Rethinking companies' culture through knowledge management lens during Industry 5.0 transition

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Abstract

Purpose – Through the human resources (HR) and knowledge management (KM) perspective as human-centric processes, the aim of this study is to explore how companies' engagement in diversity (DIV), inclusion (INC) and people empowerment (PEMP) policies influences companies' organizational performance, to support organizations in the shift to the Industry 5.0 framework.

Design/methodology/approach – Combining the HR management and the KM-driven organizational culture, a conceptual model is proposed for explaining companies' higher organizational performance. Proposed hypotheses are tested with reference to a set of listed international companies traced by Refinitiv on a five-year time horizon (2016–2020) through 24,196 firm-year observations.

Findings – This research shows that companies engaged in DIV policies, INC practices and PEMP through education have higher profitability and are more valued by capital markets' investors.

Originality/value – This paper draws attention to the need to overcome the reductionist view of HR and rethink KM architecture to cope with the growing challenge of HR integration according to the Industry 5.0 paradigm.

Keywords Sustainable development, Knowledge management, Human resource management, Companies' culture, Companies' performance-driven culture

Paper type Research paper

1. Preliminary reflections

The knowledge society has triggered a disruptive development for work processes and for the organization of production (Castelfranchi, 2007). At the same time, the COVID-19 outbreak has exacerbated the vulnerabilities of some industries, making clear the urgency for businesses and society to be more resilient. In this context, several studies have focused their attention on possible pathways for understanding and managing the ongoing evolution (Del Giudice and Straub, 2011; Carayannis *et al.*, 2017; Barile *et al.*, 2018).

In such a context, the scientific and institutional debate about Industry 5.0 indicates research and innovation as pivotal factors driving a transition to a human-centric and resilient European industry (European Commission, 2021). This emerging paradigm, by shifting the focus from shareholder to stakeholder value, reinforces the role of companies toward societies by pushing the worker to the center of the production process (Ardito *et al.*, 2018; Carayannis *et al.*, 2021). Therefore, the role of socially responsible human resources management (SRHRM) and knowledge transfer to improve diversity (DIV) management, social inclusion (INC) and people empowerment (PEMP) assume a strategic role.

To the best of our knowledge, studies examining the impact of human-centric resource management and knowledge management (KM)-driven organizational culture on

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companies' performances are exiguous. Particularly, few studies analyze the role of sustainability culture in DIV management, social INC and PEMP.

Looking into the managerial and organizational literature, one critical issue that emerges is that there is substantial variation in how companies embed sustainability. PricewaterhouseCoopers (2018), for example, highlights that some companies show superficial engagement with the sustainability issue. Companies should prioritize sustainability in the organizational culture by actively ensuring that the sustainability goals are central to the business strategy. Many studies confirm, indeed, that a sustainability-oriented organizational culture is a prerequisite for the effective adoption of sustainability principles at a corporate level (Linnenluecke and Griffiths, 2010; Islam *et al.*, 2019). However, there is a gap in terms of how human-centric resource management and a KM-driven organizational culture can lead to higher performance. In such a direction, this study explores whether companies highly engaged with DIV, INC and PEMP policies exhibit better organizational performance. The analysis of these phenomena requires better consideration of the impact produced by the interaction between KM and human resource management (HRM).

Following this conceptual flow, the paper analyses human resources (HR), KM and organizational performance as the three key elements to navigate the cultural transition in Industry 5.0 scenario. The study proceeds as follows: Section 2 provides the theoretical framework and the research questions. After describing in Section 3 the methodology and results obtained, we provide a discussion of the theoretical and practical implications in Section 4. Section 5 provides the conclusion and an agenda for further research.

2. Theoretical background and conceptual model

2.1 The link between companies' culture and performance improvement

According to Carayannis *et al.* (2020), "Industry 5.0 is considered to be the answer to the question of a renewed human centered/human centric industrial paradigm, starting from the (structural, organizational, managerial, knowledge-based, philosophical and cultural) reorganization of the production processes of industry" (p. 2). Similarly, Nahavandi (2019) pointed out that "the Fifth Industrial Revolution will pair human and machine to further utilize human brainpower and creativity to increase process efficiency by combining workflows with intelligent systems. While the main concern in Industry 4.0 is about automation, Industry 5.0 will be a synergy between humans and autonomous machines" (p. 3). In this context, the emergence of a human-centric and knowledge-based corporate culture raises several fundamental questions for scholars and practitioners.

One emerging issue is the relationship between corporate sustainability, organizational culture and performance. In recent years, many organizations have adapted their policies, products and processes to stakeholder expectations, addressing sustainability issues (Crane, 2000). However, these changes are often only superficial. To deal with this lack of consistency, companies should adopt a sustainability-oriented organizational culture. Because organizational culture is the main driver of organizational change programs, several scholars have pointed out that cultural engagement with sustainability is also an important prerequisite for improving economic performance and long-term growth (Linnenluecke and Griffiths, 2010).

The topic of companies' performance is one of the most discussed in managerial literature (Porter, 1979; Schramm-Klein and Morschett, 2006; Okoshi *et al.*, 2019; Tumelero *et al.*, 2019) and the key role of knowledge in ensuring high performance for companies in multiple economic and cultural areas has been widely underlined (Buenechea-Elberdin *et al.*, 2018; Kianto *et al.*, 2018; Papa *et al.*, 2018; Caputo and Evangelista, 2019).

In the era of globalization and technology innovation, managerial studies have increasingly stressed the impact of culture on innovativeness and performance. Companies operating in competitive markets are consistently under pressure to monitor and improve their performance to meet the expectations of investors, employees and customers. Because companies respond to changing circumstances based on their established culture, performance should be studied by analyzing organizational culture (Colyer, 2000; Rasheed et al., 2017; Kim and Chang, 2019).

Organizational culture can manifest itself in many ways. Among the multiple existing definitions, Schein (1992, p. 17) defined it as "a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems". Accordingly, organizational culture represents those behavioral patterns affected by the organizational system of values and beliefs, which subconsciously lead individuals to make a choice or a decision following some implicit or explicit rules rather than others (Ortega-Parra and Ángel Sastre-Castillo, 2013). In this perspective, Schneider et al. (2013) referred to organizational culture as the set of norms that individuals believe characterize their work environment, and those norms can influence how members react and adapt to organizational goals.

In this perspective, a performance-driven culture is a form of culture in which the whole organization is driven by a motivation to achieve organizational success. Caputo and Evangelista (2018, 2019) underline that organizations' performance-driven culture appears when HR perceive themselves to be part of a shared entity, and they feel free to share their ideas and knowledge. In more detail, recent studies (Caputo and Evangelista, 2019; Goswami and Agrawal, 2020; Enwereuzor, 2021; Nguyen et al., 2021) have shown that shared paths inside an organization define a common culture only where HR are strongly engaged with activities and processes related to the organization's strategies and plans.

2.2 Human-centric organization culture

The Industry 5.0 framework embraces a vision in which organizations are committed to HR and employees' well-being being at the core of business activities with the aim of creating sustainable outcomes and more resilient organizations (EU, 2021). The role of HR and employees' well-being as an antecedent of organizational performance has been long investigated (Van De Voorde et al., 2012; Guest, 2017; Mohanty, 2018). In this regard, researchers have found that a shared purpose (Hartnell et al., 2011), interactions, a friendly working environment (El-Farr and Hosseingholizadeh, 2019) and engagement (Mohanty, 2018) are all factors enabling knowledge-sharing processes (Goswami and Agrawal, 2020; Enwereuzor, 2021; Nguyen et al., 2021), leading to higher organizational performance.

In line with the Industry 5.0 framework, Barrena-Martínez et al. (2017, p. 3) defined the SRHRM as "the integration of CSR into the HRM function aimed at engaging and satisfying employees through social rewards that go beyond the strictly economic and legal, focusing on the well-being of workers and their families". The literature (Barrena-Martínez et al., 2017; Shen and Zhang, 2019; Muñoz-Pascual et al., 2020) highlights that companies engaged in SRHRM tackle employees' expectations more effectively. This capability becomes an important source of greater motivation and, in turn, of higher organizational performance (Goswami and Agrawal, 2020; Enwereuzor, 2021). According to this vision, Gangi et al. (2021) found that high-quality job conditions promote environmental knowledge sharing and performance.

Following Van De Voorde et al. (2012), HR well-being encompasses three dimensions, namely, happiness, health and relationships. According to the World Health Organization, health problems such as depression and anxiety have led to a loss in productivity at a

global level for about one trillion a year. A survey by the Society for Human Resource Management (2020) of 1,099 American workers revealed that 22–35% of respondents felt depressed and emotionally stressed by remote working, whereas two out of five employees declared that they found it difficult to balance their work and personal life (e.g. always online, always available). In this sense, a human-centric culture should consider the necessary balance between work flexibility and human dignity, even in a digital environment. The STREBLO application works in this direction, developed with the support of the EU project inhibiting stress in the construction industry as a tool to help HR monitor and better manage work stress and job tasks (Riva *et al.*, 2021).

These circumstances demonstrate that a human-centric resource management culture should embrace a holistic view of human capital (Alcázar *et al.*, 2013; Banerjee, 2013). In such a direction, Talmage and Knopf (2017) discuss DIV, INC and inclusiveness as building blocks for a high level of community well-being. Specifically, DIV is an organizational resource encompassing a wide range of differences in terms of behaviors, perspectives, attitudes, experiences and identities, among both individuals and groups (Jackson *et al.*, 1995; Kochan *et al.*, 1996). INC defines the process through which an organization can leverage DIV as a resource, unlocking the capacity of the community to increase its own well-being. INC encompasses dimensions such as influence in terms of organizational voice and participation, organizational justice and fairness, as well as a respectful and supporting organizational culture and individual acceptance and psychological support (Talmage and Knopf, 2017). Hence, DIV and INC are closely linked. The combination of diverse resources and inclusion processes leads to an inclusive cultural outcome and increases workplace belongingness and productivity (Talmage and Knopf, 2017; Enwereuzor, 2021). In line with Accenture (2020), companies that adopt a human-centric approach can develop agility and resilience in turbulent and unpredictable social and economic contexts. A human-centric approach can indeed allow companies to unearth HR motivation and attitudes to boost organizational performance. From this perspective, companies' engagement in DIV and INC policies can increase HR well-being and support for the creation of a specific organizational culture, leading to higher performance. Hence, we posit the following hypotheses:

H1. Companies highly engaged in diversity policies exhibit better organizational performance than companies that are poorly engaged.

H2. Companies highly engaged in INC policies exhibit better organizational performance than companies that are poorly engaged.

2.3 Knowledge management-driven organization culture

Recently, Deloitte (2021) drew attention to the importance of knowledge sharing as a cultural tool to build organizations' resilience to the current social and economic complexity caused by the pandemic global situation. A total of 50% of the workers interviewed by Deloitte (2021) indicated knowledge sharing as a critical driver for organizational success. Organizations that make KM a priority create a more comfortable and trusting environment for the exchange of knowledge resources between workers. Motivation and incentives to share appear to be highly relevant for effective and fruitful knowledge-sharing processes. At the same time, 37% of the HR interviewed consider the lack of appropriate incentives a barrier to effective knowledge sharing. Hence, technology alone as a tool to reinforce a KM-driven culture is not sufficient. As Hwang (2003) pointed out, "unless people in organizations possess the learning capability to use knowledge creatively, a well-developed knowledge management system cannot be directed at sustaining profitability. Managing knowledge involves both perspectives and tools for learning" (p. 92). Therefore, new research is needed to explore how companies can efficiently and effectively adopt a KM culture to improve people's empowerment.

According to Nicholls (1995), "empowerment occurs as the organization sincerely 'engages' with people and they progressively respond to this engagement. In operational terms, the scope of a person's job/task is progressively extended, leading to a growth in that person's personal capability" (p. 6). A practical example is Microsoft's declared commitment to PEMP. As Chief Marketing Officer Chris Capossela underlined (2020), in the past years the company's vision has shifted from a know-it-all culture to a learn-it-all culture. Accordingly, this example highlights that sustainable engagement and organizational performance in the future are strictly linked to company culture. The reason is that organizational culture is a rare and critical resource with a strong positive impact on companies' performance (Barney, 1986).

This evidence is in line with the stream of research focusing on the strong link between HR and KM (El-Farr and Hosseingholizadeh, 2019). As a "strategic human asset" (Ananthram et al., 2013, p. 456), HR is the pivotal vehicle for knowledge creation, sharing and implementation. In this perspective, KM's effectiveness relies upon HR management processes and strongly depends on alignment among organizational culture, people and knowledge (Svetlik and Stavrou-Costea, 2007; Gope et al., 2018).

Following the KM perspective (Abdi et al., 2018; Dal Mas et al., 2018), a culture-based view is a challenging process, intercepting the ways in which HR share knowledge and constantly change their behaviors and mental models with the aim of building a shared path to achieve common aims. Accordingly, KM represents both an antecedent and a consequence of organizations' culture because it contributes to defining the conditions through which knowledge is approached and managed inside the organization, but also the way in which organizations' culture can evolve over time because of HR' relations and interactions (Janz and Prasarnphanich, 2003; Oltra, 2005).

In such a conceptual domain, the culture-based view requires rethinking the approach to HR, overcoming a reductionist and resource-based view to understand their role in ensuring the definition of organizations' knowledge sharing processes as a key driver for a competitive and sustainable advantage (Danõa et al., 2020). Accordingly, the following hypothesis is stated as:

H3. Companies highly engaged in PEMP policies exhibit better organizational performance than companies that are poorly engaged.

Summarizing all the abovementioned propositions, the following Figure 1 reports the conceptual model under which proposed reflections have been conducted.

Figure 1 Conceptual model

Source: Authors' elaboration
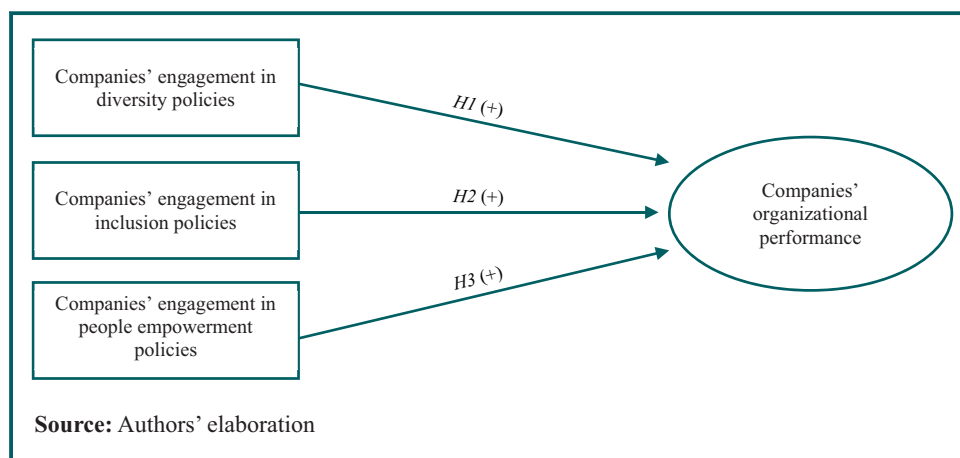
3. Methodology and results

3.1 Sample and variables

This study focuses on DIV, INC and PEMP as pivotal organizational culture dimensions leading to higher organizational performance. To explore this link, we investigate a set of listed international companies traced by Refinitiv. Refinitiv provides environmental, social and governance information, enabling professional investors to integrate extra-financial information into their investment processes.

Refinitiv's diversity and inclusion index (D&I) is conceived to inform investors on how companies engage and perform in DIV, INC and PEMP policies (Refinitiv, 2021). This index is based on a set of 24 metrics encompassing four pillars: DIV, INC, people development and news controversy. Although the first three pillars focus on internal policies pursued by a company toward HR, the fourth tracks external news about organizations' controversies. The D&I sub-pillars' scores range from 0 to 100.

We started by searching companies according to the availability of the D&I sub-pillars of DIV, INC and people development. In this way, we gathered information on a sample of 7,158 global listed companies for a five-year time horizon (2016–2020) for 24,196 firm-year observations.

Table 1 lists the variables adopted. In line with our theoretical background, to proxy DIV, we use the Refinitiv DIV sub-pillar, which measures companies' engagement and effectiveness in promoting a diverse workforce and a culturally diverse board. Furthermore, to proxy INC, we adopt the INC sub-pillar, measuring a company's engagement and performance toward INC of HR, an effective life-work balance, a family-friendly environment and disability INC policies. Finally, we measure PEMP by adopting the sub-pillar of people development, evaluating companies' engagement and effectiveness in providing training for their HR. In line with López *et al.* (2007), both accounting-based and financial performance contribute to explaining organizational performance. We use three accounting-based measures, return on assets (ROA), return on equity (ROE) and return on investment (ROI) and one market-based financial measure, namely, market capitalization (MCAP).

3.2 Method and results

The study aims to verify whether companies more engaged in the DIV, INC and PEMP dimensions may differ significantly in terms of financial performance from those less

Table 1 Variables understudy		
Variable	*Description*	*Source*
Diversity (DIV)	Diversity measures a company's engagement and effectiveness in maintaining a gender diverse workforce and board member cultural diversity	Refinitiv, D&I
Inclusion (INC)	Inclusion measures a company's engagement and effectiveness toward establishing an effective life-work balance, a family friendly environment and disability inclusion	Refinitiv, D&I
People empowerment (PEMP)	People development measures a company's engagement and effectiveness in providing training and development (education) for its workforce	Refinitiv, D&I
ROA	Return on assets	Refinitiv, Worldscope
ROE	Return on equity	Refinitiv, Worldscope
ROI	Return on investment	Refinitiv, Worldscope
MCAP	Market capitalization	Refinitiv, Worldscope
Total asset	Sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets.	Refinitiv, Worldscope
Industry	Refinitiv industry classification; number of industries: 39.	Refinitiv, Worldscope

involved in the creation of a sustainable culture. For each indicator of interest (DIV, INC and PEMP), we adopt a dummy variable taking the value of 1 if the value of DIV (or INC or PEMP) for each firm-year observation is higher than the median of the sample, and 0 otherwise. In this way, we obtained two samples companies scoring above and below the median of DIV (or INC or PEMP). To test the normality of performance variable distributions, we performed a Kolmogorov–Smirnov test. The results indicate that data doesn't follow a normal distribution; hence, we rely on the Mann–Whitney non-parametric test.

Table 2 presents the descriptive statistics for the variables adopted. The main sectors in our sample are banks and financial services (14.56%), pharma and biotech (8.41%), software and computer services (5.45%) and real estate (4%). The companies investigated show an average DIV score of 22, with a predominance of gender-based DIV policies. The lowest average score is associated with the INC pillar (14.85). Indeed, the descriptive statistics show that companies are engaged or not engaged in inclusion policies. Finally, the PEMP dimension presents the highest average score (31.47), signaling that knowledge sharing and training is widely considered by companies to be an important dimension of a sustainable organizational culture.

Table 3 provides information on the geographical sample composition and on differences among regions in DIV, INC and PEMP practices. In geographical terms, companies belonging to the African and European regions demonstrate a higher commitment to an organizational culture oriented to embrace DIV, people INC and training as pillars for HR well-being. Interestingly, African companies show a higher score for INC, whereas training and development of people are also considered a relevant dimension in European companies.

Figure 2 presents the evolution of DIV, INC and PEMP scores from 2016 to 2020. Companies observed constantly increased their commitment to DIV, INC and PEMP issues. However, training and DIV dimensions present higher average scores than those of INC policies.

Table 2	Descriptive statistics: overall sample			
Variable	Obs.	Mean	Median	SD
DIV	24,196	22.98	21	14.84
GD	24,155	18.43	16.67	13.7
INC	24,196	14.85	0	21.04
PEMP	24,196	31.47	35	24.47
ROA	23,949	2.08	3.97	21.74
ROI	24,028	2.28	6.3	110.83
ROE	23,447	3.53	9.66	318.76
MCAP	24,042	1,055,962,788	5,749,870	15,627,319.978
TA	24,146	2,592,381,139	7,482,416	31,677,487,973

Table 3	Diversity, inclusion and people empowerment performance by region				
Regions	Africa	Americas	Asia Pacific	Europe	Middle East
Obs.	494 (2%)	10.608 (44%)	7.497 (31%)	5.373 (22%)	224 (1%)
Mean					
DIV	28.69	18.22	22.16	33.23	17
INC	28.60	9.07	18.67	18.82	4.59
PEMP	43.90	19.76	38.92	43.45	21.28

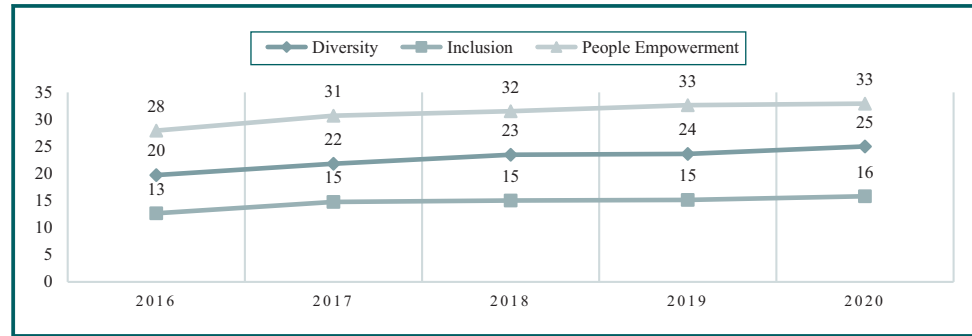**Figure 2** DIV, INC and PEMP issues by years (mean)

Table 4 reports the median of ROI, ROA and ROE divided between companies scoring above and below the median for each dimension investigated, and the result from the Mann–Whitney test. On average, companies that score well on the DIV, INC and PEMP dimensions show better financial performance than those that score badly. The Mann–Whitney test (Table 4) indicates significant differences in the ROI, ROA, ROE and MCAP between the two groups of companies. This is verified in relation to each dimension proxying for HR and a KM-driven organizational culture. Companies engaged in DIV policies, INC practices and PEMP through education present higher profitability and these are more valued by capital market investors. These differences are statistically significant, supporting Hypotheses 1, 2 and 3.

4. Theoretical and practical implications

Human-centric and sustainable innovation in Industry 5.0 is an urgent and sensitive topic. Several studies emphasize that modern challenges of customization, personalization and technology upgrading can only be met by human involvement (Hunt et al., 2018; Carnevale and Hatak, 2020; Kumar et al., 2021; Riva et al., 2021). The emergence of a dynamic digital economy and the technological changes underpinning Industry 5.0 calls for new studies and best practices around HRM models and the adaptation of business strategies.

The Industry 5.0 vision places the well-being of HR at the center of the organizational process. When industry workers collaborate closely with intelligent machines, it is crucial to ensure that the tools do not (explicitly or implicitly) undermine the dignity of the worker, regardless of their race, gender or age (Carnevale and Hatak, 2020; EU, 2021). For this reason, more effort should be devoted to creating an organizational culture focused on valuing and enhancing HR. A practical issue that deserves more research and evidence concerns policies, programs and actions to develop a culture geared toward sustainable HRM (Barbara, 2015; Barrena-Martínez et al., 2017; Gangi et al., 2021; Muñoz-Pascual et al., 2020).

According to the reflections herein, one specific research field to explore further is the management of cultural DIV and the social INC of workers to improve organizational performance (Hunt et al., 2018; Jaiswal and Dyaram, 2020; EU, 2021). To set up a HR-driven organizational culture and improve their performance, companies should improve their commitment and effectiveness in terms of gender and cultural workforce DIV. The cultural DIV of both individuals and teams should be considered by organizations as a resource to cultivate to increase organizational resilience. Gender DIV, ethnicity DIV and policies for the INC of workers represent powerful HR tools to leverage HR well-being. This commitment to people and their DIV as a distinctive factor, alongside organizations' inclusive mindset, contribute to generating more resilient organizational capabilities in complex scenarios.

Table 4 Corporate financial performance and the extent of DIV, INC and PEMP policies

Performance	Diversity			Inclusion			People empowerment		
	Above	Below	Mann–Whitney	Above	Below	Mann–Whitney	Above	Below	Mann–Whitney
ROI	6.87	5.73	−15.709***	6.71	5.95	−12.633***	7.1	5.41	−24.487***
ROA	4.54	3.46	−15.865***	4.3	3.68	−11.574***	4.75	2.91	−26.979***
ROE	10.61	8.71	−16.951***	10.58	8.83	−15.913***	11.07	8.05	−27.635***
MCAP	9,423,535	3,166,549	−26.969***	14,615,831	2,707,765	−46.501***	18,078,605	1,917,396	−60.794***

Notes: This table contains the medians of the DIV, INC and PEMP indicators and the results of the Mann Whitney tests. The variables are ROI, ROA, ROE and MCAP

Moreover, because one of the fears associated with the uptake of new technologies is the loss of jobs, the Industry 5.0 paradigm pays specific attention to DIV management and workplace inclusiveness. In this vein, companies should also improve their commitment and effectiveness in relation to an effective life-work balance and a family-friendly environment.

Another important set of considerations for Industry 5.0 concerns the role of skills and education in knowledge-intensive companies. Education 5.0 is a relatively new domain, and more research is needed to establish how it can effectively deliver its objective (Togo and Gandidzanwa, 2021). The basic assumption is that transferring the knowledge and skill gained from a digital/virtual system to its physical twin, in a secure and robust way, covers a decisive role in the Fifth Industrial Revolution (Nahavandi, 2019). According to the prior considerations, recent challenges imposed by technological conversion require new approaches to the management of people, skills and knowledge, as well as new organizational forms and leadership strategies. In this context, KM has been identified as a strategic managerial process for achieving competitive advantage (Barile *et al.*, 2018).

To set up a knowledge-driven organizational culture and improve performance, companies need to tackle new ways to empower their people, creating new training experiences and paths to make them more confident through coaching, engagement and a high level of self-efficacy in knowledge acquisition and sharing (McKinsey, 2020).

5. Conclusions and further research directions

The organizational culture is a pivotal asset to mobilize, allocate and leverage human and non-HR for the achievement of corporate goals through values, HRM and KM systems (Chan *et al.*, 2004). For a long time, HR have been considered a simple part of complex organizations' structures. However, the rapid changes that Industry 5.0 poses to HR and technological integration within KM processes forces organizations to adapt their culture and organizational behaviors to strive and survive.

Recognizing the subjectivity of HR as one element on which to act to improve companies' performance thanks to the definition of non-replicable managerial processes, the current paper traces some elements that might reinforce companies' culture and sustainable performance. Specifically, the study identifies a human-centric organization and a KM-driven organizational culture as two main drivers to improve organizations' performance. The reflections herein offer the first sharable knowledge about the elements on which to act and reflect on building organizations' performance-driven culture, going beyond the reductionist view of HR as mechanistic raw materials (Saviano *et al.*, 2017; Tronvoll *et al.*, 2018). Our study suffers certain limitations that may be considered the directions for future research agenda. First, further analysis could consider different policies of DIV, INC and PEMP to verify which practices can be more effective in the creation of an organizations' performance-driven culture. Second, further researchers could extend the analysis to the role of culture. Finally, further extensions might emerge by differentiating industries according to their specificity toward sustainability topics. Accordingly, further research might explore empirically whether DIV, INC and PEMP can enforce knowledge sharing, leading organizations to reach greater resilience and organizational performance.

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