

Digitization in Human Resource - Literature Review and Future Research Agenda

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Abstract

Purpose: The aim of this paper is to present a study of available literature on the digitization of HR, the current scenarios, limitations and to provide a path for future research for this field of study. **Design/Methodology/Approach:** Research papers were collected on Digitization of HR from various journals available at different online databases. Papers were classified in different categories and tabulated under various classes. A total of 50 research paper sources were studied and assessed in terms of nature of research, level of analysis and application. **Findings:** As organizations continue to search for ways to be more responsive, flexible, strategic and efficient, HR managers are being forced to explore more innovative methods of performing their HR activities to support these strategic initiatives. An architectural framework can be used to understand and map the underlying structure of virtual HR. **Research Limitations/Implications:** The findings of this paper can be generalized only to the specific population of online databases selected for this research for a given period of time and not for the entire universe of the digitization literature. There may be various unexploited areas for future research in terms of different variables.

Keywords: Digital Employees, Digital Work, Dynamization, e-HRM, Human Resources Development

1. Introduction

The world has undergone far reaching cultural, societal and economical changes based on the increasing dominance of digital technologies. In sum, these changes have led to the current period being characterized as the “digital age”. In line with these changes, digital technologies play an increasingly prominent role in both the lives of employees and Human Resource Management (HRM), which seems to be affected in multiple ways. (Strohmeier Dr Emma Parry and Professor Stefan, 2014) Human Resources (HR) departments have typically managed people while remaining separate from other parts of an organization.

This is rapidly changing thanks to advances in digital technology, specifically Software as a Service (SaaS) based applications for Human Capital Management (HCM). While a broader discussion and categorization of digital changes of HRM is missing at present, reviewing the literature yields three focal areas that might be briefly labelled as “digital employees”, “digital work” and “digital employee management”. It is obvious that HRM should react to such changes and align its strategies and activities to this new labour market cohort and search for adequate ways to recruit, develop, compensate, etc. such “digital employees” and moreover to integrate them with previous generations of employees.

To meet the rising demand in the market, there is an increasing pressure on HRM to support strategic objectives and to focus on value-adding activities, which consequently leads to the change in the job content and the expectations on Human Resource (HR) professionals. It is known that one of such changes is that the wide, contemporary use of Information Technology (IT) in supporting various HR activities. Moreover, the researchers expect that the increasing use of Human Resource Information Technology (HRIT) can improve the performance of HR professionals and makes them involved in the company internal consulting activities.

In addition, Ulrich (1997) mentions that the use of HRIT provides value to the organization and raise HR professionals' status in the organization. In a recent theoretical development, Ulrich and Brock bank (2005) emphasize the need for HR professionals to become business strategic partners (Yu Long, 2009).

Over the past few years, Human Resource (HR) departments in government organisations in the developed countries have improved their performance by employing electronic Human Resource Management (e-HRM) systems. The growth of IT has significantly influenced organisations towards changing their working strategies such as HR environment and performance has been influenced, by implementing new technology in HR departments. However, it is important to note that the implementation of IT within an HR environment has not always been problem free as a result of several factors. Although the use of Information Systems (IS) has increased, its e-HRM utility has been low in developing countries, because of the HR manager's lack of skills and proper training. If employees do not receive proper training from the organisations to use e-HRM systems, it results in increased cost and reduces job. Other organisational disadvantages with e-HRM implementation include a shortage of staff with IT competencies or expertise, lack coordination between the department, lack of technology support or organisational process changes. Resistance towards the use of new systems has been highlighted as a significant issue. Other problems confronted during the implementation of e-HRM systems in developing countries is the high cost of implementing the e-HRM systems, building appropriate IT infrastructure, buying computers fitting the requirement of the e-HRM systems, software maintenance and hardware maintenance. (Mushfiqur Rahman, Chima Mordi, Uzoechi Nwagbara, 2018).

In general, the main aim is to present an extensive study on digitization of HR through thorough literature review so that better insights and understanding can be gained in this field as well as to provide scope for future research in the same. In particular, the aim is to rationalize and analyse the studies on the basis of approach and content to highlight the path, field is following. This article aims at reviewing advantages, trends, limitations on the topic of digitization in HR. Thus, the motive of this paper is to provide a better understanding of the literature on a single platform by providing various classification schemes of literature and to provide future scope of research in this field for the help of both practitioners and academicians. This paper begins with a discussion on methodology used followed by the classification of literature on various criteria. In subsequent sections research findings are presented followed by the discussion and scope for future research.

2. Methodology

The aspects of "Digitization in HRM" which have been explored in the existing literature revolve around the evolution of HR in terms of technology used, application of e-HRM tools and technologies in the field of HR and the impact - both positive and negative, of digitization on different HR processes like talent acquisition and performance management. Most authors like Strohmeier (2007) have taken a bird's eye view of the impact of digitization on HR whereas some authors like Kumar and Lepp (2017) certain specific aspects of this phenomenon like the role of ethics in digitization or the implementation of digitization in select sectors.

The main objective of this paper is to address the extensiveness of the research done in the field of Digitization in HRM. The increasing attention paid to this field over the years has created the need to identify the growth of research in this field as well as to find the potential zone of research.

The following resource databases were used by us to collect literature:

- Emerald Insight
- Research gate
- EBSCOS
- JSTOR
- Taylor and Francis

From the above mentioned sources, we used content analysis to find the availability of information in various disciplines. We used various keywords like digitalization, e-HRM, technology, trends in the literature search. These keywords were detected in the title, abstract, keyword list and in full text. The study of various papers after this extensive research came out to be 50.

After the sorting and selection of papers according to their relevance, analysis of literature was done based on several criteria such as issues covered, application area, methodology adopted, etc. These have been explored in the following pages.

2.1 Distribution of Article in Terms of Time Period

Distribution of articles in different time periods will help to show the growth of studies on digitization in HR across different time spans. This classification provides a basis to understand the quantitative improvement in the research studies when we come to the study phase cited in the figure 1.

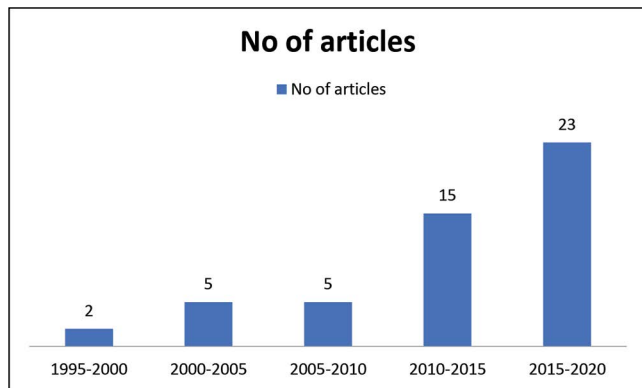


Figure 1. Diagram representing the number of articles published in each range of years

2.2 Distribution of Articles in Terms of Countries

The country wise distributions will help the audience get an overview as well as understand the spread and reach of digitization changes occurring across the globe. It is an important classification of the review which helps to identify the gravity of the issue all across the globe. Based on this spread data, we can see where the changes are rapidly taking place and which all areas are still not at par with the other countries. In our research, we found that digitization in HR is more rapidly being implemented in countries like USA, UK, Netherlands and India cited in figure 2.

2.3 Distribution of Article in Terms of Application Area

The distribution will help the audience understand all the major digital changes that are taking place or are being taken up by organizations to bring about a digitization in HR. The table states the major focus parameters of the companies through which they are implementing digital changes, in a year-wise division.

2.4 Distribution of Articles in Terms of Methodology Adopted

This classification will help the audience understand the nature of the methodology used for the assessment of digitization in HRM. From filtering and sorting out the data, it has been found that most of the analysis in the paper is qualitative in nature-based on exploratory approach or a case study approach based on secondary data. Quantitative methods however are increasingly gaining traction with the researchers, with statistical tools like hierarchical regression, t-tests, correlation and meta

Table 1. Table showing the variables studied in relation to digitisation within the given time period

Dependent Variable	Year of Publication	1994-1998	1999-2003	2004-2008	2009-2013	2014-2018	Total
Technology	1995	1					1
HR practices in organisations	1998	1					1
Digitization, Internet, Technologies	2004		1				1
HRM practices, HR education	2004			1			1
Data, Digital	2007			1			1
HR practices	2011				1		1
Strategic role of HR, revenue and costs of organisations	2011				1		1

Social media	2012	1	1
Internet	2013	1	1
Work of HR professionals	2013	1	1
HRM practices	2013	1	1
Application of e-HRM tools, level of automation in organisations	2014		1
Cost Reduction in HR	2015		1
Digitization, Internet, Technologies	2015		1
Workforce Performance Management	2015		1
Digitalization, Dynamization	2015		1
Human Resource Factors	2016		1
Data, Digital	2016	2	2
Data driven practices	2016	1	1
HRM practices	2016	1	1
Employee Engagement, Productive and cost effective HR practices	2017		1
HR competencies	2017		1
Organizations	2017		1
Digitalisation in HRM	2017		1
HR analytics, Organization development	2017		1
Digital skills	2017		1
Relationship between Artificial intelligence and Industry 4.0 and competency	2017		1
Digital changes	2017	2	2
HRM practices	2017	3	3
Changing role of HRM	2017	2	2
People analytics	2017	1	1
HRM efficiency, HRM practices, professional management system in the public sector	2018		1

Table 2. Country wise publication on the topic

Country	Year of Publication	1994-1998	1999-2003	2004-2008	2009-2013	2014-2018	Total
Singapore	1995	1					1
USA	1998	1					1
Massachusettes	2004			1			1
Germany,Belgium,Netherlands,Luxemberg	2004			1			1
USA	2004			2			2

NA	2005	1		1
UK	2007	1		1
Netherlands	2009		2	2
Nottingham	2010		1	1
The Netherlands	2010		1	1
London	2011		1	1
USA	2011		2	2
Australia	2012		1	1
Germany	2012		1	1
USA	2013		1	1
Netherlands	2013		1	1
Twente	2013		1	1
Germany	2014			1
India	2014			1
Romania	2015			1
India	2015			2
Germany	2015			1
UK	2015			1
Mauritius	2016			1
USA	2016			3
India	2016			1
Bangladesh	2017			1
India	2017			4
Sweden	2017			1
Netherlands	2017			1
UK	2017			2
Romania	2017			1
Germany	2017			1
USA	2017			6
Poland	2018			1

analysis being used to find the impact of digitization on various aspects of the workplace ranging from headcount to effect on the cost structure.

Among the articles identified, only a few have mentioned their sampling technique. From the analysis of the papers, it has been found that papers providing a broad-based view of this topic of digitization have mostly used the random sampling technique whereas papers covering certain aspects of this topic have used a very small selective sample-of a particular sector or certain companies.

2.5 Distribution of Articles in Terms of Journals

Articles related to digitization in HRM have been published in a variety of reputed databases. In the course of our exploration, we found 39 journals that published papers related to the issue within a reasonable timeframe. The list of journals along with the number of articles is shown in table 3.

Journal Name	No. of articles
Emerald Group Publishing Limited	2

The International Journal of Human Resource Management	3
Arbeitspapier	1
Research Gate	1
Oxford Review of Education	1
Organization Science	1
International Management	1
Research Online	1
University of Twente	3
Imperial Journal of Interdisciplinary Research	1
Lund University	2
Rainer HamppVerlag	1
NomosVerlagsgesellschaftmbH	1
Penn State University Press	1
Sage Publications, Ltd.	1
International Journal of Business Management	1
Management Information Systems Research Center, University of Minnesota	1
International Journal of Contemporary Management	1
Imperial Journal of Interdisciplinary Research (IJIR)	1
International Journal of Business and Management Invention	1
International Conference, Competitiveness and Stability in the Knowledge-Based Economy	1
International Journal of Advance Research and Innovative Ideas in Education	1
AJIRA Vol 2	1
Human Resource Management Review	2
Novelty Journals	1
Journal of Organizational Effectiveness: People and Performance	1
Human Resource Management International Digest	1
Journal of Information & Knowledge Management	1
Business Process Management Journal	1
Volker Stein	1
IUP Journal of Information Technology	1
Management Dynamics in the Knowledge Economy	1
Mercer	1
Strategic HR Review 2017	1
IMS Union University, Lucknow	1
Research Technology Management	1

3. Conclusion

According to Stefan Hauptmann and Thomas Steger, (2012) “We have demonstrated how

organizational and individual activities may alter when taking place in virtual environments.

First, the design, i.e., the technical configuration of social media, restricts but also enables certain activities. It sets the organizational structures that determine how everyday activities are coordinated. Therefore, to regard technology as being closely related to social conditions as ‘sociomaterial’, can be considered a demand for analyzing post-industrial work. Second, we identified a new array of interaction that parallels the ordinary areas of interactions in organizations as part of membership. In one of our cases, part of the organization’s workforce was acting within a closed environment with its own rules of behavior. In relation to social media, we considered the distinctiveness of a particular birth cohort as being relevant for HR. Digital natives and post-digital natives, as the youngest cohorts in organizations, hold their own expectations that, in our view, increasingly diffuse in organizations.

This will result, we assume, in some severe changes to communication and behavior.”(p. 18)

This gives us a context with reference to how social media plays a part in digitization. Other authors have also put forward their findings like how Huub Ruel, Tanya Bondarouk and Jan Kees Looise, (2004) state “e-HRM seems to be providing an important ‘push’: To put HR responsibility hands of the line manager. After 15 years of ‘preaching’, an administrative of HR is becoming a task for the line management. The introduction of companied by the decentralization of HR tasks and by the harmonization faradization of HR processes. In order to become a ‘real’ global company and practices need to be the same in ‘all the corners of the globe’ where present. Differences in cultures and languages between continents and hurdle in the acceptance of newly introduced web-based HR facilities. For the HR department, introducing e-HRM shows itself to be a ‘push-changing HRM within an organization: from a bureaucratic approach towards clan approach. Introducing e-HRM will be accompanied by a reduction staff levels, especially in terms of administrative staff.” (p.15). The authors also cited multiple examples, real life interviews with employees who felt the same. Digitization in HRM has not only made lives easier for HR

professionals but also improved productivity and revenue of organizations. They can focus on more important aspects of running a Business than on paperwork. Further Jorrit van der Togt and Thomas Hedegaard Rasmussen, (2017) citing the major Energy Player Shell and their Digitization practices say “HR analytics is a game changer for the future of HR. It allows better people decisions and more effective and efficient HR. It makes use of the ever-expanding

pools of data on people, operational and financial matters that can be combined. The degree to which insights from HR analytics can be monetized will determine whether HR analytics is there to stay.

HR analytics is a necessary step toward evidence-based HR. In a world where we have more access to a wider set of data, including data about people and their behaviors, HR analytics offers an opportunity to get better HR for less; link HR practices with business outcomes and value; challenge beliefs through data; educate practitioners on what works and what does not; improve decision making through use of sound predictions. In short, HR analytics has the potential to rebase beliefs and evidence within HR for the better. It is good that there is so much interest in the academic and practitioners’ world toward HR analytics. The hype will blow over. But we will get to a more evidence-based HR practice – with hard work, stamina and the right cross-fertilization between academic rigor and business relevance.” (p.7). When you see major Business Players accepting realities of Digitization and quickly adapting in their use in their day to day functioning.

HR isn’t the same anymore. We see news that constantly state that companies are changing their recruitment methods. Screenings are done by bots that only take a few seconds to search for keywords and then reject a CV. Interviews are done via video to a screen that has no invigilator. Times have changed and digitization has impacted HR on a large scale. Gone are the days when you needed to get a paper signed to sanction a leave. That part is now done online, via a system.

Change is the only constant here. The limitations of our study lie as changes are done rapidly from time to time. It leaves us with a lot of questions regarding the future of HRM. Will there be any transactional future? Will it be eliminated entirely? What role would it really take up?

Towards the end it can be said, Digitization has played a huge role and has helped with improvements and it is here to stay.

4. Agenda for Future Research

Based on the outcome of this review, possibilities for future research should be on the basis of the following guidelines.

4.1 Assessments of the Impacts of Digitalization

There needs to be an assessment to quantify the benefits of digitalization in HRM. This part can be looked at in two-fold manner. First of all, an assessment needs to be put in place to exactly represent the cost saving on the HR process a whole. Businesses are concerned with making profits and reducing costs. In order to pitch to management to adopt a particular digital replacement of an existing HR process, we need to show tangible benefits in terms of how much money it will save. This will lead to better planning and budgeting for the management. Also, this will lead to a more mass adoption of various digital initiatives in the HRM domain. Reducing costs of the process will further impact the overall performance of the company. Digitalization can also lead to the process being leaner and therefore requiring less people to do the operational work. Reducing the number of employees and still achieving the set targets is a win-win situation for all. The other aspect that can be looked at is the how digitalization will help the overall productivity of employees both in the HR department as well as the other end users of the processes. This can be ascertained by comparing previous data with the data recorded after implementation of these digital processes in the organization. At the end of the day, it all depends on how much impact does a new method have in order to implement and keep it going within the organization. Future research can look upon various techniques to ascertain tangible amounts for the same. Making sure that one size does not fit all, different methods must be used in order to accurately assess and evaluate the impact of digitalization in HRM within different sectors.

4.2 Methodology

Methodology-wise, our findings suggest that existing studies are mostly qualitative in nature. There had been many case study approaches as well but what can be focused more upon is the quantitative research in this field of study. Management requires numbers to make almost any decision and therefore in order to implement any

such digitalization initiatives there needs to numbers to speak for it. Further impact assessments on the financial and non-financial performance indicators are necessary to reach a more definite result.

4.3 Implications for Management

Apart from academic use, the classification and positioning of the ever growing number of studies in the field will help practitioners develop a more holistic understanding of the impact of digitalization in the overall strategy of the firm. More research in this field will enable management to make more well informed and sound decisions. Nowadays, it is becoming more challenging and demanding of managers to deliver an overall heightened productivity as well as ensuring an engaging user experience for all stakeholders. This article will enhance managers' awareness regarding digitalization in HRM in the organization and will consequently lead to quicker and widespread adoption of various digitalization initiatives within the HR department.

5. References

- Mutch, A. (2010). Technology, organization, and structure—A morphogenetic approach. *Organization science*, 21(2), 507-520.
- Alvehus, J. (2013). *Skriva Uppsats med Kvalitativ Metod: Enhandbok*, Stockholm: Liber.
- Alvesson, M., & Deetz, S. (2004). *Kritisk Samhällsvetenskaplig Metod*, Lund: Student literature.
- Alvesson, M. & Skoldberg, K. (2009). *Reflexive Methodology: New vistas for qualitative research*, Los Angeles: Sage.
- Alvesson, M. (2003). Beyond neopositivists, romantics, and localists: A reflexive approach to interviews in organizational research. *Academy of Management Review*, 28(1):13–33 <https://doi.org/10.5465/amr.2003.8925191>
- and implications. *Human Resource Management Review*, 16(1): 95–106.
- Andersson, J. (2017). Digital Transformation, Modern aaf-färs system. April 2017.
- approaches, 2nd Ed. Thousand Oaks: SAGE.
- Attia, E. A., Duquenne, P., & Le-Lann, J. M. (2014). Considering Skills Evolutions in Multiskilled.
- Bailey, P. H. (1996). Assuring quality in narrative analysis. *Western Journal of Nursing*. PMID: 8638423. <https://doi.org/10.1177/019394599601800206>
- Bell, B. S., Lee, S. & Yeung, S. K. (2006). The Impact of E-HR on professional competence in HRM: Implications for the development of HR professionals. *Human Resource Management*, 45(3):295–308. <https://doi.org/10.1002/hrm.20113>
- Bondarouk, T. & Ruel, H. (2009). Electronic Human Resource Management: Challenges in the digital era. *The International Journal of Human Resource Management*, 20(3):505–514 <https://doi.org/10.1080/09585190802707235>
- Bondarouk, T., Marsman, E., & Rekers, M. (2014). HRM, Technology and Innovation: New HRM competences for old business challenges? Bondarouk, T., Olivás-Luján, M. R. (eds.) *Human Resource Management, Social Innovation and Technology*, Emerald Group. <https://doi.org/10.1108/S1877-636120140000014016>
- Bredin, K. & Soderlund, J. (2011). Human Resource Management in Project-based Organizations: The Quadriad Framework. <https://doi.org/10.1057/9780230297517>
- Bryman, A. & Bell, E. (2011). *Business Research Methods*, 3rd Ed, Oxford: Oxford
- Bryman, A. (2011). *Samhällsvetenskapliga Metoder*, Malmö: Liber
- Bryson, C., & Karsten, L. (2009). Managing Uncertainty or Managing Uncertainty? In
- Cap Gemini Consulting. (2013). Using Digital Tools to Unlock HR's True Potential.
- Cappelli, P. & Tavis, A. (2016) .The Performance Management Revolution: The focus is
- Connelly, C. E. & Gallagher, D. G. (2006). Independent and Dependent Contracting:
- Cöster, M. & Westelius, A. (2016). *Digitalisering*, 1st Ed. Stockholm: Liber.
- Creswell, J. W. (2007). *Qualitative Inquiry and Research Design: Choosing among five*
- Deloitte. (2016). *Global Human Capital Trends 2016*. The new Organization: Different by design, Deloitte University Press.
- Framework for Managing Knowledge Across Boundaries”
- H. J. M. Ruel & T. V. Bandarouk. (2009) Electronic Human Resource Management: Challenges in the digital era. <https://doi.org/10.1080/09585190802707235>
- Ruel, H., Bondarouk, T., & Looise J. K. (2004) , E-HRM: Innovation or Irritation. An Explorative Empirical Study in Five Large Companies on Web-based HRM. <https://doi.org/10.5771/0935-9915-2004-3-364>
- van der Togt, J. & Rasmussen T. H. (2017) .Towards Evidence based HR. <https://doi.org/10.1108/JOEPP-02-2017-0013>
- Dresselhaus, L. (2010). Global talent management and the role of social networks.
- Leopold, J., & Harris, L. (eds). (2009). *The Strategic Managing of Human Resources*. 2nd Ed. Harlow: Prentice Hall/Financial Times.

30. Rahman, M., Mordi, C., & Nwagbara, U. (2018). Factors influencing E-HRM implementation in government organisations: Case studies from Bangladesh. *Journal of Enterprise Information Management*, 31(2):247–275. <https://doi.org/10.1108/JEIM-05-2017-0066>
31. Selwyn, N. (2012). Making sense of young people, education and digital technology: The role of sociological theory. *Oxford Review of Education*, 38(1):81–96. <https://doi.org/10.1080/03054985.2011.577949>
32. Organizations: The HR quadriad framework, UK: Palgrave Macmillan.
33. Carlile, P. R. (2004). Transferring, translating, and transforming: An Integrative Production Research, 52(5):4548–4573. Research, 18, pp. 186-194 resource/pdf/digitalhrpaper_final_0.pdf [Downloaded: 2017-03-20] shifting from accountability to learning, *Harvard Business Review*, pp. 58–67.
34. Hauptmann, S., & Steger, T. (2012). A brave new (digital) world? Effects of In-house Social Media on HRM.
35. Strohmeier, E. P., & Stefan. (2014). HRM in the digital age – digital changes and challenges of the HR profession. *Employee Relations*, 36(4). <https://doi.org/10.1108/ER-03-2014-0032>
36. Stein, V. (2015). Human Resources Development in Times of Digitization: A Dynamization Agenda.
37. Wiblen, S., Dery, K. & Grant, D. (2012). Do you see what I see? The role of technology in talent identification. *Asia Pacific Journal of Human Resources*, 50(4):421–438. <https://doi.org/10.1111/j.1744-7941.2012.00037.x>
38. Long, Y. (2009). The impact of information technology on the HR function transformation.