



A study of human resource digital transformation (HRDT): A phenomenon of innovation capability led by digital and individual factors

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ABSTRACT

Surviving in a digitally disrupted world required organizations to continuously innovate and digitally transform their work practices, especially HR processes. Scholarly failure to define and conceptualize the construct of human resource digital transformation (HRDT) suggests the lack of an integrated approach to understanding HRDT as a discipline. This study presents an overarching and integrated conceptual framework of HRDT, grounded in robust qualitative research, to describe factors in successfully implementing HRDT. Drawing insights from 20 senior HR professionals in multinational organizations, this study defines HRDT as a multidimensional construct resulting from successful integration of digital and individual factors into the innovation capability of organizations. Expanding the dynamic-capabilities perspective, this study proposes that in uncertain and turbulent times, such as COVID-19, businesses must constantly upgrade organizational capabilities, manifested in the innovation capability with enablers such as- digital infrastructure, architecture, and individual capability and creativity. This research further elaborates on HRDT indicators.

1. Introduction

The rise of new digital technologies has pushed organizations to embark on the path of digital transformation (Kraus et al., 2021; Loonam, Eaves, Kumar, & Parry, 2018). Digital transformation refers to the integration of various digital technologies, such as social networks, mobile, big data, social media, analytics, or embedded services, for improving business activities, enhancing the experience of all stakeholders, and ensuring business continuity (Gigauri, 2020). Digital transformation has revolutionized how companies relate to their customers, run their operations, organize work, and conceive their business models (Haverkort & Zimmermann, 2017; Schallmo & Williams, 2017; Westerman & Bonnet, 2015). However, successful digital transformation arguably depends significantly on how all stakeholders in all functions embrace digital-transformation practices (Gray and Rumpe, 2017). In particular, the human resource management function is experiencing significant and inevitable disruptions that take the forms of the digital workforce, the digital workplace, and digital human resource practices

(Bresciani, Huarng, Malhotra, & Ferraris, 2021). These are not only relevant but could prove to be strong tools in the hands of HR professionals who use them optimally. Human resource information systems (HRISs) constitute one such disruption that helps organizations acquire, store, manipulate, analyze, retrieve, and distribute information, to make human resource planning and recruitment more effective (Fenech, Baguant, & Ivanov, 2019). In addition, digital communication technologies facilitate work continuity through telecommuting and other flexible work options (Loonam et al., 2018; Parry & Battista, 2019; Thakur, Bansal, & Maini, 2018). Interestingly, the emergence of COVID-19 expedited these transformations as the pandemic forced organizations to look for new ways of working (Gerards, van Wetten, & van Sambeek, 2021), adopting technological innovations and work designs to meet the demands of the uncertain and ambiguous business environment (Lanzolla, Pesce, & Tucci, 2021; Minbaeva, 2021; Palumbo, Manesh, Pellegrini, & Flamini, 2021). This signifies the importance of understanding digital transformation in human resource management, not just to ensure business survival but also to prepare organizations for

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the future of work (Gerards et al., 2021; Minbaeva, 2021).

Although the existing literature on human resource digital transformation (HRDT) suggests that it is not an untouched phenomenon, we observe three major gaps in the literature. First, researchers mention various terminologies, such as HR disruptions (Minbaeva, 2021) HR digitalization (Strohmeier, 2020), and (to some extent) HR transformation (Sankar, 2021). Yet the conceptualization of the entire HRDT construct is confusing and struggles for separation from its antecedents. Thus, our research responds to a very pertinent question, i.e., “What is HRDT, and what is the organizational need and significance of HRDT, especially in the wake of the COVID-19 pandemic?” We noted that the literature has only asserted some digitally transformed HR practices, e. g., human-resource planning, recruitment, training, and rewards (Bansal & Panchal, 2022; Chanana, 2021; Fenech et al., 2019; Nicolas-Agustin, Jimenez-Jimenez, & Maeso-Fernandez, 2021; Schwartz et al., 2001; Silva & Lima, 2017). However, this understanding is not comprehensive, and the literature thus far has not addressed digital transformation at the level of many other practices, such as employee onboarding and engagement. This could prove important in the overall conceptualization of the HRDT construct.

Second, the literature fails to illustrate what the process of HRDT entails in an organization. Bengtsson and Bloom (2017) assert that while digital disruptions affect human capital in different capacities, very limited research exists on how the human resource management (HRM) function experiences digital disruptions leading to transformation. In this pursuit, we looked at the roles that human and technological factors play in HRDT. Research has highlighted the need to develop a culture of creativity and a focus on adopting digital technologies (Bresciani et al., 2021; Farooq & Shoaib, 2021; John, Tiffany, Rahnama, & Van, 2017). The pandemic has added a new layer to the adoption of digital technologies, pushing organizations to be innovative in reviewing their day-to-day HR practices and bringing about the sought-after digital transformation. Thus, we investigate the innovation capability at the core of HRDT. In their study, (Julio, George, Miriam, & Richard, 2017) claim that innovative HRM activities appeal to millennials and increase their motivation and engagement with the organization. Unfortunately, earlier research did not study innovation capability as an important driver of HRDT in organizations. Hence, we look at another important question, i.e., whether innovation capability is integral to HRDT.

Third, we noted that the literature lacks information about the enablers of innovation capability, in the context of digital disruption. In this pursuit, we looked at the technological means of innovation and emphasized the importance of the technological infrastructure that innovation capability requires, along with individual capability and creativity (Farzaneh, Wilden, Afshari, & Mehralian, 2022). With this objective, our research responds to another pertinent question, i.e., the aids and advancements that building the organization's innovation capability requires.

The current study aims to address these research gaps in the literature and answer the subsequent research questions, with the help of grounded-theory research (Glaser & Strauss, 1967), using qualitative interview data from 20 senior HR professionals. Addressing these gaps would enable HR professionals to look beyond the existing practices and extensively adopt innovative tools and technology to make the HRM function more “future ready.” We borrow from the perspective of dynamic capabilities, emphasizing human capital and capabilities to address the needs of changing environments (Teece, Pisano, & Shuen, 1997). The dynamic capability perspective emphasizes firms' ability to integrate, build, and reconfigure internal and external competencies (Farzaneh et al., 2022). However, innovation capability is not just a function of human abilities; it requires a significant amount of support, infrastructure, and guidance from the organization (Rajapathirana & Hui, 2018). Extant research called for such factors as the emergence and advent of digital technologies, customer acceptance of technological innovation, and the ability to reduce the burden of elongated business processes as integral to any transformation (Amla & Malhotra, 2017;

Dong, 2019; Hoffman, 2017; Stephanie, 2021). Borrowing from the work of Zawislak et al. (2012), we reflect upon the importance of technology development as a crucial building block of innovation capability. However, the complexity of the technology and the high cost associated with its procurement have largely been responsible for organizations not being forthcoming in adopting it (Scott, 2020). Certainly, the importance of technology is undeniable (Kaartemo & Nystrom, 2021). We interviewed 20 senior HR professionals from multinational organizations for their input on HRDT, resulting in a comprehensive conceptual framework for HRDT in our findings.

Our research presents three important contributions to the literature and theory. First, we provide a thorough conceptualization of the HRDT construct, along with detail on the various HR practices that digital disruptions help to transform. Second, the dynamic-capability perspective encourages us to look at innovation capability at the core of HRDT. We attempt to dissect the concept of innovation capability into an attribute present at multiple levels in the organization and, thereby, study it at the individual, group, and organizational levels. Finally, the dynamic-capability perspective suggests looking beyond the human intent and capabilities as enablers of innovation capability and emphasizes the least-studied factors, e.g., technology (Zhen, Yousaf, Radulescu, & Yasir, 2021). Thus, we expand the dynamic-capability perspective, allowing us to integrate the technology with individual factors.

The presentation of the paper is as follows. The next section builds a brief and appropriate review of the literature, focusing on bifurcating conventional and digital human resources and segregating what transformation at the level of HR would look like, followed by the role of innovation capability in leading to it. We then present a detailed account of our research methodology, detailing the sample and data collection and analysis procedures. A detailed description of underlying themes, dimensions, and findings follows. Finally, we offer our research contributions at the practice and research levels and directions for future research.

2. Literature review

2.1. HRDT

Digital transformation has become a buzzword in the business world, to which organizations must adhere to stay competitive and remain relevant (Goldstein, 2015). COVID-19 especially has made organizations realize the importance of digital transformation to their ability to stay in business. The conceptualization of digital transformation focuses on the use of new digital technologies to enable major business improvements, such as enhancing customer experience, streamlining operations, or creating new business models (Bresciani et al., 2021; Fitzgerald, Ferlie, McGivern, & Buchanan, 2013; Warner & Wager, 2019). The human resource function has been the one that the COVID-19 period has most drastically impacted and transformed (Bresciani et al., 2021) making organizations reconfigure their policies, from recruiting to onboarding, training, appraising and rewarding performance, to suit the online workforce. Realizing its importance, many organizations granted huge contingency amounts to build the required infrastructure and technologically adapt at the HRM functional level (Zhang et al., 2021).

The current study presents a review of HRDT, including the transformation of various HRM practices that previous studies have described. Reviewing the HRDT literature, we identify two prominent issues—first, the inconsistency in the use of different terminologies to explain the same concept and, second, the lack of efforts to develop a comprehensive HRDT theory or framework. We review the literature on HR digital transformation resulting from digital disruptions that different authors have popularized by different names at different points in time. The literature has used assorted terminologies, such as digital HRM (Strohmeier, 2020), e-HRM (Prakash, Krishna, & Mores, 2019), sustainable HRM (Agarwal, Mathiyazhagan, Malhotra, & Saikouk,

2021), HR digitalization (Jedynak, Czakon, Kuźniarska, & Mania, 2021), and smart HRM (Ogbeibu, Pereira, & Burgess, 2021) to explain the concept of HRDT, which not only differs in terms of definitions but also lacks conceptual clarity and understanding. In Table 1, we provide the definitions of these terminologies from various studies. Most of the existing definitions or understandings of these concepts revolve around technological interventions at the level of the HRM function.

For the sake of clarity and to ensure completeness, we use the term “HRDT” to explain this phenomenon. After reviewing the related literature in detail and deducing from our findings the role of qualitative grounded theory research, we define HRDT as follows: ‘*Human resource digital transformation (HRDT), indicated in the digital upgradation of HR processes, is a multidimensional construct that results from an organization’s innovation capability, enabled through the successful integration of its digital infrastructure, digital architecture, and individual capability and creativity.*’ In Table 1, we provide a detailed understanding of the HRDT construct with other related variables.

2.2. HRDT and dynamic capability theory

Traditionally, explaining an organization’s ability to adapt and gain

competitive advantage occurs with the help of the theory of dynamic capability, which conceptualizes it as “the firm’s ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments” (Teece et al., 1997). The dynamic-capability perspective extends the static perspective of the resource-based view of firms by focusing on the purposeful modifications of the resource base to fit the external environment and ensure the firm’s survival (Avanade, 2016). The perspectives on dynamic capability range from seeing it as the boundary condition of high-velocity and unstable organizations (Eisenhardt & Martin, 2000) to its specific focus on rapid technological changes (Teece et al., 1997). However, a more recent perspective by (Peteraf, Stefano, & Verona, 2013) looks at the dynamic capabilities facilitating competitive advantage in a fast-paced digital environment.

In our research, we offer an expansion of this view of dynamic capabilities and suggest that developing them more frequently and continuously is crucial during crises, to meet the needs that uncertain and untimely changes create, specifically, those that require considerable upgrading of existing capabilities (Dejardin et al., 2022). COVID-19 has made organizations relook at their people-management practices, not just to gain a competitive advantage but to ensure survival with the

Table 1
Evolution of Human Resource Digital Transformation (HRDT) Construct.

Reference	Purpose and Focus	Methodology	Definition of HRDT or Related Concepts	Conceptualization of HRDT	Theoretical Framework
Seufert & Meier, 2016	Study organization-wide E-learning contribution in digital transformation	Systematic Literature Review Research	The greatest impediments felt at the level of technology adoption in E-learning are not the information, nor any other components of the system and technology, but these are people themselves.	No	No
Larkin, 2017	Focusing on inward, outward, and across changes in HRM in ongoing the digital age	Systematic Literature Review Research	The technology has completely changed how HR processes currently run, or more specifically, how businesses gather, store, use, and disseminate information about their HR. Business executives have long emphasised the value of IT integration with operational processes to make inroads in digital HRM .	No	No
Silva & Lima, 2017	Study innovations in technology to understand HR	Conceptual Research	Human Resource Information System (HRIS) is a digital innovation that acquires, stores, manipulates, analyse, retrieves and distributes information related to human resources to automate a large number of HR functions.”	No	No
(Prakash et al., 2019)	Investigate digitally induced changes in HRM including attitudes, qualifications, behaviours, and expectations.	Conceptual Research	e-HRM has achieved much importance now because of its use to organizations to increase productivity by maximizing the value of the organization’s most significant asset i.e., employees in the digital age.	No	No
Strohmeier, 2020	Provide a language and typology for digital HRM, and digital organisations	Systematic Literature Review Research	Digital HRM is not merely about aligning digital technologies to pre-formulated HR strategies but formulating and executing HR strategies that are directly based on the potential for digitization to create value for an organization.	Partially	No
(Agarwal et al., 2021)	Align the industry 4.0 disruptions with HRM and emphasize on sustainable HRM	Mixed Methods Descriptive Research	Sustainable HRM enables organisations to accomplish their goals by utilising the best skills and abilities of its people.	No	No
(Jedynak et al., 2021)	Identify the development of digital transformation literature	Systematic Literature Review Research	HR Digitalization depicts the relationships between human and digital agents within organizations.	Partially	No
(Ogbeibu et al., 2021)	Investigate the relationship between digital task interdependence, disruptive technology and smart HRM in determining team creativity and organizational level outcomes	Descriptive Research	SHRM (Smart HRM) is defined as the digital revolution in HRM tasks which are executed in a manner that depends somewhat on artificial intelligence, cloud computing, big data and automation.	No	No
Present Study	Conceptualises HRDT as a multidimensional construct and emphasizes on its enablers and indicators	Grounded Theory Research	Human resource digital transformation (HRDT) , indicated in the digital upgradation of HR processes, is a multi-dimensional construct that results from an organization’s innovation capability enabled through the successful integration of its digital infrastructure, digital architecture, and individual capability and creativity.	Yes	Yes

help of the organization's available technological and human resources (Carnevale & Hatak, 2020). Our research offers a broader explanation of the process for adapting to digital changes at the HRM level, whose traditional focus had been on strengthening the employee aspect of organizations (Bansal, 2022; Chaubey & Sahoo, 2019). That remained consistent, even in the digital age, by creating more diverse and challenging job opportunities, to ensure acquiring young talent with a high level of engagement, which digital transformation facilitated (Palmer, Dunford, & Buchanan, 2017). However, it demanded certain capabilities and competencies (Bell, Lee, & Yeung, 2006) to adopt digital technologies in HRM, attract and retain potential talent, and provide accurate and efficient results for making sustainable decisions (Sivathanu & Pillai, 2018). Digital transformation not only provides opportunities but also presents challenges (Schwab, 2016), such as managing digital employees and renovating HR practices accordingly (Makridakis, 2017), and making the technological infrastructure and resources available as needed (DiRomualdo, El-Khoury, & Girimonte, 2018). The emergence of digital technologies, including the Internet of Things (IoT), big data analytics, and artificial intelligence (AI), has further compelled the transformation at the HRM level (Islam, Dhir, Talwar, & Walsh, 2021; Hecklau, Galeitzke, Flachs, & Kohl, 2016).

2.3. HRDT and firm innovation capabilities

The extant literature claims that innovation is the most fundamental source of firm success and survival (Cho & Pucik, 2005; Palumbo et al., 2021), especially in times that have no shortage of uncertainty and ambiguity (Freel, 2005), e.g., the COVID-19 pandemic. We explain this by remarking that no matter how much an organization prepares with new skills and capabilities, the organization's ability to constantly improve and upgrade its practices remains relevant. Hence, we propose that an organization's ability to innovate is at the core of achieving the transformation for responding to all kinds of external environmental changes (Bresciani, Ferraris, Romano, & Santoro, 2021; Bresciani, Huarng, Malhotra, & Ferraris, 2021; Ferraris et al., 2017; Lopez, Perez, & Valle, 2009). Innovative practices should enhance a firm's ability to achieve high performance in uncertain times (Maditheti, 2017).

But innovation does not just come handily with the need whenever it arises. Rather, it is a function of the capabilities and creativity of the existing people, with support from the necessary organizational resources (Khin & Ho, 2018). The digital transformation of HR is not new, as the research and practice present evidence from a long time back, in the form of employing digital means of recruitment and ensuring digital ways of engaging employees (Fenech et al., 2019). But yet again, the pandemic has proved to be a lever for organizations to significantly build their innovation capability (Wang, Qin, Xu, & Skare, 2022), an under-examined construct in the HRM domain. Most research deals with the firm's performance and new product development (Huhtala, Sihvonen, Frösén, Jaakkola, & Tikkanen, 2014; Taherparvar, Esmaeilpour, & Dostar, 2014). We fill this void by looking at the enablers and impact of organizations' innovation capability.

Gerards et al. (2021) emphasize the importance of organizational interventions to stimulate employee engagement in innovative behavior. The pandemic has allowed organizations to be much more willing and open to undertaking innovation and using resources to support innovation behavior (Chaubey & Sahoo, 2019).

The concept of disruption in human resources emerged to meet the market demands for receptivity to change and gain a competitive advantage (Thomas, 2016). The need for disruption in human resources arises to meet new business realities (Julio et al., 2017), to survive and revive during an economic slowdown (Emmy, 2016), and to ensure enhancing employees' skills for performing in changing circumstances (Agarwala, 2003). Digital disruptions have equipped organizations with the required technological tools and Internet-driven systems to successfully advance those systems and their processes (Manuti, 2017). However, as much as tools and systems contribute to the advancement of

a process, organizations could not ignore human intervention. Research suggests that if firms desire to enhance innovation capability, they should appreciate the contribution and value of employees, as human resources often embody critical organizational capabilities (Wei & Lou, 2005). Arguably, coherence must exist between an organization's HRM practices and the strategies and infrastructure that enhance the learning capability leading to innovation (Bresciani et al., 2021; Ferraris et al., 2017; Lopez et al., 2009). Innovation capability and HRM appear to link with knowledge acquisition and learning. Thus, HR professionals have critical roles in promoting individual, group, and organizational capabilities (Gibb & Waight, 2005). The development of new HRM functions that include human experience, generation of knowledge, and shared and leveraged learning processes aid in developing innovation capabilities (Pastor, 2010). In our research, we explore in detail the human factor, along with technological and infrastructure aids, in developing organizational innovation capabilities, to ensure overall HR digital transformation.

3. Research methodology

3.1. Research approach and setting

We conducted the present study to present a better comprehensive understanding of the concept of HRDT. Accordingly, we focused on three major objectives. First, we aimed at defining and conceptualizing HRDT, which the literature has done very poorly and confusingly. Second, we aimed at exploring whether innovation capability is at the core of HRDT. Finally, we aimed at investigating the digital and individual enablers of innovation capability.

We employed an exploratory qualitative grounded-theory approach to studying how organizations adopted digital disruptions during the COVID-19 pandemic, which led to transformations in the HR function (Clark, Gioia, Ketchen, & Thomas, 2010; Glaser & Strauss, 1967). Grounded theory is a research method that contributes to the generation of theory (Glaser & Strauss, 1967) grounded in data collection and analysis to systematically aid discovery of different patterns that form a process (Malodia, Dhir, Mishra, & Bhatti, 2021; Strauss and Corbin, 1998). It intends to study major categories, their relationships, and context more extensively than a descriptive account (Becker, 1993). Grounded theory is useful for studying how people manage their lives and deal with changing circumstances (Adolph, Kruchten, & Hall, 2011). Accordingly, the researchers adopted this methodology.

3.2. Participants and sampling

Our research attempted to interpret events in a first-order analysis, the first-hand account of the people actually experiencing those events (Van Maanen, 1979). We selected participants based on their knowledge of HRDT in their organizations during the pandemic. We interviewed human-resource professionals in organizations (mostly multinationals) that had recently experienced digital transformation in human-resource practices. We conducted interviews during the period of country-wide lockdown in India that compelled organizations to transform their traditional HR practices into a virtual mode. During the lockdown, organizations operated through online means and adopted remote work, a crucial basis for this research.

Our sampling strategy followed a theoretical logic (Glaser & Strauss, 1967), purposefully selecting human resource professionals operating in organizations that had recently experienced HRDT. We independently reached out to HR professionals, asking them to connect us with other HR professionals from their network, following a snowball sampling scheme (Naderifar et al., 2017). We ensured collecting information from a mix of professionals belonging to industries ranging from Information Technology (IT) to Agrochemical, Banking, and Financial Services, Manufacturing, Education/Education Technology, and Chemicals. Though this research contributes to an exploration of the HRDT

phenomenon, our larger interest was in generating insights that would be valid for a set of organizations working in varied types of industries. Our final sample (total $n = 20$) consisted of 60 % males and 40 % females living in India, who described their designation as: Senior HR Manager (85 %), HR Business Partner (10 %), and Assistant Human Resource Manager (5 %). Their age ranged from 25 to 42 years old (mean of 30.5) with 65 % below the age of 30 years, 20 % in the range of 31–35 years, 10 % in the range of 36–40, and the rest over 40 years old. In terms of work experience, 85 % had up to 10 years and 15 % had more. Table 2 summarizes participant details.

3.3. Interview schedule and data collection

The pandemic allowed us to reach out to a larger set of HR professionals based in different geographic areas, and we collected data both online and offline. The authors visited six HR professionals based in nearby cities while accessing the rest (14 participants) online via such applications as Zoom and Google Meet. The first author conducted interviews with participants from 2020 to early 2021. The interviews lasted between 40 and 60 min and were audio-recorded with the participant's permission. We transcribed audio-recorded files verbatim to retain the actual sense of the participant's insights.

A semi-structured interview schedule supported the data collection. We developed it to explore the recent changes in the organization at the level of HR practices, especially considering the COVID-19 situation. We used a set of open-ended qualitative questions to investigate the innovations and employees' innovative behavior at the level of HR practices. Further, the questions emphasized the challenges participants faced during HRDT, in terms of understanding employee-level support and the technological infrastructure and assistance. The questions also focused on the need for training to ensure HRDT. In addition, we asked HR professionals to describe the structured approach to innovation, the ways to ensure it across the organization, and the resistance the employees faced. Last, we asked the respondents to highlight the existing HR processes and the changes they expected in the coming years.

The interviews largely followed a discussion style. Although most of the questions were common to all participants, certain questions emerged from some of their responses. For example, HR professionals in the IT industry described the transformational initiatives that occurred in the recruitment process, occurring completely online. Some emergent

questions focused on the adoption of hiring techniques and aids in facilitating e-recruitment.

3.4. Data analysis

We built a quasi-grounded theory coding process, to identify patterns and themes that constituted our conceptual model (see Fig. 2). Our analysis began with transcribing the tape-recorded interviews word by word, which gave us about 290 pages of rich and thick descriptions. Then, we sent these transcripts back for member checking, after which we adopted a threefold coding process involving open coding, axial coding, and selective coding (Malodia et al., 2021; Miles & Huberman, 1994). The first two authors conducted the first step of open coding and generated a document of 13 single-spaced pages. The initial coding synthesized comprehensive participant descriptions (Strauss & Corbin, 1998) of the HRDT in their organizations and the aids it required. For example, we preliminarily coded the respondents' emphasis on adopting different technological disruptions in the organization as "ensuring adaptation to technology." In the process of coding, the first two study authors met multiple times before finalizing the coding scheme, exchanging notes on their coding of the first four transcripts to compare and contrast their codes and arrive at a reconciliation.

Next, to create more meaning, we extracted second-order concepts, which the data tree in Fig. 1 reflects, from the more abstract and theoretical first-order coding (axial coding). For example, the first-stage code—"ensuring the safety and well-being of employees"—led to the second-order concept, "occupational health and safety." Similarly, a first-order code—"online mentoring to help new joiners"—led to the second-order concept, "e-mentoring." We then categorized second-order codes on the basis of their relevance and placed them under different themes. All authors of this research met to arrive at its final framework, placing the related themes within overarching dimensions and building relationships and patterns among them. For example, innovation capability as an overarching dimension had three different levels—individual-level, group-level, and organizational-level innovation—as the need for integrating these levels is constant to implement innovation. These themes further included various subthemes, such as person-organization fit, team management, and high-involvement work practices. Gradually, we developed an HRDT framework. Help from the organization's innovation capability and such interventions as developing digital infrastructure, adopting digital architecture, and individual capability and creativity, moderated by (for example) management support, communication, and organizational culture, can build such a framework.

4. Results

The current research aimed at exploring the adoption of digital disruptions at the level of HR function during the COVID-19 pandemic, resulting in HRDT as an outcome of an organization's innovation capability. For a long time, digital transformation functioned as technological adoption or upgrading (Kraus, Durst, Ferreira, Veiga, & Kailer, 2021). This understanding completely overlooked the importance of human interventions and existing processes. Thus, we built on the premise that the infrastructural and technological efforts toward transformation remain incomplete if employees' capability and creativity to ensure innovation capability at all levels in the organization do not support them (Saunila, 2020). Thus, we explored the roles of people, processes, and technological factors as major enablers of innovation capability. In addition, our research highlights the moderating role of management support, effective communication, and participative culture (Bansal & King, 2020; Bansal, 2019) in determining HRDT, especially during COVID-19 when one had to continuously update skills and abilities, at not just the individual level but also the group and organizational levels. This enabled organizations to build self-directed systems through collaborative efforts aiming toward greater productivity. We

Table 2
Sample Characteristics (N = 20).

Characteristics	Subgroup	Frequency
Industry	Information Technology/Technology	8
	Education/Education Technology	3
	Construction	1
	Agrochemical	1
	Banking and Financial Services Chemicals	11
	Consultancy	1
	Manufacturing	4
Position	Assistant Human Resource Manager	1
	Senior HR Manager	17
	HR Business Partner	2
HR Functions Managed	HR Compliance Manager	1
	Talent learning & development Manager	1
	Talent Acquisition Manager	1
	Program Manager (Operations)	1
	Generalist HR Manager	16
Years of Experience	Upto 10 years	17
	Above 10 years	3
Gender	Female	8
	Male	12
Age	Below 30	13
	31–35	4
	36–40	2
	Above 40	1

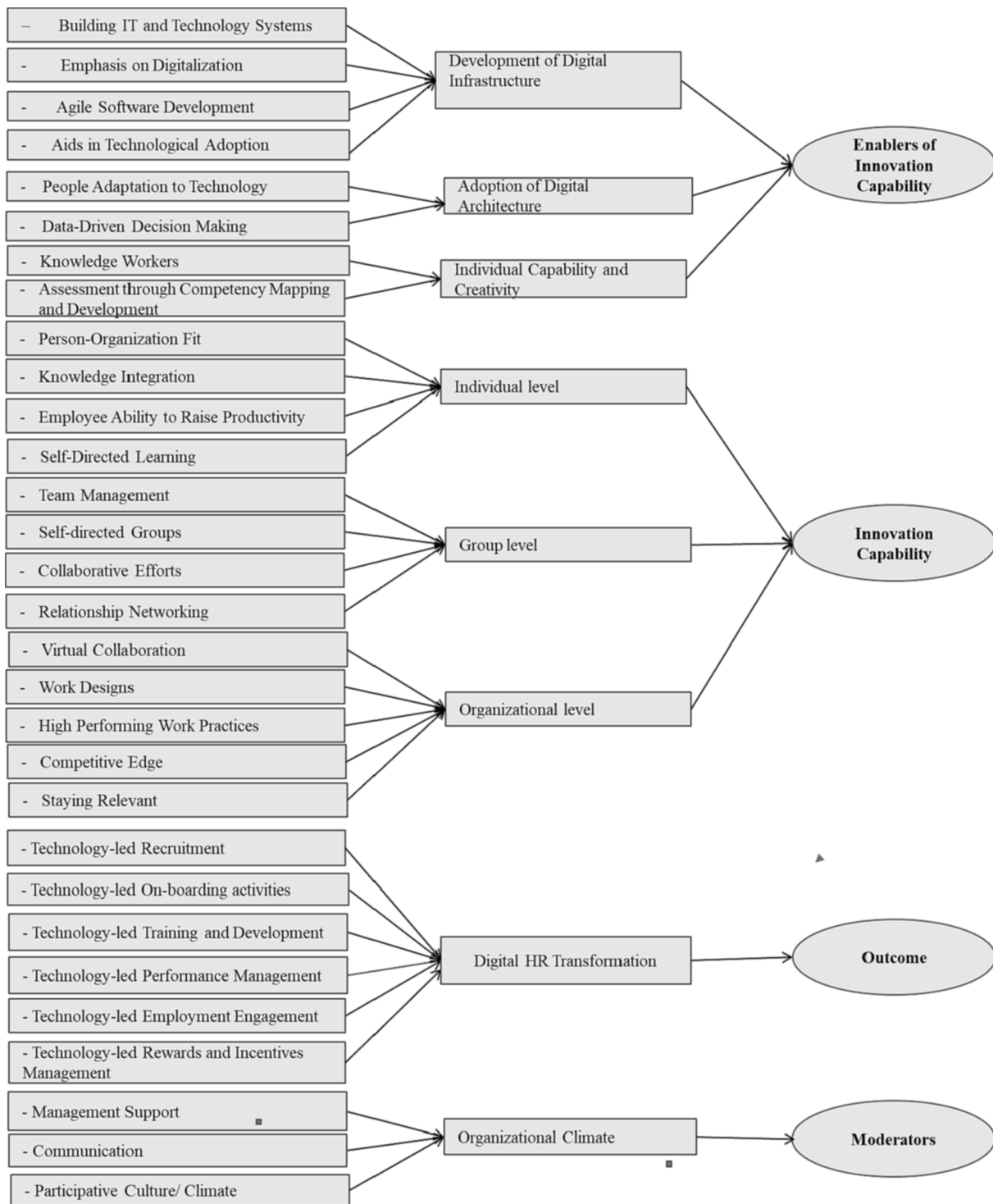


Fig. 1. Data Tree with second-order codes, first-order themes and overarching dimensions.

explain our resulting research framework below (see Fig. 2).

4.1. Enablers

Digital transformation has gained importance in management practice and research by strategically integrating digital technologies, transforming businesses (Nambisan, Wright, & Feldman, 2019) by improving on existing business processes, culture, and consumer expectations, and facilitating changing market trends (Sankar, 2021). Though prevalent, HRDT is not only a function of technology. People

factors that build the organization's innovation capability also aid HRDT (John et al., 2017). Thus, we tried to explore innovation capability at HRDT's core.

Lawson and Samson (2001) define innovation capability as "the ability to continuously transform knowledge and ideas into new products, processes, and systems for the benefit of the firm and its stakeholders" (p. 384). Our findings refer to innovation capability as constructing new ways of performing business activities by effectively absorbing new technologies, gaining expertise in the existing processes, and ultimately exploiting individual capabilities and creativity. Thus,

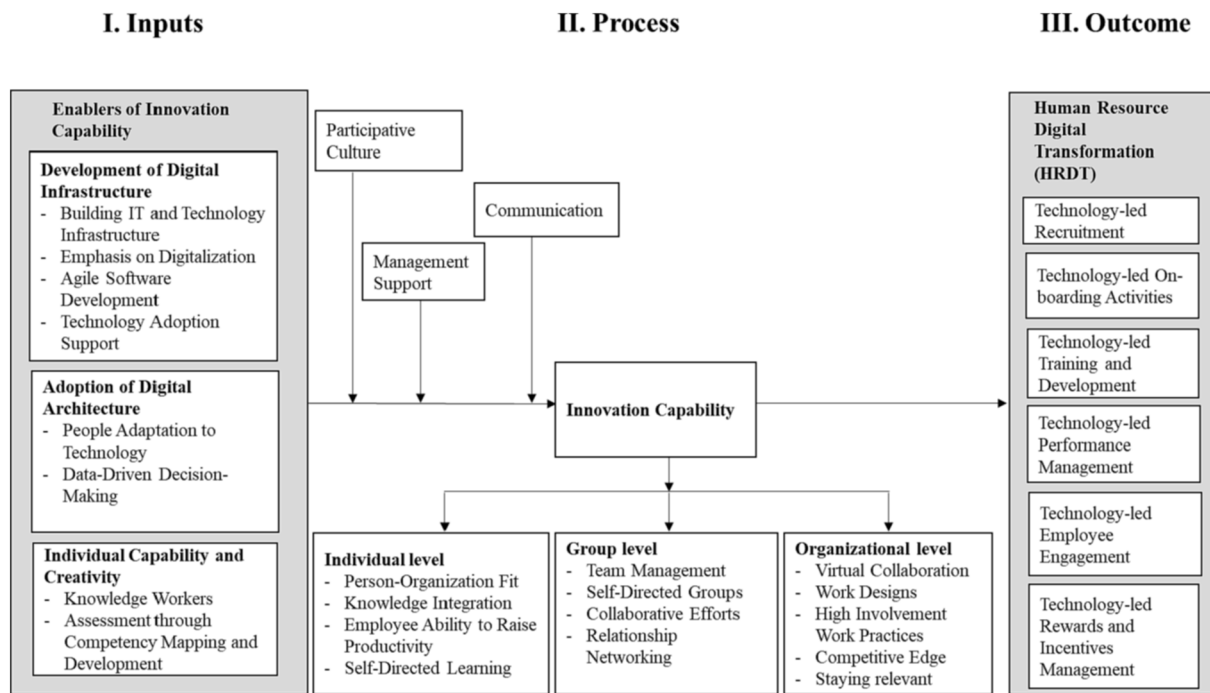


Fig. 2. Research Framework of Human Resource Digital Transformation (HRDT).

our research integrates three enablers of the organization's innovation capability—*development of digital infrastructure*, *adoption of digital architecture*, and *individual capability and creativity*.

4.1.1. Development of digital infrastructure

The *development of digital infrastructure* is one of the most crucial enablers of the innovation capability to lead HRDT. It highlights the need for the availability of technology and the related infrastructure, thus identifying four important themes: *building IT and technology systems*, *the emphasis on digitalization*, *agile software development*, and *technology adoption support*. Organizations are overcoming the challenges of the digital world by redesigning their culture and their functioning. Technological infrastructure is a set of “physical, cultural and digital arrangements that streamline working life in the complex, dynamic and often unstructured working environment” (Kristine, Ina, & Nick, 2017, p. 136). During this pandemic, the drastic conversion of actual organizational activities to virtual work environments has resulted in building and strengthening the IT infrastructure and reliance on technology. Participant 2 corroborates: “HR systems are improving and innovating as per the intensity of the pandemic. We are striving to become future-ready and resilient in the market. Video analytics, pandemic tracking, and smart geolocation as an exit strategy are all being implemented, along with the services desk outsourcing, cloud transformation, and telemedicine services are put in action.”

Second, *emphasis on digitalization* was integral to the overall HRDT of the organization, referring to the creation of new methods for implementing organizational activities using the Internet and digital technologies, including big data, the IoT, cloud computation, augmented and virtual reality, and artificial intelligence (Islam et al., 2021; Zhang, Zahid, & Muhammad, 2021). The current pandemic has compelled organizations to replace traditional methods of doing business and managing workforces with more digitally sound practices. Participant 13 talks about her organization's initiatives on the level of digitization: “For 2021, we are trying to make everything smoother and user-friendly to ensure presence on the digital platforms. More digital, more use of AI. And that would be easy for the candidate as well for us. And I think its importance is increasing day by day and would increase year by year.” Similarly, Participant 5 said, “Going digital, is surely the biggest change

in one last year. From taking online interviews to conducting workshops on Zoom, we have learned and adapted a lot.”

Agile software development refers to the development of technological methods and software with the help of a diverse group of workforces and cross-functional teams (Kumar & Bhatia, 2012), in short periods. Thus, we emphasize the importance of self-directed teams that help facilitate collaboration and technological adaptation. For example, as participant 2 conveys, “More cloud-based interactions and GitHub integration projects create an agile environment.” During our study, we also noted that organizations collaborate with agencies to outsource agile software for end-to-end solutions for business activities. Participant 1 described the importance of one such instance of outsourced software: “To process the salary-related documents, the organization provides us with added software support from the CA (chartered accountant) firm which we have partnered with to make things simpler for employees and us.”

Finally, our findings point to *technology adoption support*, to ensure the development of digital infrastructure at the organizational level. For example, virtual training of employees to adopt technology was a major concern for organizations. The emergence of multiple digital platforms aided the existing technology infrastructure and, thereby, the overall organization, to build connections and remain intact with the teams. For example, Participant 1 stated, “Working on a global organization as ours, we already had systems and processes in place where everything was supposed to be done on an in-built software, or third-party service software and tools. So, we were prepared for it way before the pandemic, and employees were also fully trained a priori to it, as part of their training of the software.” Further, Participant 5 highlighted the initiatives his organization took: “Our organization adopted a new HR tool involving AI. Since we were adapting to the online platform, we wanted to minimize the chaos as many things were happening around us. So, we started using XOR [exclusive OR computing] tools, which help us screen potential candidates simply searching by the related keywords.” Working from home and relying on technology for monitoring and controlling has emphasized decentralization of work as an important concept during the pandemic. Participant 16 emphasized the resulting efficiencies: “We have done a lot for employees because of the kind of Internet that you had at the office; you need the similar kind at home. We launched an app for hardware-related problems and also gave some extra money and

then provided more data, to make sure that the employees get the Internet wherever they are working from—in all, ensured that employees do not feel constrained for resources.”

4.1.2. Adoption of digital architecture

Webster's dictionary defines “architecture” as “an art or science of building or construction or the art and practice of designing and building structures.” However, today we use the word broadly in many fields, such as computers, software, and technological or digital architecture that aids in developing conceptual as well as technical knowledge about digital technologies. Architecture differs slightly from infrastructure, which describes the actual set of components that form a system; architecture goes further, describing their design and relationships (Winters, 2001). Our findings concur. As modern organizations pressurize to increase the efficiency and effectiveness of the business and achieve a competitive advantage, the existing digital infrastructure requires optimal understanding and utilization to ensure organizational transformation. Our research identifies two integral components of adopting digital architecture: *people adapting to technology* and *data-driven decision-making* to aid the innovation capability of the organization.

The tremendous development of information technology has had a remarkable impact on organizations and shifted traditional organizational activities to virtual work, moving several business processes onto various online platforms and compelling their employees to be at the forefront of technological adoption. In their comments, our research participants reflected on the importance of technology adoption. For instance, Participant 8 said, “... so, everybody is using the new technology and it is working very, smoothly. In fact, much system upgradation was also done during the pandemic situation and everybody's getting used to this new normal.” However, HRDT must not be the function of one individual's intent; it requires all-around support from the people, departments, and overall organizational intent. Many study participants emphasized the importance of creating teams and groups to ensure the implementation. For example, Participant 5 said, “We had a leadership team, technical team, and finance team specifically for budgets. Then we were in constant contact with the IT team as they were very crucial in this transition.” However, the most important inhibitor of any change in the organization is employee resistance, hence requiring sufficient measures to manage it. Thus, Participant 2 discussed the most important contributor to the resistance as “the most resistance that we have faced is from the middle-level management, especially when it comes to lateral hiring. These employees have a set mindset that newer, fresher HR policies are hard to implement.”

Further, *data-driven decision-making* is of immense importance in helping HRDT. Data generation by AI and IoT technologies as part of strategic decision-making have provided immense data on the same phenomenon, aiding the tech industry in recruiting employees who are well-versed with the technology and analytical tools. In 2020, the number of analytical jobs the tech industry posted surpassed the demand for traditional skills (Kartik & Jeanette, 2021). Data-based decision-making helps achieve better results in hiring potential candidates, enhancing employee talent, and attracting and retaining employees. For example, as Participant 8 stated, “Considering the attendance, initially, the employer used to swipe in, and then they had to fill in their efforts in a ‘V’ incorporated system, which is not as effective. Work from office platform, wherein the employees who have been working had to fill in their details there, and that has been capturing the database correctly. So that helped later on, to track the attendance of employees without manually inserting the details of the employees.” Data-based decision-making is advantageous, especially in organizations with a larger workforce, not only predicting the financial expenses and results using different models but also implementing practices for increasing employee efficiency and reducing employee turnover. For example, as quoted by participant 14, “The data is coming into HR a lot. Because of the data, you can do things that were not imagined; for example, in recruitment, when you have 1,000 sales employees who will work with

you, using data you can run through and make a perfect profile of a candidate who will work extremely well for you, you can also make new hiring using that data. So, you identify proxies, and then you find those proxies in the candidates, and then you hire.”

4.1.3. Individual capability and creativity

Ultimately, our findings emphasize the people aspect and draw attention to the importance of individual capability and creativity to aid HRDT. Change is a function of creative ideas, which the necessary tools to implement them support. Thus, our findings identified two important determinants of creativity, namely, *knowledge workers* and *assessment through competency mapping and development*. According to Damodaran and Olphert (2000), “Knowledge management (KM) systems are information systems which are perceived as facilitating organizational learning by capturing important (content and process) ‘knowledge’ and making it available to employees as required” (p. 405). Knowledge management systems should enable the creation and sharing of knowledge in the organization and, thus, supporting knowledge workers in successfully leading the HRDT. Participant 12 stated, “They had some gap between the reception of the knowledge that we wanted to give to employees and how the knowledge was being imparted at the beginning of the sessions. But then the experts realized that their passion needs to be upgraded. For example, these people will not learn through how we learn in our MBAs or our graduations through textbooks. This is the age group wherein you have to talk through scenarios, we have to portray scenarios, we have to give real-life examples. So, a lot of case studies were given to them. A lot of videos were given to them about how people are doing it efficiently even before the pandemic came.” Knowledge workers themselves should be innovative, bringing new ways of working and processing methods using the best possible knowledge, arrived at through knowledge management systems. For example, Participant 1 stated, “For support staff, we consulted our project managers, asked for potential methods on how to make things simpler for clients, etc., and designed modules with collaboration with teams from other countries.”

We found *assessment through competency mapping and development* to be integral to the creative strength of the organization. Competency mapping is a process of identifying the abilities of an individual (Sugumari & Andal, 2014) while competency development is associated with increasing the strength of the organization and enhancing its innovative potential through employees and teams. Our results highlight organizations increasingly emphasizing digital competency mapping of the job incumbents during this pandemic situation. For example, Participant 1 highlighted, “Instead of focusing on only the interview, we have developed gamification approach while selecting candidates, and especially during the pandemic, we increased its weightage as we cannot call that person to office to write a test on logical questions and quantitative aptitude. So, instead, we rely on his logical and problem-solving skills during the gamification assignment.”

Thus, we offer the following proposition:

P1: Organizations that significantly invest in their technological infrastructure and architecture and are forthcoming in extending individual resources can better facilitate HRDT.

4.2. Innovation capability

Our research identifies innovation capability at the core of HRDT. Thus, its enablers (explained above) build innovation capability at individual, group, and organizational levels.

4.2.1. Individual-level innovation capability

Our findings indicated that ensuring innovation at the individual level is the function of four important themes: *person-organization fit (PO fit)*, *knowledge integration*, *employee ability to raise productivity*, and *self-directed learning*. Chatman (1989) referred to *PO fit* as the congruence between organizational norms and values and one's personal values. It not only concerns the individual's work, groups, and superiors but also

focuses on the suitability of individuals to the organization as a whole (Khalid Abed, Mohammed, & Bansal, 2020). Participant 1 commented on the importance of PO fit. “Here, our opinions are always valued, and so is our performance. To make the hiring process easier and more efficient, we introduced the referral program in the India office, which was well supported by the management as that would allow us to hire only capable and dedicated talent instead of pursuing candidates for job applications like business development.” In this digital era, where traditional HR is transformed into strategic HR, superior emphasis is placed on hiring based on PO fit, to ensure compatibility between the employee and the organization.

In addition, we find that *knowledge integration* contributes to individual-level innovation, especially during the pandemic when people communicated, met, and gathered through virtual digital platforms. Students who attended online lectures, organizations that conducted virtual training programs, and online workshops are just a few examples of institutions of every kind relying on technology for knowledge integration. In this regard, Participant 12 stated, “The gap between the reception of the knowledge that we wanted to give them and how the knowledge was being imparted at the beginning of the sessions were challenging. But then the trainers realized that the passion needs to be changed... So, a lot of case studies and videos were given to them about how people are doing it efficiently even before the pandemic came.” The integration of knowledge through multiple means enhances effectiveness and efficiencies to be more responsive to market changes. Knowledge within the organizations must be reconfigured to meet the environmental demands, especially during the challenging facets of the pandemic. For example, as Participant 5 stated, “To facilitate the support staff, we consulted our project managers, asked for potential methods on how to make things simpler for clients, etc., and designed modules with collaboration with teams from other countries.”

Employee ability to raise productivity was also found to contribute to an individual's innovation capability. The growth of the organization depends upon the performance of employees, which we found to have significantly risen during the pandemic. Experimentation with the ways of doing things, developing new tools and methods of performing tasks, and building meant staying in touch and ultimately contributing largely to an organization's innovation capability. Participant 4 highlighted, “Every-one was cognizant of the fact that these are unprecedented times, and we need to stand together and help each other in such difficult situations. Every-one adjusted to the best of their abilities and worked together to increase their productivity.” The emphasis is on physical and mental safety as well as financial security. For example, Participant 4 reflects, “We ensured every-one is intellectually and monetarily stable during this time. So, there were a couple of our drives to ensure that if a worker is intellectually well, they had the option to perform better. So, we isolated ourselves into little gatherings and ensured that everybody is doing acceptable.” One of the methods of raising productivity in a virtual work environment is the formation of groups that can lead to smooth interaction and coordination of work. For example, as Participant 7 stated, “We made sure everybody is mentally and financially stable during this time. These were a few of our initiatives to make sure that every employee is mentally well; they were able to perform better. So, we divided into small groups and made sure that every-one is doing good.”

Finally, our research indicates that *self-directed learning* is another contributor to the individual-level innovation capability that refers to the voluntary responsibility of the individual to learn (Guglielmino, 2002). The development of information and communication technologies and the blended-learning approach through virtual means led to an increase in self-directed learning. Participant 15 stated, “When employees themselves get the exposure to working on something a little different from what they had been in their usual course of work, which also opens up the avenues and the possibilities for possible upwards movement in the organization, or for people who are interested in some other things that they are doing in some lateral movement, as well. So

self-learning is a big reward.”

4.2.2. Group-level innovation capability

The pandemic has given rise to the organization's call for groups and teams to be able to collectively manage work, communicate, and change. Our research suggests that these groups also proved to be important sources of innovation capability and contributed to the overall HR transformation. Our research looked at four important themes that led to group-level innovation capability: *team management*, *self-directed groups*, *collaborative efforts*, and *relationship networking*. Virtually working and managing teams was a tough task during the pandemic. On the other hand, working with diverse teams globally was a major advantage to networking opportunities, helping employees to imbibe a greater sense of global networking. Participant 8 reflected on this and stated, “We could access different team members across locations, across geographies. In fact, not only the Indian employees, but it was also the employees who work abroad could join this particular session. So, it was a positive in this particular kind of environment.” Emphasizing team bonding activities has a significant impact on the work environment and bringing innovation to the organization. For example, Participant 3 said, “We invite you from all sides, so if there isn't a structured approach, whenever we're faced with a challenge, each team that's working on that particular part of the product, they come up with various ideas and innovations to enhance or make the process more efficient. So, all of that is incorporated on the UI.”

The formation of virtual groups has given rise to a self-directed working approach during a pandemic when people could not physically interact with team members. Decentralization in a virtual work environment replaces the hierarchical approach. For example, Participant 2 reflected, “Our organization has always been innovating and implementing the best practices in the industry. We have been setting the industry bar on high and empowering our people in work culture practices.” *Self-directed work groups* have increased the importance of responsibility and autonomy in the organization. For example, as Participant 15 stated, “The employees themselves get the exposure to working on something a little different from what they had been in their usual course of work, which also opens up the avenues and the possibilities for possible upwards movement in the organization, or for people who are interested in some other things that they're doing in some lateral movement, as well. So learning is a big reward.” Further, *collaborative efforts* contribute to the group-level innovation capability building. Roschelle and Teasley (1995) define collaboration as “mutual engagement of participants in a coordinated effort to solve a problem together” (Dillenbourg, Baker, & Blaye, 1996). During this pandemic, people understood the importance of teamwork and integration. Participant 1 thus highlighted, “We have modified the team structures and organizational structures of Indian offices where work from home was not that evident before the pandemic. We changed the way team meetings happen, their frequency, training modules, evaluations, etc.” The collaborative support and efforts practiced during this pandemic have significantly resulted in the organization's success. Collaborative efforts are not only limited to the internal organization; external parties matter too. For example, Participant 2 said, “We believe that X (the organization) is a part of every-one of us and we proudly call ourselves X-ians. Thus, the responsibility of the organization is the responsibility of all stakeholders within and outside the organization; we abide by this principle.” Contributing to innovation and adapting to change in a remote work environment was a crucial task for every-one the pandemic affected. In tough times, it was a major role of the employers who provided aid to keep employees mentally and financially stable, encouraging them to innovate. Participant 5 thus highlighted, “Every-one must contribute. Surely the team leaders or heads should lead by example, but it is also the responsibility of every individual to be innovative and creative. We make sure that all of our employees' ideas are heard because you never know which small thing could disrupt the entire market.”

Relationship networking especially refers to building connections to obtain business growth and development. To adapt to technology during the disruption, the pandemic compelled every-one to rely on digital platforms to either acquire information or build connections around the world. Relationship networking was an effective method to productively utilize the time during the pandemic to safeguard the business, in such terms as increasing investments and growing global reach through on-line means. Many organizations got the opportunity to expand their businesses overseas during this pandemic. Participant 1 referred to this: “We also have country exchange programs in which employees get a chance to visit and meet their complete team and clients from other countries, and they can directly communicate with any senior member, including CEO if they want.”

4.2.3. Organization-level innovation capability

Finally, we also found innovation capability building at the organizational level. Our research identified five contributing themes: *virtual collaborations*, *work design*, *high-performing work practices*, *competitive edge*, and *staying relevant*. *Virtual collaboration* refers to connecting people geographically dispersed across the world, through online means. During the pandemic, organizations outsourced services and collaborated with people across geographies to minimize operational costs. Coughlin and Kajder (2009) stated that virtual collaboration is a process utilizing a variety of methods for experts to work together, pool resources, and communicate, nurturing self-development opportunities. Participant 1 thus highlighted how their organization collaborated virtually: “To process the salary-related documents, the organization provides us with added software support from the CA firm which we have partnered with to make things simpler for employees and us.” *Work design* is “the content and organization of one’s work tasks, activities, relationships, and responsibilities” (Parker, 2014). The flexibility could be associated with the time or the location (Bansal, 2021; Tandon, Dhir, Islam, Talwar, & Mäntymäki, 2021). The pandemic tremendously increased remote work, decentralization, smaller teams, and a more diverse workforce. For example, as Participant 19 stated, “We introduce flexible work schedule, different timings, work from home, shift work, and flexible timings.” The immediate changes in organizational work designs due to the pandemic were introduced first in on-site work, which tools like Zoom replaced, and in general digital platforms that substituted for direct coordination. In this regard, Participant 1 stated, “Remote meetings were always there and will be continued; we will be soon having an iterative project management system in place, in which most of the employees will be facing clients in complete progress of project timeline.” Second, the pandemic led to the delegation of duties and tasks to the line managers, along with decision-making power and autonomy. For example, as Participant 1 said, “The new approach was that employees need to finish all the assignments that are being allocated to them on the company software and finish in a total of 40 h in a week, with the minimum working of 4 h every day. Also, employees were free to take a week off and work on Saturday in case of emergencies but had to inform their project teams and managers before it. This model has been quite successful so far, talking about the efficiency and work concerned.”

High-involvement work practices also contributed to organization-level innovation capability, attempting to improve organizational performance by increasing employee involvement in a series of actions, decisions, or relationships for which they had responsibility. We believe that high-involvement work practices can develop positive beliefs and attitudes, resulting in employee engagement and generating discretionary behavior leading to high performance. One of the ways to effectively implement high-involvement work practices is by introducing self-design and encouraging empowerment. Participant 1 said, “Our opinions are always valued, and so is our performance. To make the hiring process easier and more efficient; we also introduced the referral program in the India office, which was well supported by the management as that would allow us to hire only capable and dedicated

talent instead of pursuing candidates for job applications like business development.” Participation in the process of developing new systems and methods of working provides skill and knowledge enhancement. For example, Participant 5 stated, “The goal is to have an environment where all of our employees feel that they are a part of one whole organization and not their respective teams. So, we don’t have corners per se in our organization, and all of our employees are involved in brainstorming new ideas. If any employee wants to share any proposal or suggestion, we are all ears and easily accessible, motivating them, and maximizing participation.” High-involvement work practices improved work and drove the culture of innovation and idea curation, allowing employees to make organizational decisions, have opportunities to enhance their skills and knowledge, participate in the change management process, and get rewards for their efforts and contributions to the success of the organization that lead to enhanced performance (Alison, 2006). In this regard, Participant 3 stated, “So, one of the things that we used to do earlier was an all-hands meeting for the parent organization with teams across India. So that’s something we would do every once in a while. But something that we do now is we try and have one every-two months because we want to ensure that every-one in the team is feeling involved and encouraged and kept informed about all the progress that the company is making.”

Our results point out that an organization’s *competitive edge* allows it to focus on innovation and progression. Our research shows that to a large extent, communication and collaboration contribute to an organization’s competitive edge, which helps businesses expand and build their networks. Moreover, team collaboration was another aspect of gaining a competitive edge globally with a diverse workforce. For example, as Participant 7 stated, “Everybody in an organization cannot be innovative. You have few people leading that innovation. And it’s always lead by example. Suppose I have a team of five and out of five, two people are really good innovators, everybody has their skillset and their forte. So, if person A is a really good innovator, I would have my team follow the lead by example and methodology. So, if A is performing well, B automatically tends to perform well following the peer. So, it’s kind of a competitive and motivating environment. And that helped during this tough time.”

Finally, an organization’s ability to *stay relevant* is its ability to spend efforts toward innovation. A blended structure of working is emerging due to the disruption of the pandemic. People are habitual in the virtual work environment. For example, as Participant 5 said, “... and talking about the future, I can surely say that it will be a hybrid model of offline plus online services. I prefer taking interviews online, to be honest, as they are more efficient and save a lot of time. So, probably work can continue in online mode and for some workshops and activities, we can meet and bond along.” Organizations are saving operational costs by institutionalizing remote work. Participant 12 thus highlighted the concern for saving the cost: “When we talk about the business side, I save a lot of costs when we are working digitally. Even if we have to pay them the Internet bills, still we are saving lacs together money per month. So why wouldn’t the CEO want every-one to remain at home as long as possible? So we need to cover up and then put it in a way that, you know, it doesn’t sound rude enough to the candidates. So, that was another challenge that we faced.” Employees enjoy sharing space for work and family at one time. The pandemic has several pros and cons, but living with this new normal will be preferable, by all means. For example, Participant 13 said, “We have a lot of work from home situations. So, from the perspective that our team from 21 will be expecting a virtual scenario in which, you know, some of the employees will be told to work from home, that may be able to save the cost of working from the organization, a lot of maintenance.”

Thus, we propose:

P2: *Technological and individual-level enablers do not directly lead HRDT; rather they first induce an organization’s innovation capability to facilitate the HRDT.*

P3: *Innovation capability, demonstrated at the individual, group, and*

organizational levels, is at the core of HRDT.

4.3. Moderators

Though our results point to innovation capability as the function of its antecedents, they also emphasize three moderators that significantly accelerate the relationship: *management support*, *communication*, and a *participative culture*.

The pandemic has separated people from their workplaces, colleagues, and daily routines. By providing personalized support, showing appreciation, encouraging employee involvement, empowering employees, providing autonomy, and ensuring team bonding, management can lead to higher levels of employee satisfaction and creativity, thus enhancing the organization's innovation capability. Participant 1 thus stated, "In our organization, the higher management has ensured to be supportive for every role and designations including HR department when it comes to change management; it's a unique situation, and we all have to be in this together to come out as winners." Adaptation to change was difficult for all in this pandemic, but gradually, with the support of management, people adjusted to the new normal and participated in providing creative solutions to problems. For example, as Participant 8 said, "Our leaders are very supportive in that way. So, they help us understand the new phenomenon and they tell us what the best practices are and what, how we have to implement or adapt the changes, that was helpful."

Communication plays a vital role in a virtual work environment, to keep every-one updated about the latest happenings. Emphasis on open communication and transparency across team members tends to foster relations between employees and management, thereby increasing employee participation in the innovation capability of the organization, both at individual and group levels. Participant 1 responded: "It [open communication] can be initiated by the top management on a time-to-time basis; it would be good for others to evaluate, try and accept them. But, on the other hand, ground-level employees should also be free to raise suggestions and innovations in the organization which can be further discussed with top management and implemented if good for the welfare of employees." Participant 1 further addressed the structured approach to communication that the organization adopted: "We do have a structured approach. Employees should be clear to whom to approach, how to communicate if any issues, suggestions, or initiate talks with other employees situated in a different country to keep things smooth. We increased the frequency of team meetings to ensure every-one is aware of the others, their state of mind, and all things every-one is working on. We started having weekly meetings instead of bi-weekly meetings with upper management from the Netherlands after the pandemic, to ensure the smooth working conditions at the India office." Organizations implement a bottom-up approach in communicating with employees, especially new joiners, to not just blend them with the work culture but to also imbue them with the feeling of empowerment, to motivate them to give their best to the organization. Participant 1 stated, "We continued having buddy mentor system for new joiners where they can reach out to them via any platform, call them up if they need any help, but people were hesitant to communicate due to new environment and introvert nature. So, we did not know what issues they are facing to make it simpler for them and give their best to the organization."

Organizations are looking forward to keeping their employees satisfied and motivated, by ensuring a *participative culture*. Encouraging employees to present their ideas, share opinions, maintain frequent communication, and implement best communication practices helped the organization to be more effective during the pandemic. For example, as Participant 7 stated, "Initially, it was a little bumpy road, but then everything went on smooth, since everything went from in-person to everything online. We started with having all the meetings on Zoom, or either team or any other communication online platform. Gradually, we started having a lot more of our town halls, team meetings, all hands-on

deck, all meetings." Participative culture provides employees with a sense of authority and autonomy in working, enabling them to develop creative solutions. Thus, Participant 3 stated, "We are an organization that doesn't really have a very structured approach. In terms, since we're young companies, we look at, you know, getting the work done, rather than following a whole hierarchy."

People practicing in remote work environments face many challenges, personal as well as professional. Employee voice in an organization requires acknowledgment, respect, and care for their physical and mental well-being, to ensure their best contribution to the work.

Thus, we propose:

P4: Management support, communication, and participative culture of an organization strengthen the relationship between the digital and individual-level enablers and an organization's innovation capability.

4.4. HRDT

Finally, our results indicate that innovation capability, which the enablers of technological infrastructure, architecture, and individual capability and creativity lead, and top management support, internal communication, participative culture, and climate moderate, help transform the HR processes in the organization, its HRDT. Our results point to the various HR subfunctions experiencing a digital transformation, such as *recruitment*, *onboarding activities*, *training and development*, *performance*, *employee rewards*, and *incentives management*.

Technology-led recruitment possesses an advantage that virtual and social-media hiring enables over the complex traditional methods, allowing organizations to introduce flexible and attractive ways to recruit potential candidates. For example, Participant 13 said, "Traditional logic tests will no more be required and we take another round of interview and HR interview before taking them in, so completely removing the writing tests, due to pandemic, and evaluating them from our newly built portal and gamification, coding rounds and remote interviews itself." Similarly, millennials focus on realistic job previews to gain better clarity about the organization and its culture. Nowadays, organizations prefer recruitment through social media to hunt the millennials, assuming that acquiring talented youth will lead to gaining global competitiveness in terms of adaptation to change. Similarly, it is easier for the candidates to appear in virtual interviews irrespective of their location. For example, as Participant 12 said, "So when we see now that the people are not expected and you can say one drawback of this pandemic is that many people have lost their jobs, so many people are immediately available. And the benefit for them to leverage is that no one is calling anyone to the physical facility. So, it has become much more comfortable for them and the work of HR, following up with the candidates to make sure that he/she actually joins has reduced. Lesser risks involved."

Technology-led onboarding makes it much easier for organizations to make new joiners aware of the culture and work environment of the organization without visiting and experiencing the environment. For example, Participant 3 shared how the organization created 360-degree virtual tours for their newly joined, allowing them to fully immerse themselves in the infrastructure of the organization. Another participant, Number 16, highlighted the importance of apprising the employees in online mode. "There was a change in the onboarding process. My organization was recruiting 140 people weekly, and we made sure that they were provided formal introduction training virtually. We also made sure that we are calling everybody, and they are kept in the loop so they don't feel left out." Organizations have created e-orientation and e-induction programs, wherein the new joiners can become familiar with the organization and their colleagues. For example, as Participant 10 said, "I used to create the pre-onboarding engagement for all my new donors, people who are being offered and even those who are serving as 30 days or 60 days of despair. I always have that relationship so that before joining the organization, the candidate is aware of the stakeholders they are working with, about the company they are joining to do

so that it should not be anything negative once they are joining the organization that all should.” Organizations ensured that there was a participative culture for new joiners and provided them with mentoring support.

Technology-led training and development initiatives enabled organizations to continue to impart their mandatory training virtually. Participant 1 highlighted the types of training imparted during the pandemic: “We have two types of training programs—‘Lateral Training Programs’ and ‘Debutant Training Programs’. The lateral training programs are usually 3 weeks long and are for experienced employees. The debutant training programs are for the employees who are campus hires and/or new entrants. These programs are usually one month long. We nurture not only their technical skills but also behavioral and work cultural skills.” As a result of gaining such a competitive advantage, organizations will have to increasingly rely on frequent virtual training exposure, to ensure enhancing employees’ competencies, which can further result in more committed employees. For example, as Participant 17 said, “Throughout the skill management, 95 % of the operators are trained for the cross-functioning work and trained for the other stages also. There is a 4-by-4 system in which a single operator can work on a 4-stage and there will 4 operators to work on the same stage.” Online training for employees to adapt to technology has been a difficult task for all employers. For example, as Participant 1 stated, “We had to give a tutorial to employees on how to raise a ticket for support team in case they need any help about software versions, installations, or remote access to servers, which was an important task for them, and they fully have to adapt to it.” Initiatives such as mentoring and mobile learning signify ways to provide online training (Bansal, 2017; Julio et al., 2017). With the advent of technology, the number of digital platforms has risen during the pandemic as people must rely on a digital source of information for every activity. For example, Participant 5 said, “We conducted more trainings on the new tool. We bought multiple Zoom premium memberships to have a seamless discussion. We attended various workshops organized by the Zoom company, where they taught us the basic functions and how to operate special services, such as Breakout rooms, Annotating whiteboards. Then we had our IT team, which was the backbone of this operation. They made sure that even the smallest of our employee’s doubts were cleared on handling the tool. Also, we gave opportunities to explore the platform, so during the main presentations or meetings, there were no hiccups. It is still a learning process, and we get to know new things as the technologies are rapidly evolving.”

Technology-led performance management played a vital role in transforming traditional practices and bringing automation into the process. With the help of varied software, organizations can track and monitor employees’ performance. Similarly, with the feature of dashboard presentations, employees can also track their progress. One way to motivate employees is to appreciate and reward their contribution during these tough times, which can be satisfactorily implemented with E-PMS (electronic performance management system). In this regard, Participant 12 noted, “We make sure to acclimatize them to this culture wherein everything is monitored digitally. It is not that we’re trying to invade their privacy; we’re just trying to make sure that they are working as per the required standards and meeting up the deadlines.” Also, new work design and performance assessment tools also required employees to be well-versed in them, significantly impacting their evaluation in the organization. As Participant 1 stated, “There will be new evaluation KPIs to evaluate employee performance now, using technology, which will not include how much time he works but will assess based on quality and punctuality of their work.”

Also, HR managers did a fantastic job in building *technology-led employee engagement* during the pandemic disruption. This has transformed the system of tracking employees into an employer-employee interface that includes unique roles in updating the friendly and interactive work environment (Thomas, 2016). The hybrid approach of online and offline work has changed the perspectives of HR practices.

Organizations strongly emphasize employee engagement and empowerment to keep motivation and enthusiasm intact, in turn achieving organizational goals collaboratively. For example, as Participant 1 stated, “As an organization we always believe in team bonding and other recreational activities for employee welfare. So, we continued having our Friday snacks, birthday parties, team activities, games, by taking different approaches.” The onset of a pandemic has compelled every-one to adapt to change, specifically technological change, but in due course, it is merely important to socialize and stay connected to people informally. Participant 3 highlighted a few events: “We’ve tried to incorporate events. A lot of celebrations that we used to do as a team, would mostly be at a city level, given that every-one was in a workplace. So, there would be localized celebrations for various things. But now, given that every-one is working from home, it’s entirely online. So, we planned celebrations on Zoom, and we have parties and things like metal Midlands, that’s something that we do to keep the morale and motivation high in employees.”

Technology-led rewards and incentives management has further helped organizations keep their employee’s motivation at a high level. Participant 19 stated, “Companies are starting to offer more personalized benefits and online tools. Instead of offering one benefit package, employees are casting a wide net of different niche options. The ideas provide a wide area of options that will suit the unique needs of employees from any background and in any stage of their careers.” Organizations offer benefits to increase performance, monetary or nonmonetary rewards. These increase employee creativity and innovation capability by enhancing motivation to acquire autonomy and competence (Byron & Khazanchi, 2012). As Participant 15 said, “There is a monetary reward for innovations which end up seeing the light of day, which are taken through to the final stage. So that I feel its big reward for these employees from all parts of all corners of the organization to take part and give ideas for innovation.”

Thus, to this end, we propose:

P5: Overall HRDT is not indicated by the automation of just one or two practices. Rather, it is indicated by technology-led recruitment, onboarding, training and development, performance appraisal, employee engagement, and rewards and incentives management.

Further, based on our findings explained above, we define the construct of HRDT as follows: ‘*Human resource digital transformation, indicated in the digital upgradation of HR processes, is a multidimensional construct that results from an organization’s innovation capability, enabled through the successful integration of its digital infrastructure, digital architecture, and individual capability and creativity.*’

5. Discussion

Technology has fully transformed the management of HR processes, essentially how organizations collect, store, use, and disseminate information about their employees. Companies that cannot adapt to the digital world will undoubtedly fall victim to “digital Darwinism,” where incumbents may disappear and only the most adaptable enterprises, responsive to technological trends, will survive to remain on the competitive landscape (Schwartz et al., 2001). Though business leaders have long advocated the importance of integrating IT with business functions (Larkin, 2017), this accelerated in the HR function only during the COVID-19 pandemic, to ensure work continuity in the wake of personally and professionally traumatizing times (Prakash et al., 2019). However, adopting it is not easy. First, organizations are in short supply of digital talent, and second, traditional organizations are unfamiliar with the ways of optimally utilizing digital means (Edelman, 2020). Further, the pace of modification, uncertainty, unpredictability, and ambiguity of events that COVID-19 led, along with the intense development of recent technology, had a huge influence on operational routines (Varadaraj & Mahmoud, 2021). Thus, using the grounded theory approach brings an understanding of HRDT and provides researchers and practitioners with a toolkit for it.

5.1. Theoretical implications

The current study expands the existing understanding of HRDT and contributes to the development of HRDT theory that has languished over the years because of the existence of confusing terminologies (e.g., HR digitalization, digital HR, smart HRM, e-HRM, sustainable HRM). Even though many of these concepts attempted to explain the technological disruptions in the HRM function, they failed to define and conceptualize an understanding of the digital transformation of the HR function, which our research conceptualizes as HRDT. Thus, we started with the question of how to conceptualize HRDT in a scholarly way. We responded to this research question by thoroughly reviewing the literature on all the related concepts and antecedents, ultimately deducing the answer from our rich data, through grounded-theory research. As indicated in the digital upgradation of HR processes, we define HRDT as a multidimensional construct that results from an organization's innovation capability, which the successful integration of its digital infrastructure, digital architecture, and individual capability and creativity enables.

We further elaborated on the conceptualization of HRDT that was found missing for all the related constructs (highlighted in Table 1). Our research thus expands the existing literature on HRDT and presents a detailed conceptual framework with its enablers, moderators, and indicators. We offer an inclusive discussion on what goes into the process of HRDT. Our findings conclude that while HRDT is a process that the external socioeconomic environment largely influences, HR professionals believe it to be an internal exercise that various drivers of innovation capability support (Zhang et al., 2021). Innovation capability improves an organization's success (Jiménez-Jiménez & Valle, 2006) as it equips organizations with tools to act faster and do a better job in seizing new possibilities and responding to the challenges of the dynamic work environment. Thus, we elaborated in our research on the role of building innovation capability to achieve HRDT, as research has significantly pointed to its importance in the past (Swen & Reinhard, 2021). A deeper analysis of our core theory, i.e., the theory of dynamic capabilities, concludes with its limitations in developing capabilities at once, to meet the need of the external environment. Also, our research offered building capability as an ongoing process requiring innovation at all organizational levels, to continuously invest efforts in process upgradation. Thus, we find innovation capability at the core of HRDT.

In addition, we expand the literature of innovation capability and conclude that it is not merely a function of one's ability or competence to adapt to change. It requires an organization-wide infrastructure, systems, and support to develop what it takes to mitigate the challenges associated with an unforeseen situation. Our research explains this as efforts invested in the development of digital infrastructure. Adoption of digital architecture, along with individual capability and creativity, leads individuals to better contribute to knowledge integration and participate in self-directed learning, arriving at greater engagement with the overall process. Many enablers of innovation capability, such as building IT systems, agile software development, and technological adoption, required a significant shift from current ways of working and tremendous costs. Management's support is integral in ensuring resultant capabilities.

Finally, we expand the HRM literature and elaborate on the role of an individual's capability and creativity in adopting these technologies. Unfortunately, for a long time, research (Seufert & Meier, 2016) has lamented human capital as the greatest impediment to digital adoption, over information or any other system components and technology itself. Our research emphasizes in detail on individual's capability and creativity and the resultant innovation capability of an organization, for its importance in fighting unique business-crisis situations and bringing about HRDT. Thus, we emphasize the use of an organization's knowledge-management systems to create more knowledge workers to strengthen the organization's capabilities and creativity. While strengthening the pool of knowledge workers draws out the importance of hiring an individual with technological competencies and a creative

bent, the emphasis on competency mapping and development ensures an employee's willingness to continuously update and learn new skills.

5.2. Implications for practitioners

The current research presents implications for HR professionals who must constantly look at the existing practices to make them relevant to the changing business scenario. More specifically, we talk about the need in today's ever-changing, uncertain, and complex time for technology-driven HR transformation. We offer an explanation of the dynamic capability approach and conclude that more than any or few capabilities, the core of organizational survival is the organization's ability to constantly innovate and evolve. Thus, we offer practitioners an opportunity to look at the organization as a whole and seek available digital infrastructure and architecture, emphasizing individual capability and creativity, to arrive at innovative solutions. This emphasis on an individual's creativity arrives with the need to revisit the job descriptions and sufficiently focus on the creative and technical aspects of these changes. While an emphasis on technical aspects calls for experience in programming, big data analytics, robotics, and smart systems maintenance, emphasis on capability and creativity has to do with soft skills, innovative behavior, and critical thinking (Nicolas-Agustin et al., 2021).

In this new digital world, businesses must embrace those digital interventions in HR that offer creative solutions to the unique business situation, especially those arising in a crisis like the COVID-19 pandemic. For example, our research emphasized artificial intelligence and the use of HRIS to help HR professionals acquire, store, manipulate, retrieve, and analyze information about talent (Silva & Lima, 2017), thereby bringing efficiencies to overall human-resource planning. Our research also looked at technology-led e-recruitment and concluded that the adoption of digital means empowers an employer to use a variety of technological and electronic means to speed up hiring, e.g., e-tracking applicants, automating candidate screening, and communicating decisions, corroborating the research of Kashyape (2018). Besides, such developments as analytics and augmented virtual reality have been enhancing the HR experience and strengthening employee engagement with the organization (Parry & Battista, 2019). Also, the shift from formal coaching to shaping a culture of womb-to-tomb individual development is occurring (Gok et al., 2021; Jarvis, 2010; Sloman, 2007), corroborating the findings of Mikołajczyk (2021), who encouraged learning, teaching, and re-learning within the course of labor itself. Thus, our research contributes to the level of studying the various digitally disrupted HR functions and its nuances of digitalization.

Additionally, at the moment, 65 % of employees are working from home, and in 2025, firms will require 40 % to continue (Tata Consultancy Report, 2020). Therefore, HR should not consider this new digital HR situation to be a one-time, temporary need. Our research facilitates HR professionals becoming "future ready" and available, with the ideal mix of digital technology, procedure, and strategy, to change operational models more quickly and broadly and overcome not only pandemic-driven issues but also various business situations. Besides, for a long time, organizations were susceptible to new technologies, but the pandemic-led digital disruptions have significantly lowered barriers, enabling the entry of new disruptive rivals (e.g., Netflix, Uber). Thereby, in the wake of new rivalry and competition, the organizations must be proactive in their approach to being front-runners in technology adoption. Our research comes equipped with the tools to help digitally transform the HR function accordingly.

5.3. Conclusion

In almost all domains, digitalization has disrupted the current course of practices. Our research investigates this transformation in the various HR subfunctions and concludes that HRDT is not a linear process, but requires the right amount of top-management support, climate, and

employee communication in developing the supportive digital infrastructure and adopting digital architecture to integrate with individual capability and creativity, to arrive at organization-wide innovation capability. The paper describes the HR-level disruptions in organizations in the wake of COVID-19, by identifying the role of innovation capability developed at the levels of individual, group, and organization. This explains the advances in various HR processes ranging from recruitment to engagement, compensation, and rewards.

5.4. Limitations and future directions for research

The paper generates new knowledge by using real-life insights from HR professionals who have experienced HRDT in their organizations during the COVID-19 pandemic. Despite this study’s valuable contributions, it also has limitations that show some avenues for future analysis. We suspect that our methodology and methods might have certain limitations, first due to the onset of the pandemic. We adopted a blended approach to collecting data, i.e., through online and offline means, and an online medium may often be lamented for failing to establish rapport between the interviewer and interviewee (Singh, Steele, & Singh, 2021).

Second, we chose to blend qualitative interview data with the grounded-theory approach. Though this approach should unravel the new phenomena and information (Bouncken, Qiu, Sinkovics, & Kursten, 2021), the methodology may not sufficiently provide generalizable results. Pandemic-led disruptions are still in early stages, and how they might impact business processes in the long run remains to be seen. Hence, while we include a large body of literature in a framework that connects organizational, social, and individual characteristics to the processes and results of digital transformation, verifying these correlations and assumptions quantitatively requires further study. Next, working with modern technology requires employees to continuously develop new skills, or even completely change existing ones. The constant change brought on by the introduction of ever-more advanced technological solutions in the workplace has the potential to exacerbate negative emotions and stress, particularly in those workers who are less able to adjust to the demands and professional variability that the corporate world is experiencing now (Bliese, Edwards, & Sonnentag, 2017; Maiti & Awasthi, 2020). This calls for future investigation in terms of how learning and development (L&D) managers could reduce such unfavorable attitudes among employees.

Finally, the data from different geographical spaces would help in gaining deeper insights for generalization purposes, as our data came from limited locations in India, which though providing thick descriptions of the phenomenon, had limitations regarding cultural diversity. This creates an opportunity for future researchers to continue to investigate factors that may amplify or improve the innovation capability of organizations with respect to HRDT, in cultural contexts different from India’s (Ferraris et al., 2019). Future researchers may want to explore new geographical areas in which to study the HRDT process, which might mitigate this limitation.

We also propose that since the COVID-19 pandemic has led individuals to opt for freelance work, it would be good to understand its impact on the gig economy. Further analysis could dive deeper into individual and organizational needs, to understand how HRDT leads to individual and organizational development.

Table 3 summarizes this research’s contributions to theory and practice and lists some of the areas for future research.

CRedit authorship contribution statement

Anjali Bansal: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Tanvi Panchal:** Formal analysis, Methodology. **Fauzia Jabeen:** Validation, Investigation. **Mangla Sachin Kumar:** Visualization, Validation, Supervision. **Gurmeet Singh:** Visualization, Investigation.

Table 3
Table of Contributions and Suggestions for Future Research.

Contribution to Research	Implications for HR Professionals	Suggestions for Future Research
• The research provides thorough conceptualization of the construct- HRDT along with the detailed note on the various HR practices transformed digitally as a result of digital disruptions. • Dynamic capability perspective encourages to look at innovation capability at the core of HRDT. Hence, the research attempts to dissect the concept of innovation capability into an attribute presented at multiple levels in the organization, and thereby, study the same at the levels of- individual, group, and organizations. • The research offers an expansion of dynamic capability perspective which allowed to integrate the technology with the individual factors.	• HR professionals need to create an environment to encourage digital disruptions such as artificial intelligence, big data analytics, machine learning, robotics, smart system maintenance etc. to facilitate HRDT at multiple levels in the organization. • HR professionals needs to look at the organization as a whole and look for available digital infrastructure and architecture along with individual capability and creativity, to arrive on innovative solutions. • HR professionals may thus need to hire people with high creativity quotient. • HR involvement in embracing HRDT increases employee engagement.	• Investigating HRDT by ensuring a right mix of interviews conducted through online and offline means. • A quantitative empirical investigation would help validate the results of the current study. • Working with modern technology requires employees to continuously develop new skills, or even completely change their existing ones. This requires a future investigation to support L&D managers how they can make their employees change ready for the same. • The innovation capability may get amplified or improved by different factors across different geographies, hence, it is good to investigate the same across different cultures (Ferraris et al., 2019).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

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