

Digitalization in Human Resource Management

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Abstract—*The concept of digital human resource management and related concepts such as the digitization of human resource management, the digitalization of human resource management, the digital transformation of human resource management, and the digital disruption of human resource management are gaining prominence in scholarly discussion. Frequently, however, the use of these concepts is implicit, heterogeneous, and proliferating. These concepts, thus, lack the “conceptual clarity” necessary in research. Therefore, this article aims at a conceptual clarification of digital human resource management and of related concepts of the digitization of human resource management, the digitalization of human resource management, the digital transformation of human resource management, and the digital disruption of human resource management. To do so, the article references general literature on digital organizations to develop a terminology and typology of digital human resource management. The terminology offers precise and parsimonious definitions of the concepts and relationships between them, offering a basic understanding. The typology offers precise and parsimonious ideal-types, which order and classify phenomena related to digital human resource management, in turn expanding knowledge about these phenomena. Together, the terminology and typology clarify the concept of digital human resource management and related concepts, uncover digital human resource management as an evolutionary advancement of previous conceptualizations of technology-based human resource management, and provide a conceptual basis for future work on digital human resource management.*

1. INTRODUCTION

Concepts such as “digitization,” “digitalization,” “digital transformation,” or “digital disruption”

currently rank among the most prominent and discussed terms. Roughly speaking, such concepts denote an ever-increasing use of technology and corresponding substantial changes in numerous domains of business and society. This notion is also true for the domain of human resource management (HRM). In HRM, the concept of digital HRM (e.g. Pantelidis, 2019; Thite, 2019) and related concepts such as digitization (e.g. Meijerink et al., 2018; Van Kruining, 2017), digitalization (e.g. Dixit, 2017; Parry and Strohmeier, 2014), digital transformation (e.g. Bissola and Imperatori, 2018; Vardarlier, 2020), and digital disruption (e.g. Larkin, 2017; Platanou and Mäkelä, 2016) of HRM are increasingly used. Conceptual components such as “transformation” and even more “disruption” imply substantial changes for HRM, hinting at a clearly considerable importance of these concepts.

Currently, however, these concepts are frequently used in an implicit, heterogeneous, and proliferating manner. First, authors frequently use the concepts in an implicit manner; that is, they do not offer explicit definitions but rather assume that readers understand the intended meaning (e.g. Bajer, 2017; Larkin, 2017). Second, authors use the concepts in a heterogeneous manner; that is, they use concepts with multiple and sometimes contradictory understandings (e.g. understandings of digital disruption of Larkin, 2017, and Platanou and Mäkelä, 2016). Third, authors frequently use concepts in a proliferating manner; that is, they use new concepts to denote well-known old phenomena (e.g. Martini and Cavenago, 2018; Thite, 2019). The current discussion on digital HRM therewith evidently lacks “clarity of concepts” (Suddaby, 2010).

Clarity of concepts, however, is important for different interrelated reasons. First, conceptual clarity is important to preventing a mere proliferation of concepts (Suddaby, 2010). It must be ensured that digital HRM

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(and related concepts) not merely represent “new designations for old phenomena.” Otherwise, new concepts are just used as synonyms of established concepts and most notably of the prominent concept of electronic (e-) HRM (e.g. Bondarouk et al., 2016; Strohmeier, 2007). Second, conceptual clarity is necessary to avoid confusion and misunderstanding (Suddaby, 2010). It must be ensured that human resource (HR) researchers share a common understanding that facilitates mutual communication on digital HRM. Third, conceptual clarity is necessary to avoid research deficiencies (Suddaby, 2010). The use of ill-defined concepts must be avoided, as they do not allow for precise operationalization and lead to disparate results of research on digital HRM.

It is against this backdrop that this article aims at a conceptual clarification of digital HRM and related concepts. To do so, the article develops a terminology and typology of digital HRM. Developing a terminology constitutes an initial clarification step that offers precise and parsimonious definitions of concepts and relationships between them, in turn offering a basic understanding (e.g. Suddaby, 2010). Developing a typology constitutes a subsequent clarification step that offers precise and parsimonious ideal-types that order and classify phenomena related to digital HRM, further deepening their understanding (e.g. Doty and Glick, 1994). Together, the proposed terminology and typology can clarify the concept of digital HRM and related concepts and provide a conceptual basis for future work on the topic.

2. LITERATURE REVIEW

The term intergenerational is made up from the Latin *inter* which indicates spacing, distribution or a reciprocal relation, and from the word *generation* which itself has several definitions advanced by sociologists. At the beginning of the 20th century (Karl Mannheim, 2011) defined a generation according to three components:

- A homogeneous generational positioning membership in the same age group.
- Similar historical contexts everyday experiences.
- Identical generational units shared ways of seeing the world from the two previous points.

According to this German sociologist, a generation is made up of people who share common values and develop affinities. Based on this conception, the French sociologist (Mauger, 2015) distinguishes between young people, adults and the elderly. Social divisions cross these age groups; in other words, a young person from the working classes does not have the same youth as a young person from the wealthy classes.

Another approach stands out to define the notion of generation. It is the approach of (Devriese, 1989) according to which age is a notion with variable geometry, understood as a community of experiences of a group of individuals artificially captured in time. The period does not reveal a homogeneous generation, but a plural generation among generations.

In their generational theory, the Americans (William Strass and Neil Howe, 1991) have identified four successive cycles in a rotation of four times twenty years, just like the four seasons. For them, the world goes through periods of spiritual awakening and centuries-old crises. Thus, each generation that triggers lasts on average from 20 to 22 years and in which a new social, political and economic climate exists. These generations are presented as follows (Strauss & Howe, 1991):

1. The “Veterans”, also called the traditionalist generation or the silent generation. They were born between 1920 and 1945 and experienced the Second World War and the great depression. Their attitude is marked by obedience and respect for authority. They worked under formal hierarchical management methods.
2. The “Baby Boomers”, born between 1945 and 1965, represent the generation that has benefited from the growth and full employment. She is the one who invented the consumer society and believed in social success. She seeks professional success, is loyal to the company and the hierarchy while promoting individual autonomy.
3. “Generation X”, born between 1965 and 1980, was marked by the economic crisis, the collapse of values and the technological shock. This population has developed certain scepticism vis-a-vis the future and organizations. It is the generation currently in power.
4. “Generation Y” was born between 1981 and 2000, with globalization and information technology,

progress and the impression that anything is possible. Confident and optimistic, she wants to work less and better. Both independent and in need of approval, she is eager to progress in the organization. His professional behaviour may appear to be an extension of that of the «child king». This classification has been criticized by Louis (Chauvel, 2001), who proposes a concept of the concept of generation based on statistics. The sociologist defines a generation as a partially structured cohort, whose members can share given characteristics without necessarily being aware of them (Chauvel, 2006).

Another criticism was addressed to the generation division proposed by William Strauss and Neil Howe, that of the sociologist (Claudine Attias-Donfut, 2009). «First, the identification of a generation with an event or a significant period does not presage its constitution since it generally takes place posteriori. Then, tying the appearance of a generation to a fixed moment, crystallized in time, obscures other historical elements that may later influence this generation».

The look towards the juniors who are also called Digital Natives, generation Y and generation Z is often mixed. On the one hand, they are perceived as interconnected, open, voluntary, inventive, ambitious, motivated employees who are well involved in conflict resolution or more broadly in community life (Nader and Alves 2014). On the other hand, they are perceived as immature, individualistic, lazy, impatient, lacking in loyalty, little invested in work and inclined to question hierarchical links. (Bovis, Fatien and Glee, 2010)

Differences between generations in an organization can be a source of conflict, leading to problems of cooperation, motivation and therefore, performance. The intergenerational conflict is defined by (Grima, 2007) as «a difficulty in working with people of a different generation, or even a preference for working with people of the same generation». The question then is whether the intergenerational conflict is due to intrinsic factors or contingency factors. In other words, intergenerational conflicts are mainly due to the characteristics of each generation of human resources (HR) processes put in place to foster collective intelligence? In this sense, Grima (2007) carried out a study with a large French public company in the

tertiary sector. The results that emerge from this model of Grima's analysis show that intergenerational conflict, through role ambiguity, challenges the perception of the meaning of his work. The uncertainty around the tasks to be accomplished in the organization has necessary consequences on intrinsic motivation for action. The survey thus made it possible to validate the hypothesis according to which the intergenerational conflict is positively correlated with HR systems the ambiguity of roles which calls into question the possibilities of cooperation.

According to the analyses of (Bandura, 1989) and (Thomas and Velthouse, 1990) «the individual will only feel an environment where he can develop his self-control to the extent that he has built up a vision of the latter where he feels confident and does not have to deal with major contradictions». This theoretical analysis is also valid for the intergenerational conflict.

Another field survey was carried out by (Flamant, 2005), as part of a study on the problem of integrating new hires to reduce the risk of intergenerational conflicts. The empirical research was carried out in a marshalling yard over one year of welcoming and incorporating young recruits into the company. The results of this empirical study show that the presence of different age groups in the teams does not give rise to conflicting situations. Two factors mainly explain the disagreements encountered in the marshalling yard. On the one hand, the feeling of social insecurity which generates a reaction of mistrust vis-a-vis the company and its representatives, «the lack of anticipation, the loss of benchmarks, the feeling of not controlling the unfolding and the impression of the random induce very early the fear of being sent back to the previous professional situation (Flamant, 2005).

On the other hand, the organization and definition of working rules «the organization in brigades prevent the construction of stable collectives and slows down the emergence of solidarities. It reinforces the difficulty of building landmarks; it immediately creates a feeling of isolation. It exacerbates the feeling of fragility and insecurity (Flamant, 2005) ». The results showed that the company did not announce to the elders the change of rules when the young recruits arrived. She did not explain to them that the rules presented to them were new and that the oldest worked according to a different

system and habits. Work rules play an essential role in fostering intergenerational cooperation. As confirmed (Reynaud, 1997), the law constitutes a social fact, and it is the foundation of the social game. The community of social life and work is inhabited by different rules which coexist, complement, confront and compete with each other.

Other authors have addressed the issue of intergenerational conflict, which confirms the hypothesis of Grima and Flamant. According to (Chaminade, 2014) «the various factors listed as sources of conflict within companies come from both organizations themselves, due to: poor integration of the youngest, absence or bad definition of roles and functions, the maintenance of old-fashioned working methods, in which both old and young do not recognize themselves or more».

In their literature review carried out as part of the Dauphine Management of Human Resources MBA, (Boutreux et al., 2010) presented an extract from the speech of Luc Ferry, Doctor of State in political science and former Minister of Youth, National Education and Research (Raffarin government) from May 7, 2002 to March 31, 2004. we are in a society of intergenerational conviviality, more than in a real dialogue, each generation lives with the other, without open conflict but without discussing the substance either. Trust between young and old has never been greater than today. Thus, the vision of the oldest vis-a-vis the younger seems rather positive, and vice versa». Another empirical study on intergenerational management has been jointly conducted by (Delay and Huyer-Levrat, 2006). The subject of the study concerns the experience of current employees and their transfer conditions about the organizational changes made. The results show that conflicts between generations are induced by the disruption of the benchmarks offered to employees and competition between them through activity registers and new production techniques. The study highlighted four aspects of human resource management explaining the intergenerational conflict: mixed work collectives, time spaces freed up for joint learning, the real delegation of power and models of clarified professional paths.

The literature review shows that the intergenerational conflict does not result mainly from the intrinsic characteristics of each generation, but rather from the organization of the work and the mismatch between

it and the expectations of different ages. It is notably the role of human resources management thanks to intergenerational management which makes it possible to organize and manage the copresence of generations at work (Guillemard, 2010). Nevertheless, these studies were conducted in a cultural context separate from that of the Moroccan company. So, what about the Moroccan background?

3. RESEARCH METHODS

At the first stage of the study, secondary sources of information were studied. For example, surveys of employers of the largest enterprises in the Ural region, conducted by recruitment agencies, point to the automation of all processes as one of the main drivers of the digital revolution in HRM. The most frequently mentioned are: recruitment automation using the Applicant Tracking System, automation of compensation management, or the introduction of modern cloud information systems. Today, in every fifth Russian company, the processes of communication, training and personnel evaluation are automated, and only 15% of organizations process everything manually (Izotov, 2018).

In order to determine the effectiveness of using digital tools in the development of the employer's brand, a survey was conducted using a questionnaire method. The respondents were students, working citizens and not working citizens of different age categories. In total 136 respondents took part in survey: respondents aged 18-25 years – 53%, 26-35 years – 23%, 36-45 years – 17% and over 46 – 7%. Among respondents, 42% are students, 27% are specialists, 13% are unemployed, 9% are line managers and 9% are others.

To obtain empirical data on the effectiveness of digital recruiting, was used the method of interviews with candidates and recruiters, which allowed to identify the main channels for finding vacancies and candidates, and a general description of the impact of digitalization on the selection process for sales managers. The choice of interview method is caused by the possibility of obtaining first-hand information about the using of digital technologies while job research and candidates. 54 candidates took part in researches for the position of sales manager and 42 recruitment specialists working in sales of services, a complex technical product, real estate and FMCG, aged 25-35 years. Among

recruitment managers, 95% are women and 5% are men; considering sales managers, 63% of respondents are men and 37% are women. As part of the study, participants identified several of the most popular search channels.

The study of the influence of the computerization of labour on the motivation of postal operators was held in one of the branches of the state enterprise “Russian Post” in the form of a survey using the method of Barbuto and Sholl (1998). For each postal operator, “motivational cards” were drawn up with sources of motivation, which are located in order of importance for each of them.

All of the above-mentioned studies were conducted in 2018 at enterprises of different industries and forms of ownership in the Ural region.

3.1 Conceptual Clarification—toward an Understanding of Digital HRM

As a basis for developing a terminology and typology of digital HRM, in the following, existing literature on the general digitalization of organizations is referenced (see, for example, the reviews of Gebayew et al., 2018; Hanelt et al., 2018; Hausberg et al., 2018; Henriette et al., 2015; Ismail et al., 2017; Kahre et al., 2017; Kuusisto, 2017; Morakanyane et al., 2017; Reis et al., 2018; Vesti et al., 2017, 2018; Vial, 2019). This seems appropriate for several reasons: First, digitalization constitutes a general organizational phenomenon, relevant not only for HRM but for all organizational domains (e.g. Gebayew et al., 2018; Hanelt et al., 2018). It is, thus appropriate to conceptualize digital HRM in accordance with the general digitalization of organizations. Second, there are mutual dependencies of the digitalization of the organization and digitalization of HRM (e.g. Amladi, 2017; Bondarouk et al., 2017). It is thus appropriate to conceptualize the digitalization of HRM together with the general digitalization of organization to consider such dependencies. Third, the general digitalization literature is more developed than the literature on digital HRM. It is thus appropriate to capitalize on existing general insights in clarifying digital HRM.

Discussion: Toward a Consideration of Digital HRM

The above conceptual clarification provides definitions, delineations, and corresponding ideal-types of digital

HRM and related concepts. Based on this clarification, digital HRM can be understood as a conceptual advancement of previous understandings of technology-based HRM. In particular, the innovative strategic integration of digital technologies based on “digital HR strategies” evidently entails both great promises and great challenges. Thus, future scholarly consideration of digital HRM requires guidance regarding core tasks to be performed. Based on the above results, core interrelated tasks refer to the theoretical explanation, empirical investigation, and socio-technical design of digital HRM. Given that each of these responsibilities is voluminous and multifaceted, some rough outlines are delineated in the following.

3.2 Theoretical Explanations of Digital HRM

Theoretical explanations are necessary for a deeper understanding of basic regularities underlying both the process of digitalizing HRM and the result of digital HRM. Beyond this necessity, theoretical explanations also form a mandatory basis for empirical and design research in digital HRM. Since the conceptualization of digital HRM mainly focuses on the macro-level, it is compatible to a broader set of macro- or organization-level theories. Given that a broad range of aspects is to be covered, it is to be expected that a broader set of different theories will be necessary. In seeking suitable approaches, the research on digital organizations proposes a set of already employed theories (see the overview given by Hanelt et al., 2018). Since an anthology of theories suitable for explaining (certain aspects of) digital HRM is far beyond the scope of this article, the neo-configurational approach (e.g. Park and El Sawy, 2013) and resource-based view (e.g. Bharadwaj et al., 2013) are briefly mentioned as possible approaches. The neo-configurational approach theorizes digital HRM as a limited set of organizational configurations that emerge within a certain context and comprise of different elements. The elements on their part conjuncturally cause certain organizational outcomes. Thus, the approach allows for a systematic understanding of the emergence of different types of (non-)digital HRM and the causation of relevant consequences. Against this background, the emergence and outcomes of different types of “digital HR strategy” can be also explained by the approach (Misangyi et al., 2017). The resource-based view theorizes that certain resources can provide sustainable competitive

advantages when they are valuable, rare, inimitable, and exploited. Against this theoretical backdrop, both humans and digital technologies can be understood as resources of an organization with the potential for a competitive advantage. In particular, digital HR strategies can be understood as (ideas on) the fusion of human and technological resources aiming at producing corporate advantages (Barney, 1991). As briefly indicated, there are diverse recognized theoretical approaches that are directly suitable for explaining and founding digital HRM.

3.3 Empirical Investigations of Digital HRM

Empirical investigations are necessary for gleaning insights into digital HRM. Initially, the conceptualization of digital HRM is not restricted to certain empirical methods and allows likewise for qualitative, quantitative, and mixed-method approaches. Given the anticipatable complexity of digitalization topics such as interrelations between the digitalization of organizations and of HRM, the use of different methodical approaches seems to be frequently indicated. Moreover, the conceptualization of digital HRM is not restricted to certain empirical topics. However, due to the macro-level nature of the concept, mainly macro-level issues are addressed. While a comprehensive elaboration of topics is again far beyond the scope of this article, the two core topical areas of the state and development of digital HRM are briefly addressed in the following.

Investigating the state of digital HRM implies different interrelated aspects. The distribution of organizations across the different ideal-types must initially be examined to uncover existing digitalization patterns. Moreover, given that HRM has rather struggled in realizing the strategic alignment of digital technologies (see the review by Marler and Fisher, 2013), it is of interest to uncover whether operational application still constitutes the dominant type or whether this situation has changed. Related to this challenge, it is of interest to determine whether specific real-types of digital HRM can be detected (e.g. different characteristic real-types of an operational application of digital technologies). In particular, real-types of strategic integration are of interest, and it should be investigated whether and if so, which digital HR strategies already exist. Of course, the interaction of digital HRM with

overall digital organization also constitutes a topic for further inquiry. In this regard, it is of interest to determine if the digitalization of organizations and HRM is balanced by the or if “lopsided” pairs combine high and low levels of digitalization. Moreover, the concrete managerial and technical interrelations between both digitalization domains are also of interest. Investigating these and further aspects should provide a detailed account of existing real-types of digital HRM. Regarding existing real-types, respective contexts and consequences are also of interest (e.g. Bondarouk and Brewster, 2016; Strohmeier, 2007). Regarding the context, it is of interest to determine which contextual forces contribute to the emergence of certain real-types. Since the context refers to internal and external contexts of digital HRM, the digitalization of an organization, as considered in the integrated typology, constitutes an important but not exclusive contextual component. Regarding consequences, it is of interest to determine which concrete changes are associated with identified real-types. An important consequence doubtlessly refers to the (multiple facets of) digitalization success. Particularly because the success of digitalization is frequently taken for granted, it is important to emphasize that the success of digitalization and different digitalization intensities is an open empirical question. Beyond success, multiple further consequences are of relevance. In addition, unexpected and undesired consequences such as the increased technical vulnerability of HRM or increased surveillance of employees also require particular consideration (Strohmeier, 2007).

Investigating the development of digital HRM expands the above investigation of the mere state. Understanding the digitalization of HRM as an on-going process that started decades ago broadens the perspective toward dynamic aspects. In aiming at detecting interesting dynamic patterns of digitalization, typical positions that real-types of digital HRM subsequently adopt over time (“digitalization paths”) are of interest. When investigating paths of digitalization, it is important to note that different ideal-types might also constitute ideal-typical digitalization phases that organizations successively pass through—ranging from a historic, fully analogue HRM to current, fully digitalized ones. However, the respective phases do not constitute a mandatory path of digitalization that all organizations

must follow. Organizations may persistently relate to a certain (non-)digital ideal-type without the need to switch successively to more digitalized ideal-types. As a variety, digitalization paths may proceed only within an ideal-type (“intra-type digitalization paths”). Moreover, HRM may start directly on a digitalized level without the need to successively traverse the preceding ideal-types (“born digitals”). Finally, organizations may reduce their levels of digitalization over time, introducing the largely disregarded but relevant and interesting phenomenon of “de-digitalization” (and corresponding “de-digitalization paths”). For these reasons, investigating actual digitalization paths constitutes a future relevant topic.

3.4 Socio-technical Designs of Digital HRM

Socio-technical designs are necessary for an appropriate and practical realization of digital HRM. This is realized by developing innovative solutions for digital HRM. Based on the above elaboration, it is obvious that such solutions have a complex socio-technical nature, that is, comprised of interrelated managerial (e.g. Van Aaken, 2004) and technical (e.g. Hevner et al., 2004) components. Rather than waiting for innovations in digital HRM to emerge in practice and investigating them ex post facto, research should accompany and even guide practice by (developing, evaluating, and then) providing appropriate solutions. While design generally refers to all digital ideal-types, it is obvious that the strategic integration of digital technologies constitutes the core challenge of design research. Again, developing different scenarios of a strategic integration of digital technologies is beyond the scope of this article, but a brief example can be drafted. As mentioned, the ideas of HRA and ERM show basic features of and potential for a digital HR strategy. Design thus involves further developing concepts of HRA and ERM toward the creation of a fully digital HR strategy. Another design task involves developing, evaluating, and providing related technical artifacts that can realize HRA and ERM. For ERM, this realization, for instance, refers to the development of prototypes of ERM systems, which offer the collaborative, operational, and analytical functionalities that realize the concept (Strohmeier, 2013). Therefore, a starting point for design research could involve elaborating on the managerial and technical realization of such concepts. While it constitutes only an initial suggestion

for design research, it uncovers the complexities and challenges of the third task in considering digital HRM.

4. CONCLUSION—taking the Next Step

Against the backdrop of increased yet unclear consideration in research, this article provides a conceptual clarification of digital HRM and related concepts. Based on general research on digital organizations, a terminology and typology of digital HRM could be developed. The results suggest a perspective that is not fundamentally different from previous perspectives on technology-based HRM but that incorporates and develops the previous perspective further. A core advancement of this article lies in its introduction of the idea of a strategic integration of digital technologies (“digital HR strategy”) and in its corresponding further development of the concept of the digital transformation of HRM. Moreover, the integration of the digitalization of HRM with the digitalization of organizations marks a conceptual step forward. Digital HRM thus constitutes a further evolutionary step in conceptualizing technology-based HRM. As the digitalization of HRM accelerates, the need for corresponding research efforts increases. This article provides a conceptual basis for such research and is intended to support the next step of research on technology-based HRM.

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