digital work environment. The strategic contribution of HR management is critical to creating a work culture that is adaptive, resilient, and responsive to the changing dynamics of the digital era.

The digital transformation of work constitutes an arena where new experiences and working practices may arise out of digitalization's managing and organizing work. The role of HR management in this transformation is pivotal, as it lays the groundwork for how these changes are experienced and lived by workers. They are not just administrators of change but architects of a new work culture that intertwines technology with human-centric values. By effectively managing labour transformations, HR professionals help shape a work environment that is adaptive, innovative, and supportive of employee well-being. This could be done by introducing hybrid work environments and smart process automation (Rydvalová et al., 2022) and by incorporating multiple rationalities related to both internal and external stakeholders, thus achieving reconstructive reflexivity in the process (Fregnan et al., 2020). Their strategic decisions and policies set the stage for how digital tools are integrated into daily work practices, influencing everything from communication and collaboration to personal development and job satisfaction. Ultimately, HR's management and organization of digital transformation are the antecedents that define the quality of workers' experiences in this new digital era and ensures that the evolution of work remains both technologically advanced and deeply human.

Exploring Human Resources management within digital transformation

To address the role of managing and organizing digital transformation, we look in more detail at the features of HR management that can benefit the lived experience of workers while helping to pursue a human-centric approach to digitalization. In doing this, we take the license to explore HR by referring to a) a humanistic conception of the role of work and b) our previous engagements with HR managers in separate research studies. Notably, we begin our conceptualization of the role of HR managers with the call for a human-centric approach to technological innovations in the workplace as recently proposed by scholars

and policymakers (see EC, 2021; Leng et al., 2022). Although the potential role of HR management in infusing humanistic values in the workplace is an established topic within the academic literature, we wish to connect this research tradition with the current institutional establishment for potential practical implications. As later discussed, the European Commission (EC) has begun to conceptualise a novel idea of the Industry 4.0 revolution, which envisions a new step towards a more humanistic, resilient, and sustainable approach to technological advancement³. Under the label of Industry 5.0, this institutional effort invites scholars and practitioners to imagine alternatives to the digitalization of the workplace by innovating for better jobs.

With this inspiration, we continue our discussion on the role of HR managers by sharing and discussing our previous experience as researchers and psychologists working with HR managers and their perspectives on digital and technological innovations in the workplace. Over the past two years, we have jointly conducted a large qualitative study in Italy in which HR managers were invited to present and discuss their takes on the digitalization of the workplace. Human resources managers were considered at the nexus between organizational investments in innovation processes and direct recipients of such innovations, i.e., employees. Considering how HR managers engage with this medium role and their direct involvement in the digitalization process, we believe their perspectives can offer a thorough understanding of how such innovations can be realized by explicitly maintaining a human-centered focus.

Human-centric approach to the digital transformation

As discussed, the wish to contribute to an understanding of the human-centric approach to digital transformation follows two intertwined elements, i.e., the ideal of human-centricity brought by Industry 5.0 and the core role of HR in managing the transitions and establishing digital innovations in the workplace. On the surface, Industry 5.0 foresees a shift from the paradigm of economic growth to humanistic values, emphasising the worker's well-being in parallel to digital innovation. In the organizational setting, HR managers are responsible for this kind of transition, by taking care of a) the way work can be organized in view of the new changes, b) the training and development of the human resources who are primary targets

³ It is interesting to remind to initiatives promoted by the European Commission for advancing a way forward to Industry 5.0. This is the case of the community of practice in which scholars and practitioners from disparate disciplines and sectors are collaborating for envisioning the future of work under paradigm of Industry 5.0 (see EC, 2022, Industry 5.0 Community of Practice – CoP 5.0).

of the transitions, and c) the support of a flourishing transition that should focus on the human aspects beyond productivity and proficiency.

In the following subsections, we outline the core areas that we have identified through a comprehensive literature analysis and an in-depth understanding of the context related to workplace digitalization. Specifically, adopting a bottom-up approach, these elements were initially derived from direct knowledge of diverse human resource management practices that Italian companies are adopting in the transition phases towards Industry 4.0. Subsequently, these elements were brought into dialogue with the relevant literature in order to gain a more nuanced perspective on the intersection between practical HR strategies observed in the Italian context and the broader theoretical framework outlined in the literature. Beyond general aspects of how HR managers define and view technological progress and innovation, we focused on how they can facilitate the transition while nurturing the human side. We identified a) change management as the main component of an innovation process in which an organization aims to care for the workers' well-being. This is done by b) the support of the role of leadership in guiding a democratic and sustainable change. This implies a change in c) the organizational culture, where the paradigm of economic growth is replaced by that of human-centricity. In turn, HR managers have to operate at the level of d) assessing and recruiting the workforce, which reminds us that the digitalization of the workplace implies different forms of organizing. Lastly, e) continuous education and training appear to be a concrete implementation of the contribution that HR managers can give to a human-centric approach to the digitalization of the workplace by maintaining workers' autonomy, competence, and sense of belonging.

The present diagnosis is both descriptive and prescriptive. On the one hand, the identified areas describe the themes that emerged from our work. On the other hand, our depiction of how HR managers can contribute to the digitalization of the workplace is prescriptive, as we are limited to those elements that can be linked to a human-centric model. However, combining these elements can represent an initial means to humanize the digitalization of the workplace, which can foster imagination for research and practice on how the near future of work can be. Ultimately, we consider these elements as interconnected and interdependent, so that we can attempt to contribute to understanding the role of HR in a human-centric digitalization of the workplace via a five-element theoretical model depicted in Figure 1. Moreover, our attempt offers indications for the practice, to realize a human-centric approach in the workplace.

INSERT FIGURE 1 HERE

Change Management

Digitalization of the workplace is a matter of change. As highlighted by Schwab (2016), the disruption of technology is reshaping every business sector, aiming to improve employees' work quality and increase productivity. To effectively introduce and implement new systems, organizations need targeted interventions aimed at managing the change process and promoting employees' acceptance and compliance (Cohen, 2005). A common challenge with organizational transformations arises when those implementing a new system perceive it as a minor change, even though it represents a significant change for the employees who will use it. This often leads to focusing mainly on the technological aspects and neglecting the human factor. In the change management literature, the active participation of individuals in the change process, supported by effective communication and training, is seen as the "golden rule" for the successful implementation of change. Introducing a new technology in an organization requires a comprehensive flow of information explaining the reasons for the change, how it will be introduced, and its impact on employees to involve and sensitize them.

As mentioned above, new technologies bring many benefits. However, workers may also perceive certain drawbacks, such as job insecurity, fear of the unknown, a feeling of being controlled, and a lack of trust in interacting with machines and robots (Cascio & Montealegre, 2016). These perceived disadvantages and risks can contribute to increased resistance to change among workers, which is often the main obstacle to successfully implementing new technologies, as confirmed by the HR managers we consulted. Indeed, many of them described resistance from employees when new tools or working ways were proposed. Various models have been devised to aid in understanding technology acceptance and guide the development and implementation of new technological solutions. The Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh et al., 2003), for example, describes four constructs that influence the acceptance of new technologies and usage behaviors: performance expectancy (the belief that using the technology will enhance job performance), effort expectancy (the perception that using the technology is straightforward and requires minimal effort), social influence (the belief that significant others endorse the use of the new technology), and enabling conditions (the presence of organizational support for using the technology).

Within organizations, HR departments play an important role in implementing an effective change management process to avoid or properly manage employees' resistance and foster acceptance among them. These strategic interventions should encompass three levels (Molino et al., 2020). At the first level, a comprehensive communication and information program for the entire company population is crucial to anticipate and prepare for change, and thus promote collective awareness and participation. The second level involves training all employees to enhance their knowledge and technical and soft skills and to dispel their doubts and fears. Although this type of training is not directly linked to workers' tasks, it proves valuable in diversifying their skills. Finally, at the third and more targeted level, the aim is to develop competent users of the new tools through specific training on the use of the technology (Marler et al., 2006). In addition to technical skills, these training programs should consider soft skills and personal characteristics that are protective factors in change situations.

Participation and inclusion are also important in the digital transformation. Employees can be involved in developing and implementing new systems, for instance, by inviting them to make suggestions for improving their working environment (as advocated by certain lean production models, e.g., the World Class Manufacturing model). When management embraces and incorporates employees' perspectives and transforms them into technologies and skills development through a co-construction approach, employees will likely feel motivated and engaged.

Leadership

If digital transformation is a matter of change, then change is a matter of leadership. Using their foresight, leaders should be pioneers in implementing digital and technological innovations and creating the organization's readiness for these changes. Digital leaders, or "leaders 4.0" (Kelly, 2018; Oberer & Erkollar, 2018), are at the forefront of change since they set strategies for how the organization operates and how employees should be engaged. They work across various organizational dimensions, from technology to people, through business models, structures, and processes.

Historically, leadership has been described as the action of achieving results and being followed at the same time. The relationship with followers has always been a central dimension of leadership, and this is still the case in the age of digitalization, where engaging

people is essential to gaining acceptance and commitment to technological innovation (Molino et al., 2021). However, new challenges are posed to leaders, creating a need for renewed leadership models. Kelly's (2018) analysis outlined the evolution of leadership in the context of various industrial revolutions throughout history. As we move towards the fourth industrial revolution, leadership 4.0 requires a combination of proven relational skills and new competencies to navigate the digital and automated landscape, emphasizing education, innovation, and change management at the forefront. Leaders need to gain clarity and stay abreast of digital trends. They need to understand their impact on the business and know how to leverage emerging technologies. They do not need to have in-depth technical knowledge. Rather, they should understand the importance of technology and know how to promote it. Kelly's definition emphasizes the need for a reactive type of leadership that encourages experimentation with new technologies, embraces collaborators' feedback, and ensures opportunities for continuous learning. While technology is paramount, leadership styles based on effective relationships and non-pedagogical support are essential to promote autonomy and empowerment within the leader-follower dynamic. The dialogue between leaders and followers is critical to fostering proactivity and technology adoption (Dolce et al., 2022).

In summary, the positioning of leaders in response to the advent of digital transformation will likely play a decisive role. They are expected to be protagonists of this revolution and capitalize on the opportunity for change by setting the direction and strategies. Leaders need to focus on creating a digital culture that embraces transformation, defining conditions for employee requalification in digital competencies, attracting and retaining technically skilled employees, and sharing successful strategies for technological development (Oberer & Erkollar, 2018). Recognizing that leadership roles and practices need to be reassessed and redefined is crucial and requires targeted HRM interventions. In particular, comprehensive training should be provided to individuals in leadership positions to enable them to navigate technological advancements and employees' needs. Interventions such as mentoring and coaching are deemed appropriate to provide specialized and targeted support. In addition, organizations need to improve their ability to integrate leaders 4.0 into their workforce by investing in selection and talent acquisition processes.

Organizational culture

Organizational culture plays a pivotal role in driving digital innovation, as it shapes the mindset, values, and dynamics of collaboration within a company, ultimately influencing how leaders and employees embrace and adapt to the transformative landscape of the digital era. There is a symbiotic relationship between organizational culture and the effective execution of digital transformation initiatives (Svahn et al., 2017). The first one encompasses the beliefs, assumptions, and intricate set of values that guide an organization in its business endeavours (Barney, 1986). With the proliferation of technologies and extensive online business activities worldwide, organizational culture extends to incorporate digital workplace practices (Duerr et al., 2018; Teguh et al., 2022). In this context, the concept of digital organizational culture should be formulated as the collective beliefs, comprehension, and values concerning the organization of business activities within the digital realm. This connection between digital organizational culture and digital innovation reveals that digital organizational culture could play a crucial role as a predictor for adopting digital technologies, which, in turn, introduce novel methods and solutions for business processes (Grover et al., 2022). However, developing this new organizational culture and digital capabilities is not sufficient for achieving digital innovation: it is necessary to promote organizational readiness by focusing on integrating the existing human and technological resources (Nambisan, 2017).

In this landscape, a more pronounced human-centricity should replace the conventional emphasis on economic growth paradigms. This calls for a revaluation of guiding principles that shape organizational behavior, focusing on fully leveraging digital innovation while prioritizing the well-being of employees (Sun et al., 2022). Recognizing that the success of digital initiatives is intimately linked to the promotion of employee satisfaction and well-being, organizational culture becomes a pivotal factor in the success of digital innovation. To navigate this paradigm change, organizations need to foster a culture that values collaboration, employee satisfaction, and individual well-being, starting from the idea that they are not merely resources for economic goals, but individuals with unique talents and aspirations.

Starting from HR managers' suggestions, the need to strike a balance between control and autonomy emerges nowadays, with a culture of flexibility and discretion fostering an environment conducive to experimentation and agility, essential attributes to manage the complexity of the digital landscape (Manso, 2017; Galanti, 2021). Furthermore, cultivating a work environment with a high-risk tolerance encourages a culture of creativity,

experimentation, and learning. Insights from HR managers underscore the importance of collaboration across departments and functions: cross-functional teams, in particular, play a crucial role in knowledge sharing and trust development, which aligns with the principles of a human-centric digitalized workplace that emphasizes a customer-centric focus (Larson et al., 2023).

Assessment & Recruitment/Talent Management

Industry 4.0 has significantly changed the nature of work and also created a significant gap between the current capability of employees and the rapidly evolving requirements of their roles. This prompts a need to consider new and more effective approaches to talent development that are able to anticipate future skills needs, emphasizing adaptability (Goncalves et al., 2020; Sun et al., 2023) and resilience (He et al., 2023; Heinz et al., 2021).

In gathering insights from HR managers, several key considerations emerge about the process of assessing and recruiting talent. Firstly, a fundamental shift is identified in the role and mindset of recruiters, who are now tasked to focus on identifying “performers” for key positions that have the potential to differentially impact sustainable competitive advantage (Collings & Mellahi, 2009). Secondly, HR managers are encouraged to adopt agile recruitment strategies. This entails the ability to respond swiftly to the evolving demands of the digital landscape, leveraging data-driven insights in refining recruitment approaches and ensuring that candidates possess the optimal blend of technical and soft skills (Polàkovà et al., 2023). Thirdly, HR managers are called upon to identify the skills essential for successful digitalization, such as digital literacy and proficiency, emphasizing technical capabilities and cultural fit in a human-centric digitalized workplace (Whysall & Brittain, 2019). Adaptability, willingness to learn, and alignment with organizational values are integral aspects of this evaluation. Moreover, HR managers should identify candidates with leadership skills that are aligned with digital transformation (Behie et al., 2023). The ability to guide teams through change, instil a digital mindset, and cultivate a culture of continuous improvement is becoming the hallmark of effective digital transformation leadership.

In parallel, HR managers highlight the importance of prioritizing candidates with innovative thinking and robust problem-solving skills, recognizing their value in navigating uncertainties and contributing creatively to innovation (Galanti et al., 2023). Cross-functional

collaboration is also emphasized, underscoring the significance of teamwork and knowledge-sharing in fostering a collaborative culture within digital workplaces. Finally, HR managers should actively prioritize diversity to ensure a rich tapestry of perspectives within the workforce, by acknowledging diverse teams as catalysts for innovation capable of addressing the diverse needs of a human-centric workplace.

It is therefore evident that a holistic approach goes beyond the surface-level digitalization of products, services, or processes. The transformative process of adopting a digital identity and culture becomes imperative to create an environment that not only embraces technological advancements but also prioritizes talent management (Karaboğa, 2023). In this perspective, building talent pipelines and succession planning proves to be a critical strategy. Proactively identifying and nurturing individuals with leadership potential ensures a constant flow of skilled professionals ready to assume key roles in the dynamic, digitalized future. This forward-thinking approach addresses the immediate need for talent and aligns with the dynamic nature of digitalization, where leadership qualities are vital to navigating change and fostering a culture of continuous improvement.

Education and Training

It is perhaps not surprising that one core aspect of supporting a human-centric digitalization of the workplace is the emphasis on education and training. Following the implicit thinking of HR managers, the main characteristic of digitalization stands in the enlargement of the spectrum of skills and competencies that the workforce needs to effectively use technological tools made available in the innovation process (Morandini et al., 2023; Tommasi et al., 2022). Nevertheless, it is worth recalling the importance of education and training in maintaining a higher level of workforce integration and, ultimately, in sustaining their sense of autonomy, sense of belonging to the organization, and their sense of competence, which can affect their well-being at work.

Continuing education and training represent one of the concrete actions that HR managers can take to ensure a flourishing digital transition. According to HR managers, a lack of attention to training needs is one of the causes of resistance to technological innovation. Similarly, implementing new technologies may require renovating the workforce with new qualifications and experiences, as well as finding ways for employees with different orientations to interact with technological devices. For instance, considerations such as the

dynamics between older and younger employees or the distinctions between highly qualified and low-skilled workers prompt contemplation. Within this context, there is a dual need: a) to enhance awareness regarding the potential of emerging digital technologies, and b) to facilitate their effective adoption by providing customized training.

In our reflections on organizational dynamics, we recognize that digital transformation could be less efficient than desired by an organization and HR managers. Conversely, digital transformation can pose challenges, that negatively impact both employees and the organization. These aspects indicate that workers can be concerned with the workplace transformation because they might feel less confident in expressing their needs. Employees may need to understand the transformation of the workplace considering potential risks of substitution, which in turn reduces the level of loyalty to HR managers and the organization as well as the sense of belonging to the organization. To contrast the risk of resistance and apprehension among employees, HR managers must take actions to support communication while also upskilling the workforce. On the one hand, this can boost employees' knowledge and skills, with an increase in confidence with technological innovation. On the other hand, this can help to foster a more human than technological environment, as employees feel recognized, protected, and supported.

Although we are not able to clarify and map specific competencies to which training initiatives can refer, the potential undesired effects of digitalization without parallel work for the promotion of skills and knowledge require HR managers to plan such initiatives considering the workforce composition. For example, specific characteristics of the workforce (e.g., education level and ageing) can target specific training and its duration. HR managers can conduct internal surveys to interrogate training needs as well as potential resistance to technological innovations among employees. Nevertheless, future research could study more occupation-specific and technology-specific skills and knowledge to offer a careful guide for education and training planning.

Conclusion

The five elements of the theoretical model on the role of HR in the digitalization of the workplace suggest many fruitful future directions for advancing research and practice that ultimately will lead to positive individual outcomes. It is worth emphasizing that our model does not take for granted positive implications of work transformations. Rather, the model

follows the awareness of potential unexpected and undesirable negative consequences at the individual level. Then, one of the main implications of our model is bringing together positive and negative aspects in order to propose a research- and practice-oriented framework. The chapter shows that it is currently fundamental for HR managers to work in different areas of organizations simultaneously. The elements are not necessarily connected, nor do they imply tandem actions by HR managers, i.e., working at the level of the organizational culture to continue with education and training, and so on. Conversely, these elements may involve both separate and connected actions. Although this implies that our descriptive-prescriptive model lacks a pragmatic approach to supporting the work of HR managers, such a lack is not necessarily a problem as the work of HR managers always takes place in interconnected and separate ways at multiple levels. Our model's absence of a rigid prescription reflects the fluidity and complexity of the HR manager's role in piloting the digitalization transition. A rigid prescription might oversimplify HR managers' diverse challenges across different organizations, potentially limiting their ability to tailor strategies to specific needs. Lastly, we recognize that a one-size-fits-all approach may not be suitable for the diverse array of organizations undergoing digital transformation. In these terms, future studies might also refer to the employees' perspective and examine how our model of digital innovation management can overlap with experiences and perceptions of digital innovation in the workplace.

To conclude, this intellectual work leads us to the conviction that the five elements outlined here can represent a broad vision composed of principles rather than strict views. These principles raise awareness and inform on potential risks and counter actions to support employers and employees transitioning to the digital workplace. We wish to express the hope that future research can adopt a similar view to approach the study of HR managers and evaluate the transition of organizations to digitalization. We believe that our model can particularly inform action research in initiatives that use our five-dimension model to diagnose an organization while suggesting interventions.

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Figures

Digitalization of the workplace ↔ Human-Centric Approach

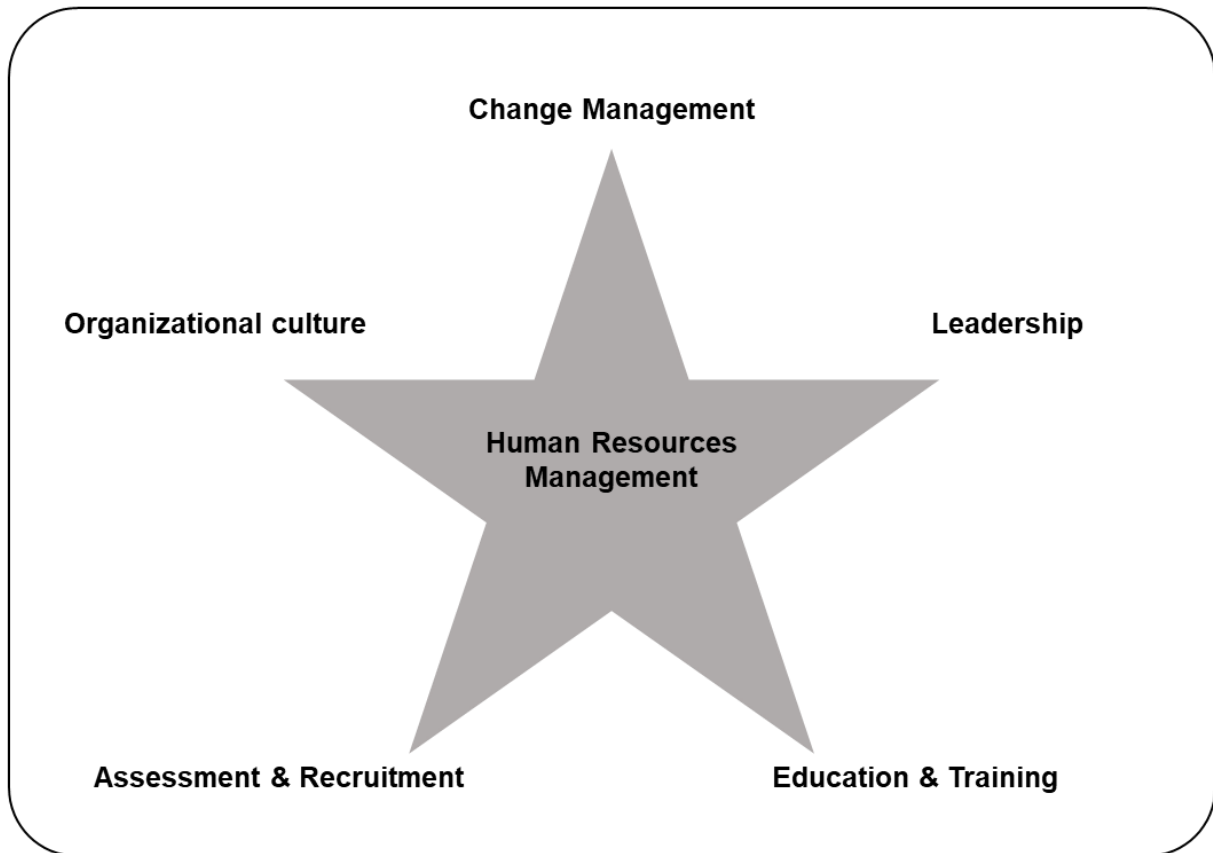


Figure 1, Five elements theoretical model on the role of Human Resources Management for human-centric approach in the digitalization of the workplace.