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Adoption and impact of electronic Human Resource Management: A systematic literature review

Fadoua El Hajjaji El Idrissi¹, Abdelhay Benabdelhadi², Hind Kabaili³

^{1,2}Laboratory of researches in management sciences of organisations, National School of Business and Management, Ibn Tofail University, Kenitra, Morocco, ³Higher Institute of Commerce and Business Administration, Casablanca, Morocco

fadouahajjaji@gmail.com¹

Abstract. In the era of new technologies and global networking, electronic Human Resource Management (e-HRM) is becoming an increasingly common practice in organizations and a topic of interest to the research community. Through a systematic literature review, this study synthesizes and analyzes research on the adoption and consequences of e-HRM over the last two decades, with the aim of supporting future research in e-HRM. A review of selected references shows that the gains from e-HRM are significant: They can be operational, relational and transformational. Over the years, the debate has shifted from operational to strategic gains. The realization of these benefits is closely linked to the successful implementation of e-HRM. The factors impacting its adoption are multi-dimensional: human, technological, organizational and environmental. Our research examines these determinants in greater detail and highlights the need for more empirical studies to theorize the relationship between adoption factors and the actual gains of e-HRM.

Keywords. Adoption, electronic Human Resource Management (e-HRM), Human Resource Information System (HRIS), Human Resource Management (HRM), Impact

1. Introduction

To cope with an increasingly complex context, marked by heightened globalization, rapid technological progress, a knowledge-based economy and constraints to achieve high performance (Teo et al., 2007; Bondarouk & Ruël, 2009; Waheed et al., 2020) the role of the human resources department has undergone a profound change (Parry, 2011). In fact, Information technology has completely permeated human resources management processes and services (Bondarouk & Ruël, 2009). The rapid development of the Internet (Strohmeier, 2007), and the importance of technology in different areas of work (Saleh & Saleh, 2016) have also contributed to this change and have paved the way for the implementation and adoption of e-HRM within organizations (Strohmeier, 2007).

E-HRM has meanwhile become an increasingly common and celebrated organizational practice (Strohmeier, 2007; Bondarouk et al., 2009, 2015; Saleh & Saleh, 2016; Waheed et al., 2020). Most of the transactional activity is now carried out electronically (Poisat & Mey, 2017). This increase in the adoption of new technologies in the HR function of different companies is an excellent proof of its importance and its multiple benefits for the HR function (Saleh & Saleh, 2016). E-HRM is considered by several authors as an important development in the field of

human resources (Lepak & Snell, 1998; Lengnick-Hall & Moritz, 2003; Bondarouk & Ruël, 2009). It can improve the efficiency of the HR function, facilitate its transition to a more strategic level (Parry & Tyson, 2011), and increase the productivity of human capital (Davarpanah & Mohamed, 2020). Despite the growing literature on the subject and the large number of reported benefits of e-HRM (Bondarouk & Ruël, 2009; Bondarouk et al., 2017), researchers still call for a lack of clarity and concrete evidence on the contribution of e-HRM to HRM effectiveness (Ruël et al., 2007; Strohmeier, 2007; Bondarouk et al., 2015, 2017). They call for more empirical studies to understand the phenomenon of e-HRM adoption, its different levels of consequences, and whether or not organizations actually achieve their goals following the introduction of e-HRM.

These observations prompted us to conduct a systematic literature review on the adoption and impact of electronic Human Resource Management. This literature review will present, analyze and discuss the results of twenty different empirical research studies conducted on the adoption and consequences of electronic HRM over the last two decades. This will allow us to participate in the enrichment of the literature related to e-HRM and to shed light on our understanding of the factors impacting the adoption and consequences of e-HRM. Our article is structured as follows: First, we will define the electronic Human Resource Management and the difference between e-HRM and HRIS. Then we will describe the methodology we followed for the research, selection and analysis of our literature review sample. Afterwards we will present and discuss our results. Finally, we will conclude with the critical implications of this study and new avenues of research on electronic Human Resource Management.

2. Definition

Given the diversity of articles related to electronic Human Resource Management and Information Technology, several terms are used to refer to the use of technology in human resource management: human resource information systems (HRIS), HR intranet, computerized human resource management systems, virtual HR and HR portals (Saleh & Saleh, 2016). Similarly, the term e-HRM is often used interchangeably with HRIS, human resources management systems (HRMS), HR software and other terms (Poisat & Mey, 2017).

Ruël et al. (2011) define HRIS as a set of information systems and computer applications, either autonomous or networked, for human resource management, whether to facilitate HR practices, policies or strategies. Walker (2001) defines HRIS as a systematic procedure for collecting, storing, maintaining, retrieving and validating data related to human resources, staff activities and the characteristics of an organization's organizational units (Poisat & Mey, 2017). Strohmeier (2007) define e-HRM as the planning, implementation and application of information technologies for the networking and support of at least two individuals or collective actors in the common exercise of human resource activities.

The main difference between HRIS and e-HRM is that HRISs are directly addressed to the HR department, whereas with e-HRM, the target group is not only HR staff, but also people outside the HR department, i.e. all employees from all parts of the organization (Ruël et al., 2004; Marler & Fisher, 2013; Saleh & Saleh, 2016; Poisat & Mey, 2017). Technically speaking, e-HRM technology can be considered as the technical unlocking of HRIS for all employees in an organization (Saleh & Saleh, 2016). To sum up, HRIS is part of e-HRM.

3. Methodology

A good literature review comes from the ability to identify and select relevant documents to the topic and then review them at an appropriate level (Hart, 2001). For our case, we chose a

systematic literature review because it provides a neutral, transparent, comprehensive and reproducible synthesis of the evidence (Bilotta et al., 2014; Haddaway & Bilotta, 2016).

The first step of our methodology consisted in searching for references related to our research theme in several scientific databases, namely: Scopus; Web of Science; Proquest; Cairn; Science Direct; Google Scholar; Springer and Jstor. Table 1 provides more information. The majority of the articles come from the Scopus database (66.8%), due to the fact that it contains a very large number of management journals that deal with our theme. The key search words were mainly: "e-HRM"; "electronic Human Resource Management"; "HRIS"; "Human Resource Information System"; "HRM AND Information Technology" and "Digitalization of human resources management". Each keyword yielded hundreds of results. After a filter on the discipline of management to reduce the number of results, we then proceeded to select the references related to our research theme. We gave importance to the most cited articles in the field, in addition to recent articles to discover the latest developments in electronic Human Resources Management, especially since our theme links a managerial and technological aspect, which is constantly changing and evolving. This step allowed us to collect 268 references, distributed among journal articles, conference papers, book chapters, books and encyclopedias. Table 2 shows us this distribution in more detail where we notice that most of the collected references (84.7%) are journal articles.

Table 1. The documents collected by source

Sources	Documents in %
Scopus	66,8%
Proquest One Academic	12,7%
Cairn	6,3%
Science Direct	4,1%
Google scholar	3,7%
Springer	3,0%
Web Of Science	2,2%
JSTOR	1,1%
Total	100%

Source: author's own research

Table 2. References by type

Type	Number of documents	Documents in %
Journal article	227	84,7%
Conference paper	19	7,1%
Book chapter	17	6,3%
Book	4	1,5%
Encyclopedia	1	0,4%
Total	268	100%

Source: author's own research

Concerning the language of the references collected, it is mostly in English (92.2%), due to the large number of articles and publications in English relating to electronic Human Resources Management in the scientific databases used. The references collected in French are 21: 17 publications come from Cairn, 2 publications from Proquest and 2 publications from Google Scholar. In terms of the years of publication of the documents collected, Figure (1)

shows us an increasing trend of publication from the year 1986 onwards, which shows us that electronic Human Resource Management is a topical research subject, which benefits from the great interest and importance from the scientific research community. The decrease in publications collected in 2020 is explained by the fact that our collection of references was carried out between January and March 2020, therefore many articles have not yet been published.

Table 3. References by language

Language	Number of references	References in %
English	247	92,2%
French	21	7,8%
Total	268	100%

Source: author's own research

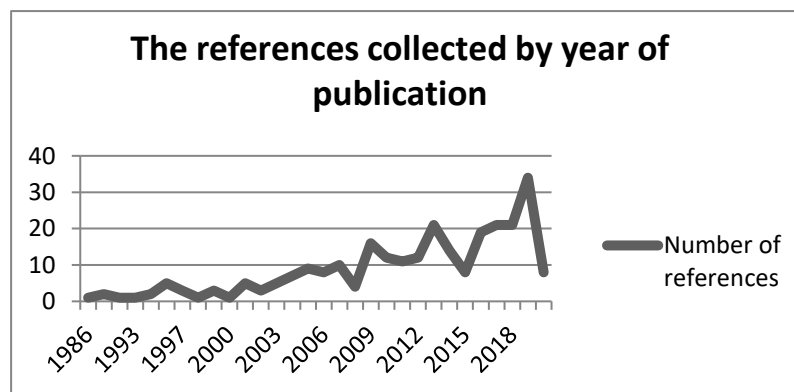


Figure 1. References collected by year of publication

Source: author's own research

3.1. Exploratory systematic literature review

After collecting the references, we filled in all data related to the references (title, author, year, publisher, ISSN, DOI, abstract, keywords, ...) in the ZOTERO electronic library. We then exported our entire Zotero library to NVIVO 10 software for analysis. The first level of analysis performed by NVIVO 10 is an exploratory analysis based on the abstracts of the publications. We performed a word frequency query, which allowed us to highlight the cloud of the most used words in the abstracts as well as the word frequency table for each reference. This analysis allowed us to detect the abstracts that contain the most keywords of our search and consequently the references that will be the subject of an in-depth analysis (Khouya & Benabdelhadi, 2020).

3.2. Extensive systematic literature review

The second step of our research is the in-depth systematic analysis of the references selected on the basis of the previous phase. The main selection criteria were the word frequency analysis performed by NVIVO 10 and the empirical character of the reference: purely theoretical or conceptual references were eliminated. In addition, we limited our choice to references published during the last two decades, and which deal either with the adoption or the consequences of the implementation of electronic Human Resource Management. In total, we were able to select 20 articles, which were the subject of an in-depth analysis, which we will report in more detail in the results section of this article.

4. Findings and discussion

The in-depth analysis of the selected references has enabled us to establish a synthesis table that brings the main data related to the research: the author, year, problematic, methodology, and main results. This table will facilitate the reading, structuring and analysis of the results, which would be very cumbersome to evoke throughout the text (Berland et al., 2013).

Table 4: Synthetic table of analyzed literature

Author	Year	Problematic	Method	Main Findings
Kamble, P. D.	2018	Explore the factors that influence the attitude towards the use of e-HRM	Quantitative method	<ul style="list-style-type: none"> - Perceived Ease of Use, user Satisfaction, facilitation conditions and Attitude have a positive impact on e-HRM. -End users must be informed and trained on the final objectives and use of e-HRM tools with technical assistance in case of technical problems. -E-HRM tools must be easy to use and designed to simplify and improve the HR process and end-users must be well equipped (systems, software and infrastructure) and involved in the project. -The company must promote the technological friendly culture of the organization.
Saleh, M. ; Saleh, Y.	2016	Study the factors that impact the adoption of e-HRM in the Palestinian service sector and propose a model for this adoption.	Mixed method	The results of the study show that the adoption of e-HRM technology in Palestine is mainly influenced by perceived ease of use, attitude, intention and communication. Then this adoption is influenced to a lesser degree by perceived risk, system security, the role of organizations and the availability of resources.
Parry, E.	2011	Examine the potential consequences of e-HRM through the study of the relationship between e-HRM and a number of organizational characteristics.	Quantitative method	<ul style="list-style-type: none"> -Size of the organization has a positive impact on the use and sophistication of e-HRM. -The ratio of HR staff to the total number of employees in the company is not a determining factor in the adoption of e-HRM. -Organizations with a more strategic role for the HR function would be more likely to use e-HRM. -Organizations use complex e-HRM systems as an alternative to delegating HR tasks to line management. -Sophistication of e-HRM positively impacts the outsourcing of human resources. Whereas the use of e-HRM is not.

				-The level of qualification of the organization's staff does not impact the use of e-HRM.
Parry, E.;Tyson, S.	2011	Explore the stated goals and the actual outcomes achieved by organisations through the introduction of e-HRM.	Qualitative method	-Operational effectiveness and efficiency remain the most important objective of introducing e-HRM in organizations. -The other gains from the implementation of e-HRM that emerge from the study are: -Improvement in the accuracy of the information contained in HR systems, transparency of processes, proactivity and customer orientation of the HR team. -Accountability of managers and development of their management capacities. -Increasing the strategic focus of the HR function -Standardization of HR practices.
Bondarouk, T. et al.	2015	Examine the quality of HRM services following the implementation and the use of e-HRM and the relationship between the technological and organizational aspects of e-HRM.	Mixed method	-Introduction of a new concept which is "e-HRM strength". -The potential benefits of e-HRM would depend on how the e-HRM technology would be used. -The extent of appropriation or frequency of use of the e-HRM system does not impact the perceived quality of HRM services. -The technology delivers results independently of how people appropriate it. -HR managers need to implement HRM systems that are distinctive, consistent and enjoy broad consensus among HR practitioners. -The technological characteristics of e-HRM can partly impact the quality of the HRM service.
Bondarouk, T. et al.	2009	Examine and understand the links between the use of e-HRM and the perceived effectiveness of HRM.	Qualitative method	-The use of e-HRM applications differs according to the category of users (line managers or employees). -The appreciation of e-HRM is linked to its contribution to the efficiency of HRM by the different stakeholders of the organization. -In order to contribute to the HRM effectiveness, practitioners should place more emphasis on the quality of the e-HRM application (content and design) rather than its ease of use.

Waheed, A. et al.	2020	Investigate the factors that influence the deployment and adoption of e-HRM in Pakistan's manufacturing industry.	Mixed method	<ul style="list-style-type: none"> -The success of the implementation of e-HRM depends heavily on the resources available within the company (staff expertise and financial and technical means) and the attitude of employees towards the system. -Hiring, internal communication issues and ease of enrolment procedure constitute the main determinants for the implementation of e-HRM among Pakistani SMEs. Cost reduction is not one of the reasons for this adoption, due to the high cost of acquiring an e-HRM system in Pakistan.
Ngai, E.W.T. ; Wat, F.K.T.	2006	Investigate HR professionals' perceptions of the benefits and obstacles of implementing HRIS in Hong Kong industries and compare the differences in these perceptions between HRIS adopters and non-adopters and between small, medium and large companies.	Quantitative method	<ul style="list-style-type: none"> -For most industries in Hong Kong, speed of response and access to information are the greatest advantages of implementing an HRIS, while the lack of financial resources is the biggest obstacle to implementation. -A large percentage of the HRIS used (86%) are for payroll services and general information. -The perception of the benefits of implementing the HRIS does not vary between adopters and non-adopters of the HRIS. -Smaller companies and HRIS non-adopters see the lack of top management support and commitment as the main barrier to HRIS adoption. -The size of the company has an impact on the benefits and obstacles encountered when adopting an HRIS.
Davarpanah, A. ; Mohamad, N.	2020	Develop and test a theoretical model to explain how HRIS is implemented and influenced in Malaysian higher education.	Quantitative method	<ul style="list-style-type: none"> -HRIS user satisfaction is a key determinant of the perception of HRIS benefits. -Information quality and institution-based trust are predictive of HRIS user satisfaction. -The study did not support the human factors impact of HRIS implementation on its results.
Manivanan, S.K. ; Valliammal, M.	2019	Explore the differences in the factors that influence the	Quantitative method	<ul style="list-style-type: none"> -The expectations of employees in the manufacturing sector differ from those in the IT sector regarding the implementation of e-HRM. Consequently, the factors impacting

		successful implementation of e-HRM in manufacturing and IT companies in Chennai.		<p>the success of the system differ according to the sector of activity.</p> <ul style="list-style-type: none"> -At the planning stage, the company must prepare a long-term plan, clearly determine the objective of implementing the e-HRM system and designate a competent team to develop the project and ensure its user-friendliness. -The use of external consultants plays an important role in the successful implementation of e-HRM. -The frequent use of e-HRM by different means contributes greatly to the success of the project.
Strohmeier, S. ; Kabst, R.	2009	Explore the adoption of e-HRM by transnational organizations in Europe.	Quantitative method	<ul style="list-style-type: none"> -E-HRM is a widespread practice in Europe -The size of the organization, the configuration of HRM, the organization of work and telecommuting are determining factors in the adoption of e-HRM -National economic development only partially influences the adoption of e-HRM.
Teo, T.S.H. et al.	2007	Examine the determinants of HRIS implementation and the factors that influence the extent of HRIS adoption.	Quantitative method	<p>Three categories of factors influence the adoption and extent of adoption of an HRIS:</p> <ul style="list-style-type: none"> -innovation characteristics: The relative advantage of the department, the compatibility of the HRIS with other systems in the organization and the complexity of the HRIS. -organizational characteristics: Top management support, the size of the organization and HRIS expertise. -Environmental characteristic : Competition.
Ruël, H. et al.	2007	Determine whether the assessment of e-HRM applications affects the strategic and technical effectiveness of HRM.	Quantitative method	<ul style="list-style-type: none"> -The assessment of the quality of e-HRM applications positively impacts the technical and strategic effectiveness of HRM. However, the relevance of the job and the ease of use of e-HRM applications are not determinants of this effectiveness. -Good support from colleagues and managers and a good level of information provided by e-HRM applications lead to a better assessment of the quality of e-HRM applications.
Bondarouk, T. ; Ruël, H.	2013	Explore the strategic benefits that e-HRM can offer	Mixed method	<ul style="list-style-type: none"> -E-HRM does not guarantee the improvement of dynamic and operational capabilities or the provision of direct strategic benefits to the organization. However, HR professionals have seen a shift in their roles and the

		to organizations.		direction of their work, allowing them to spend more time on strategic activities. - Unlike non-managerial employees, HR professionals are the category that uses e-HRM the most and are the most positive about its benefits.
Hussain, Z. et al.	2007	Evaluate and compare the areas of use of HRIS, its perceived added value, its impact on the professional status of HR professionals and its use by small, medium and large companies for strategic decision-making.	Mixed method	-On average, there are no major differences between the use of HRIS by SMEs and its use by large companies. -The specific use of HRISs improves the professional status of HR professionals in SMEs and large companies. -Unlike personnel directors, HR managers and HR directors see HRIS as an enabling technology. -HRIS is used to support strategic labor relations in large U.S. organizations. -HRIS is widely used by SMEs and large enterprises to support advanced strategic business tasks and strategic decision-making.
Iqbal, N. et al.	2019	Explore the potential for value creation through e-HRM practices in the context of Pakistani commercial banks.	Quantitative method	-The operational, relational and transformational practices of e-HRM improve employee productivity by enhancing the quality of HR services. -The size of the bank has a significant impact on the implementation of e-HRM and consequently on the quality of service and the productivity of the bank's staff. -Younger banks are most interested in implementing e-HRM and improving productivity.
Tursunbayeva, A. et al.	2019	Explore the multiple stakeholders involved in the implementation of an HRIS in the healthcare sector, and their expected versus realized benefits.	Qualitative method	-Regional Healthcare Organisation (RHO) perspective: The implementation of HRIS within the RHO facilitated its EFQM certification and the adoption of the HR transformation project. -HR Professionals perspective: the benefits of HRIS are diverse: very important operational gains, professional development of HR staff and the possibility for HR managers to focus on strategic and value-creating HR activities. -Administrative IS team perspective: HRIS requires continuous reflection and improvement. The implemented HRIS

				<p>enables cost reduction in terms of information system maintenance.</p> <p>-Managers and employees' perspective: The implementation of HRIS has enabled line managers to better manage their teams and managers and employees to update their personal data, resulting in a significant increase in their level of satisfaction.</p>
Galanaki, E. et al.	2019	<p>-What types of configurations exist in the adoption of electronic HR management?</p> <p>-What are the contextual factors explaining the emergence of a certain type of e-HRM configuration?</p>	Quantitative method	<p>The analysis reveals the existence of four different e-HRM configurations:</p> <p>-The "non-usage" configuration: represents companies that have not adopted e-HRM at all or have a very low adoption rate (26% of the companies in the study).</p> <p>-The "HR primacy" configuration: this is an intermediate level of the phenomenon of digitization of the HR function where the focus is more on the HRM aspects than on the technological aspect.</p> <p>-The "integrated e-HRM" configuration: represents the complete electronization of HRM and allows companies to achieve high performance in terms of innovation, financial, stock market and environmental performance.</p> <p>-The "IT primacy" configuration: represents companies that are more innovative on the IT aspect rather than the HR aspects.</p>
Obeidat, S.M.	2016	Measure the link between the use of e-HRM and the effectiveness of HRM.	Quantitative method	<p>The use of e-HRM has a positive impact on the practical and political effectiveness of HRM.</p> <p>- At the political level, the use of e-HRM plays an essential role in strengthening the HRM system by improving the visibility, coherence and consensus of the e-HRM system.</p> <p>-At a practical level, the use of e-HRM increases responsiveness, quality of service and usefulness of the system.</p> <p>-Performance expectations and social influence indirectly influence the use of e-HRM through their impact on the behavioural intention to use e-HRM.</p> <p>-No significant direct relationship exists between the expectation of effort and the user's intention to use the system.</p> <p>-The actual use of e-HRM in the Jordanian context is still moderate.</p>

Troshani, I. et al.	2011	Explore the technological, organizational and environmental factors influencing the adoption of HRIS in the Australian public sector.	Qualitative method	The adoption of HRIS in the Australian public sector depends on three types of factors: technological, organizational and environmental. -At the technology level, integration, accessibility and operational efficiency are the main benefits and drivers for HRIS adoption. These benefits may justify the complexity of the HRIS and the adoption costs. To minimize these risks, HRISs must provide user-friendly functionality and organizational fit with the organization's business processes through negotiation of vendor support. -At the organizational level, HRIS adoption is positively impacted by management commitment, human capacity and the size of the organization. Centralization within the government has a negative impact on the adoption and involvement of HRIS users. -Finally, regulatory compliance and successful adoption are the factors related to the environmental context that positively impact the adoption of HRIS.
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Source: author's own research

4.1.Theoretical framework

The analysis of the theoretical framework of the analysed articles shows a diversity and heterogeneity of the theoretical bases adopted. This diversity stems from the diversity of topics and aspects related to e-HRM. It is mainly the theories related to the acceptance of technology and information systems that are used to explain the behavior of users regarding e-HRM. The models adopted in this sense are the Technology Acceptance Model (Ruël et al., 2007; Bondarouk et al., 2009; Saleh & Saleh, 2016; Kamble, 2018; Manivannan & Valliammal, 2019), Taylor's Theory of Planned Behavior (Manivannan & Valliammal, 2019), the Unified Theory of Acceptance and Use of Technology (Obeidat, 2016; Manivannan & Valliammal, 2019), the Technology Trust Model (Davaranah & Mohamed, 2020) and the Information Systems Success Model (Manivannan & Valliammal, 2019; Davaranah & Mohamed, 2020). Additionally, certain theories of innovation adoption are used to study the diffusion of e-HRM and the characteristics that make the organization receptive to innovation and change. Specifically, we note the classical theory of innovation diffusion (Teo et al., 2007), the model of IT adoption by organizations (Teo et al., 2007), the Attewell's model of innovation perspectives (Teo et al., 2007) and the Technology, Organization and Environment (TOE) model. Furthermore, a number of articles were based on the conceptual framework of e-HRM typologies : the oldest typology of Zuboff (1985), which distinguishes between an automatic type and an informational type (Galanaki et al., 2019), the typology based on the importance of e-HRM that identifies an operational type and a strategic type (Galanaki et al., 2019), the Lepak and Snell's (1998) typology (Parry & Tyson, 2011; Galanaki et al., 2019), Parry and Tyson's HRIS Benefit Categories (Tursunbayeva et al., 2019) and the Strohmeier and Kabst's (2014) three types of e-HRM (Galanaki et al., 2019). In addition, the resource-based view is used to

assess the contribution of e-HRM to a company's competitive advantage (Parry, 2011; Iqbal et al., 2019), the Adaptive Structuring Theory is used to understand the process of employee use of e-HRM (Bondarouk et al., 2015) and the organizational capabilities approach is used to examine the strategic outcomes of e-HRM in organizations (Bondarouk & Ruël, 2013). However, three studies do not have a theoretical framework. To sum up, the majority of the theories adopted are related to e-HRM typologies, innovation and technology acceptance. Overall, the current e-HRM research lacks of a unified theory.

4.2. Adoption of e-HRM

According to Waheed et al. (2020), the success of implementing e-HRM depends heavily on the attitude of employees towards the system and the resources available within the organization: human, financial and technical resources. To ensure end-user commitment and involvement in the project, management must promote a culture of technological user-friendliness within the organization (Kamble, 2018), make staff aware of the goals and benefits of e-HRM (Saleh & Saleh, 2016; Kamble, 2018) and involve them in the design, implementation and improvement of the project (Kamble, 2018). Similarly, staff should be provided with adequate equipment (software, technological infrastructure), in addition to training and technical assistance in case of problems (Kamble, 2018; Manivannan & Valliammal, 2019). To perceive the benefits of e-HRM, end-users need to feel, through the use of e-HRM tools, a reduction in workload and an improvement and simplification of human resource management procedures (Saleh & Saleh, 2016; Kamble, 2018). The availability of financial resources is also of paramount importance in the implementation of e-HRM (Ngai & Wat, 2006), especially as the cost of adopting an e-HRM system remains very high (Troshani et al., 2011).

Based on the TOE model of DePietro et al. (1990), Troshani et al. (2011) propose three levels of factors impacting the adoption of HRIS, namely: a technological level, an organizational level and an environmental level. From the technological point of view, and to minimize the risk of system complexity, the HRIS must offer user-friendly functionalities and adapt to the business processes (Troshani et al., 2011) and other systems of organization (Teo et al., 2007). To do so, the organization must rely on the technical expertise of its staff and the support and guidance of its system provider (Troshani et al., 2011). The study conducted by Saleh & Saleh (2016) shows that the adoption of e-HRM is influenced to a lesser degree by the perceived risk and security of the system. At the organizational level, HRIS adoption is influenced by the size of the organization, management commitment, human and financial resources, the degree of centralization, and the orientation of the HR function.

Organizational size has been identified by several authors as a key determinant of e-HRM adoption and use (Ngai & Wat, 2006; Teo et al., 2007; Strohmeier & Kabst, 2009; Parry, 2011; Troshani et al., 2011; Iqbal et al., 2019). The larger the size of the organization, the more cost-effective the e-HRM will be, as the benefits of the e-HRM will be spread over a large number of users (Troshani et al., 2011), allowing the organization to achieve economies of scale (Parry, 2011). In contrast to SMEs, which generally face the problem of the high cost of acquiring and maintaining e-HRM (Waheed et al., 2020). The adoption of e-HRM in SMEs is highly dependent on financial and technical expertise and resources (Waheed et al., 2020). However, Hussain et al. (2007) point out in their study of 450 organizations in the United Kingdom, that on average, there is little difference in the use of e-HRM between SMEs and large enterprises.

Management commitment and support is also a critical and essential factor in the adoption and use of e-HRM (Ngai & Wat, 2006; Teo et al., 2007; Troshani et al., 2011; Manivannan & Valliammal, 2019). A management team that is aware of the benefits and advantages of e-HRM will provide its organization and staff with the support and resources necessary for the success

of the project. Human resource expertise in HRIS only influences the decision to adopt e-HRM, not the extent of its use (Teo et al., 2007). This conclusion is consistent with the finding of Parry (2011) that the level of qualification of the organization's staff does not affect the use of e-HRM. Indeed, IT and HR skills can be improved through training (Troshani et al., 2011). The strategic direction of the HR function (Parry, 2011), as well as the industry (Manivannan & Valliammal, 2019; Waheed et al., 2020) are also factors impacting the adoption of e-HRM. However, centralization within the organization negatively impacts the adoption and involvement of HRIS users (Troshani et al., 2011). Staff will feel that they are not involved and that the project is imposed by management.

Environmental factors include regulatory compliance, successful adoptions (Troshani et al., 2011) and competition (Teo et al., 2007). Indeed, the concern to comply with regulations is a motivation for adopting e-HRM. Similarly, successful adoptions of the e-HRM project are likely to convince policy makers and staff of the various benefits of the e-HRM (Troshani et al., 2011). For the competition, it has an impact on the extent of e-HRM adoption and not on the decision to implement e-HRM. Firms are not aware of the strategic role and the importance of e-HRM to compete, but once they have adopted it, they will be willing to invest more in it to gain a competitive advantage and cope with the pressures of the external environment (Teo et al., 2007).

The appreciation of e-HRM depends on the benefits it can provide to human resource management (Bondarouk et al., 2009) and the way e-HRM technology is used (Bondarouk et al., 2015) by different categories of users (Bondarouk et al., 2009). Indeed, HR professionals are the category that uses the e-HRM system the most and perceives its multiple benefits (Bondarouk & Ruël, 2010). In contrast, non-management employees were the category most resistant to change (Bondarouk & Ruël, 2010).

4.3. Consequences of e-HRM

There is a wealth of academic research dealing with the objectives and potential impacts of electronic Human Resource Management. However, there are few empirical researches that actually examine the achievement or realization of these objectives. Parry & Tyson (2011) have classified the consequences of e-HRM into three categories: operational, relational and transformational.

The operational benefits of e-HRM are very important and are the subject of various studies. These benefits take several forms: standardization of HR practices, minimization of the risk of errors, speed and transparency of HR processes (Parry & Tyson, 2011; Tursunbayeva et al., 2019) and increased employee productivity (Iqbal et al., 2019). These benefits lead to streamlined and more efficient HR processes (Tursunbayeva et al., 2019) and improved organizational profitability (Parry & Tyson, 2011). The literature also suggests that the implementation of e-HRM can reduce headcount, although this reduction remains small (Parry & Tyson, 2011).

Cost reduction also remains one of the main motivations for implementing e-HRM, however, the literature does not provide much evidence on this point. The qualitative study carried out by Parry & Tyson (2011) in 10 organizations in the United Kingdom shows that the implementation of e-HRM allows cost savings to be achieved through the reduction of training costs, recruitment costs, etc. According to Tursunbayeva et al. (2019), the implementation of electronic Human Resource Management allows maintenance costs to be reduced through the integration or replacement of several existing information systems by a single system. However, Troshani et al. (2011) and Waheed et al. (2020) state that cost reduction is not one of the motivations for implementing e-HRM, due to the high cost of its acquisition. Further

empirical studies are required to fully understand the relationship between e-HRM implementation and cost reduction.

In addition to the operational consequences, organizations are becoming increasingly oriented towards the relational gains of e-HRM. The main relational benefits that emerge from the literature are: increased employee responsiveness (Parry & Tyson, 2011; Obeidat, 2016); information sharing (Parry & Tyson, 2011); improved professional status of HR professionals (Hussain et al., 2007; Tursunbayeva et al., 2019); accountability and development of managerial capacity (Parry & Tyson, 2011). Tursunbayeva et al. (2019) also point to an increase in employee satisfaction as a result of improved HR processes and the use and updating of their personal data. Despite the lack of objective evidence, organizations see the adoption of e-HRM as an opportunity to improve their organizational image (Parry & Tyson, 2011). For example, to maintain its leading edge image, the organization must adopt the current model of good HR practices, which consists of using automated recruitment systems. E-HRM is also seen as beneficial in customer focus and enhancing the quality of HR services (Parry & Tyson, 2011; Obeidat, 2016; Iqbal et al., 2019).

After the great importance given to the operational and then to the relational benefits of electronic Human Resource Management, the literature has recently seen an increase interest in the strategic gains of e-HRM. The authors stipulate that the implementation of e-HRM does not guarantee the provision of direct strategic benefits to the organization (Bondarouk & Ruël, 2010) and is not sufficient on its own for an HR function to become "strategic" (Parry & Tyson, 2011). However, it does support corporate strategies by allowing managers to spend more time on strategic and value-creating activities by changing their roles and the focus of their work (Bondarouk & Ruël, 2010; Tursunbayeva et al., 2019). The adoption of e-HRM allows for changes in the structure of the human resources function, clarifies strategic choices and helps in strategy implementation thanks to efficient processes, relevant data and good organization (Hussain et al., 2007; Parry & Tyson, 2011). However, it remains difficult for HR staff to provide tangible evidence of these gains (Parry & Tyson, 2011).

5. Conclusion

This systematic literature review describes and synthesizes the results of empirical research conducted on electronic Human Resource Management over the last two decades. We have conducted an in-depth study of the factors impacting the adoption and consequences of e-HRM within organizations. Over the last few years, the addition of IT has gradually become very well known in the field of human resources management, resulting in a significant development of e-HRM results (Waheed et al., 2020). Electronic Human Resource Management enables organizations to achieve very significant operational, relational and transformational benefits. However, the realization of these gains is closely linked to the way in which this innovation is introduced within the organization. Hence, the importance of successful adoption that takes into account human, technological, organizational and environmental factors. Most research places great emphasis on human factors and the conditions of acceptance of electronic HRM.

Although we have carried out a systematic literature review of the most important research on the adoption and consequences of e-HRM, our research has a number of limitations. First, we have limited our review to twenty research studies over the past twenty years, while there may still be other adoption factors or consequences in other research that we did not consider in our review. Secondly, we have limited our research to electronic Human Resource Management and we did not consider functional areas of human resources management such as: e-learning, e-recruitment, e-selection, etc. Finally, we have excluded other research that could be useful for our study and that deals with topics related to the use of IT in the HR function

such as: Web-based HR, HR software, HR self-service, business to employee (B2E), Enterprise Resource Planning (ERP)...

Future research must assess the determinants and the relationship between the different levels of factors impacting the adoption of e-HRM for the different stakeholders of the organization (HR staff, IS staff, managers, employees,...), and conduct more empirical studies to confirm or deny the effectiveness of e-HRM and its actual operational, relational and strategic gains. It would also be interesting for future research to study the differences that exist in the adoption and consequences of e-HRM between public and private organizations, between small, medium and large companies, as well as between national and multinational corporations. Through this literature review, we hope to have contributed to the richness of e-HRM research and to the good understanding of the factors impacting adoption and consequences of e-HRM.

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