



THE IMPACT OF INFORMATION TECHNOLOGY ON HUMAN RESOURCES MANAGEMENT: MODEL ANALYSIS AND EFFECTIVENESS OF E-HRM SYSTEMS

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Abstract:

The integration of information and communication technologies in the context of human resources management has completely reinvented organizational operating practices, transformed human capital management and streamlined internal processes. The aim of this paper is to examine the main theoretical and empirical frameworks of e-HRM, to verify their potentially positive impacts on organizational results, as well as their validity for the Moroccan market. Notwithstanding a number of strengths, e-HRM in fact represents a complex set of challenges surrounding technology, employee expectations and the dynamics of organizational change. In light of the mixed analysis including a strong literature review component and the identified potential key success factors, focused on empirical data, a specific SEM model for Moroccan business can be developed. The research results show that Performance Expectation, Effort Expectation, Social Influence and Enabling Conditions play the central role in the process of adoption and use of e-HRM systems. In addition, the support of managers and HR professionals, as well as the training and involvement of users, add to the effectiveness of this technology. Practical recommendations for companies wishing to implement e-HRM and key findings highlight both the technical and social dimensions of the process. The content of this study makes a valuable contribution to our understanding of the use of information and communication technology in HRM, providing the basis for future studies

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1. Introduction

The integration of information and communication technologies (ICT) into the field of human resources management has transformed the means of organizational practices. Marked by increasingly frequent use of electronic human resources management systems, e-HRM has enabled companies to modernize their processes, ensure better control of human capital and, as a result, gain a competitive edge. Thanks to the computerization of the human resources sphere, companies have benefited from advances in operational efficiency, service quality and, at the same time, strategic acuity. However, despite the obvious benefits, implementing and operationalizing e-HRM presents complex challenges. Between the demands of technology, staff expectations and implementation dynamics, organizations face difficulties in successfully integrating these systems. The current state of e-HRM literature contains a considerable number of theoretical and empirical models that explain and enforce their use. To achieve these objectives, the article is structured as follows: The first section, the introduction, presents the context and challenges of integrating ICT into HRM and defines the objectives of the study. The second section, the literature review, analyzes previous work on ICT and HRM, e-HRM systems, the role of change management and supervisors, and HRM effectiveness. The third section, methodology, describes the research design, data collection and analysis methods. The fourth section, results, presents and interprets the study's findings. The fifth section, the discussion, discusses the main findings by comparing them with the existing literature, explores the theoretical and practical implications, identifies the study's limitations and proposes recommendations for future research. Finally, the conclusion synthesizes the study's contributions, highlights key messages and opens up future prospects for e-HRM.

2. Literature review

Information and communication technologies (ICT) have significantly transformed communication methods, daily routines, ways of thinking and business innovations. As Suramardhini (2012) points out, this technological revolution has led to a massive transition towards automation, affecting various fields, including human resource management (HRM). The impact of ICT on HRM has been particularly notable with the emergence of electronic human resource management (e-HRM), where automation has enabled a significant proliferation in the use of online HRM systems by companies (Gürol, Wolff, & Berkin, 2010). Implementing HR practices via ICT has become an essential strategy for companies seeking to maintain a competitive edge. According to Stanton and Coovert (2004), ICT has enabled HR departments to become more collaborative and responsive to dynamic environments and employee demands. Prior to this transformation, HRM relied primarily on computer networks for information

storage and retrieval functions. However, with the advent of advanced IT systems, the use of online HRM applications has consolidated, fundamentally changing the way HR information is managed (Stone & Dulebohn, 2013). The adoption of ICT has also altered HRM strategies due to organizations' increasing reliance on human capital, skills and talent to achieve sustainable advantage. Strohmeier (2007) points out that ICT has enabled HR departments to become more integrated and flexible, responding better to the changing needs of companies and their employees. In addition, Ulrich, Younger and Brockbank (2008) and Strohmeier (2013) have highlighted that the adoption of technology has made HRM strategies more focused on talent development and innovation. The rise of information and communication technologies (ICT) has profoundly influenced human resources management (HRM), particularly in the Moroccan context where companies are seeking to align themselves with international standards. The adoption of electronic human resources management systems (e-HRM) has become a strategic priority to optimize organizational efficiency and meet the demands of a constantly changing economic environment. However, the development and adaptation of human resource management models using structural equation modeling (SEM) in the Moroccan context remains an emerging area of research, requiring particular attention. ICTs have transformed the way companies manage their human resources, encouraging increased automation and intensive use of online HRM systems (Gürol, Wolff, & Berkin, 2010).

In this context, Moroccan companies are beginning to adopt these technologies to improve human capital management and gain a competitive edge. ICT enables better information management, facilitating decision-making and the alignment of HR practices with the organization's strategic objectives (Stone & Dulebohn, 2013). The adoption of ICT in HRM is seen as a means of increasing responsiveness and cooperation within HR departments (Strohmeier, 2007). Ulrich, Younger and Brockbank (2008) and Strohmeier (2013) have demonstrated that integrating ICT enables the development of more dynamic, competency-based HR strategies, which is crucial for Moroccan companies seeking to improve their competitiveness in the global marketplace. However, this adoption requires adaptation to local cultural and organizational specificities, an aspect often overlooked in global e-HRM studies. Structural equation modeling (SEM) offers a powerful analytical framework for understanding and assessing the complex relationships between HRM variables and organizational performance. In the Moroccan context, the development of an adapted SEM model would enable the identification of key success factors for the implementation of e-HRM systems. Current literature offers various theoretical and empirical models, but few studies have focused on adapting these models to the specificities of the Moroccan market. Contextualizing SEM models within the Moroccan framework is essential to ensure their relevance and applicability. Moroccan companies operate in an environment characterized by specific cultural, economic and regulatory dynamics. Consequently, models developed in other contexts need to be adjusted to reflect these particularities. Parry and Tyson (2011) showed that UK companies were

using e-HRM systems to improve the efficiency and quality of HR services. Similarly, studies by Khashman and Al-Ryalat (2015) in Jordan's telecommunications sector revealed positive impacts of e-HRM functions on organizational performance. These findings suggest that similar adaptations could be beneficial in the Moroccan context.

3. Research methodology

This section describes the methodology used to analyze articles published in the field of electronic human resource management (e-HRM) in order to develop a SEM (Structural Equation Modeling) model adapted to the Moroccan framework. The methodology adopted comprises several key stages: article selection, data collection and analysis, and development of the theoretical model based on the results obtained. The first stage of the methodology consists in identifying and selecting relevant articles published in the field of e-HRM. This selection is made through an exhaustive search of recognized academic databases such as Google Scholar, PubMed, JSTOR, and IEEE Xplore. The inclusion criteria for articles are: articles published in peer-reviewed journals, empirical and theoretical studies on e-HRM, research using structural equation modeling (SEM), and studies relevant to the Moroccan context or similar environments. Data collection is based on a systematic literature review. Selected articles are analyzed to extract relevant variables, relationships between these variables and organizational outcomes associated with the implementation of e-HRM systems. Information extracted includes research hypotheses, data collection methods used in the studies, empirical results and conclusions, as well as proposed theoretical and conceptual models. Data analysis takes place in several stages. First, a content analysis is carried out to identify recurring themes and key variables mentioned in the literature. Next, a comparative analysis is carried out to assess the similarities and differences between the studies, particularly in terms of context, methodology and results. This analysis is used to synthesize the variables and relationships studied in the literature, identify gaps and inconsistencies in existing research, and determine the factors specific to the Moroccan context that need to be taken into account. Based on the above analyses, a SEM model specific to the Moroccan setting is developed. This model integrates the variables and relationships identified in the literature, while taking into account Morocco's cultural, economic and regulatory particularities. The stages of model development include the formulation of research hypotheses based on the results of the literature review, the conceptualization of the model by defining latent variables and structural relationships, and the theoretical validation of the model through discussions with experts in HRM and ICT in Morocco.

4. Results and discussion

4.1 Theory and assumptions

Researchers claim that current research on e-HRM stems from multidisciplinary theoretical approaches (Bondarouk & Looise, 2009; Bondarouk & Ruël, 2009; Marler & Fisher, 2013). In the relevant literature, several theories have been used in research into the adoption and implementation of e-HRM, including the theory of planned behavior, the unified model of technology acceptance and use, the resource-based view, social exchange theory, change management theory and contingency theory. At the same time, the literature has used several related research frameworks, models and theories to investigate user responses and perceptions of the e-HRM system, particularly with regard to estimating the outcomes of acceptance and effective use of a newly implemented IT system (Marler & Fisher, 2013; Stone & Dulebohn, 2013; Strohmeier, 2007). Social exchange theory (Blau, 1964) is one of the underlying theories that have been used to explain the link between various organizational concepts and firm performance (Ahmed, Khuwaja, Brohi, & Othman, 2018). Ostroff and Bowen (2000) adopted the perspective that human resource management practices shape employee skills, attitudes and behaviors, which in turn affect organizational behavior and performance, resulting in structural and operational efficiencies (Wright, Gardner, Moynihan, & Allen, 2005). In addition, Byremo (2015) examined social exchange theory, among other theories, in the context of electronic systems related to human resource management.

According to the author, these systems consist of several integrated human resource management practices that help create more engaged and competent employees and have a positive impact on overall organizational performance. In the same context, according to Blau (1964), the social exchange approach suggests that relationships between employees, managers and the organization are based on the norm of reciprocity. From a social exchange perspective, leader-member exchange theory (Dansereau, Graen and Haga, 1975) emphasizes the mutual relationships between supervisors or managers and their subordinates (Bos-Nehles and Meijerink, 2018; Eisenberger *et al.*, 2013). As a result, middle managers and executives have the opportunity to motivate and improve employees' perceptions and behaviors so that they accept change and participate in innovation (Eisenberger *et al.*, 2013). The unified model of technology acceptance and use was developed by Venkatesh *et al.* (2003); it is an extension of the technology acceptance model created by Davis (1989). The Technology Acceptance Model and the Unified Model of Technology Acceptance and Use have been used as frameworks in various studies. They focus on system end-users and take into account their reactions, particularly in the context of system acceptance and practice (Dwivedi, Rana, Jeyaraj, Clement, & Williams, 2017; Taiwo & Downe, 2013; Venkatesh, Thong, & Xu, 2016; Voermans & Van Veldhoven, 2007; Williams, Rana, & Dwivedi, 2015). The central concepts of the Unified Model of Technology Acceptance and Use have been used for e-HRM antecedents in several previous research studies,

and have also been adopted in the present research: Performance Expectancy, which is the perceived usefulness of the new system; Effort Expectancy, which refers to simplicity; Social Influence, which consists of subjective norms; and Facilitating Conditions, which involve compatibility. These determinants (Performance Expectancy, Effort Expectancy and Social Influence) have an impact on users' Behavioral Intention to use a new system. At the same time, Facilitating Conditions and Behavioral Intention affect the actual use of the system.

Conceptually, users will be motivated to use and benefit from the new system if they are satisfied with the system's features and quality. Individuals' Behavioral Intention depends on perceptions of the system's usefulness (Fisher & Howell, 2004) and will determine the use of the new system. Recently, Obeidat (2016) empirically examined the potential consequences of using e-HRM in the Jordan Telecom Group (Orange Jordan). His study was based on the Unified Model of Technology Acceptance and Use with a sample of 450 employees using e-HRM. The results showed a strong relationship between the use of e-HRM and the effectiveness of HR management in policy and practice. The Unified Model of Technology Acceptance and Use, Social Exchange Theory and Leader-Member Exchange Theory are used as theoretical frameworks in this study. This study extends the Unified Model of Technology Acceptance and Use to test a proposed model predicting the effectiveness of the e-HRM system. It integrates several variables from social exchange theory and leader-member exchange theory (middle managers, executive human resource management role and human resource professional role) with human resource management determinants (Performance Expectancy, Effort Expectancy and Facilitating Conditions) to predict employees' behavioral intentions towards using the e-HRM system and their actual use of the system. The social exchange theory approach (Blau, 1964) explains how social relationships influence individual behavior and how they interact with the dimensions of individual human capital attributes to improve performance. According to the social exchange perspective, the implementation of human resource management can be seen as a social process that depends on social exchange relationships between the actors involved in human resource management.

These reciprocal social relationships and interactions, viewed through the lens of leader-member exchange theory, will help expose employees to a broader set of HRM practices and enable them to have a high-quality relationship with their manager (especially when managers feel supported by HR professionals), which will help improve their commitment to the organization (Bos-Nehles & Meijerink, 2018). Thus, based on previous research and drawing on the theoretical support of Venkatesh *et al.* (2003, 2012), the theoretical framework of the present study is outlined in Figure 1. In the proposed model, the relationships between HRM determinants (Performance Expectancy, Effort Expectancy) and HRM effectiveness are mediated by Behavioral Intention and the actual use of eHRM (Bondarouk & Brewster, 2016; Bondarouk & Ruël, 2012; Maatman, 2006; Obeidat, 2016).

4.2 Hypothesis development

Performance Expectancy implies the level to which an individual believes that using a particular system will help him/her in his work. Venkatesh *et al.* (2003) identified Performance Expectancy as one of the key determinants fostering the intention to use a new technology. This fact has been underpinned by several studies which showed that users are more eager to adopt systems; the more useful they perceive them (Heikkilä & Smale, 2011).

Therefore, we hypothesize that Performance Expectancy will have a significant direct and positive effect on the behavioral intention to use a human resource management system online.

H1: Performance Expectancy has a significant positive impact on Behavioral Intention to Use HRM online.

Effort Expectancy refers to the extent to which a person believes that using the system will require effort. According to the TAM model (Davis, 1989) and its extension, UTAUT (Venkatesh *et al.*, 2003), perceived ease of use is a key determinant of technology adoption intention. The easier the system is to use, the more likely users are to adopt it (Obeidat, 2016).

H2: Effort Expectancy significantly and positively influences Behavioral Intention to Use HRM online.

Social Influence reflects whether an individual perceives that important others believe they should or should not use a new system. Venkatesh *et al.* (2003) demonstrated that Social Influence significantly impacts behavioral intention, particularly in the early stages of technology adoption. Thus, we hypothesize that Social Influence positively influences employees' intention to adopt an HRM system online.

H3: Top management support significantly and positively influences Behavioral Intention to Use HRM online.

HR practitioners play a critical role in the successful implementation of HRM systems. Their ability to communicate the benefits and train potential users is a significant factor in system adoption (Bos-Nehles & Meijerink, 2018).

H4: The role of professionals significantly and positively influences Behavioral Intention.

Facilitating Conditions refer to the degree to which an individual believes that there is technical support and resources available to use the system. Venkatesh *et al.* (2003) found that conducive facilitating conditions encourage technology use.

H5: Facilitating Conditions significantly and positively influence the electronic human resources management e-e-HRM.

HR practitioners, as administrative experts, are essential for the successful implementation of performance management practices and processes. Their involvement in the process helps spread continuous support and encouragement, ensuring the practical use of the system (Ruël *et al.*, 2004).

H6: The role of professionals has a direct and significant effect on electronic human resources management e-HRM.

There exists a strong relationship between line managers and the implementation of HRM. The success and adoption of the system depend heavily on their support and utilization, which directly impacts how employees perceive and use the system (Purcell & Hutchinson, 2007).

H7: The HR management role significantly and directly influences electronic human resources management e-HRM.

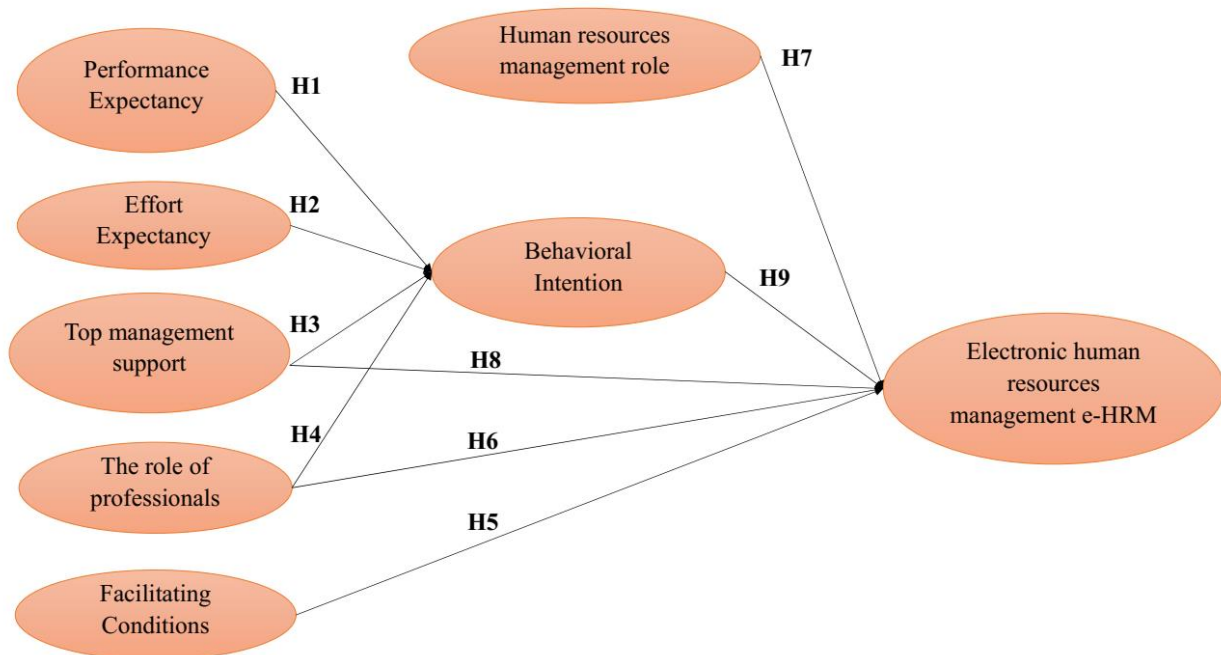
Support from top management is vital for the use of HRM systems. Employees are far less likely to use the system if top managers do not promote its use (Bos-Nehles & Meijerink, 2018).

H8: Top management support has a direct positive impact on electronic human resources management e-e-HRM.

As proposed by the UTAUT model, behavioral intention directly predicts future use of technology (Venkatesh *et al.*, 2003). Therefore, we hypothesize that Behavioral Intention positively influences retention focus.

H9: Behavioral Intention significantly and directly influences electronic human resources management e-HRM.

Figure 1: Search model



Source: The author.

5. Discussion

In particular, the adoption and implementation of information communication technologies (ICT) in human resource management (HRM) are increasingly attracting interest from both researchers as well as practitioners. Known as electronic human resource management (e-HRM), this represents a revolution in HRM functioning. To inform future research about the possible factors that drive e-HRM adoption and effectiveness, this study follows a systematic literature review method to look at the well or poorly established pre-theoretical assumptions between several groups of theoretical frameworks. Indeed, current research on e-HRM is characterized by an interdisciplinary theoretical inspiration from a plethora of theories, including the Theory of Planned Behavior (Ajzen & Madden, 1986) and the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh *et al.*, 2003). These theories provide a lens for viewing e-HRM from the perspective of its adoption and utilization. Social exchange theory (Blau, 1964) is particularly salient for explaining the interactions between employees, managers, and the organization in an e-HRM context. This theory posits that social relations are predicated on a norm of reciprocity, where sharing begets more or less positive stakeholder exchanges, reinforcing engagement and cooperation. Ostroff and Bowen (2000) argued that HRM practices are the impetus for affecting employee skills, attitudes, and behaviors, which ultimately drive organizational performance. In a similar manner, Byremo (2015) explored the use of social exchange theory within e-HRM systems and developed that these could lead to greater levels of employee engagement and capability, which should be linked back with overall organizational performance. It has clear links to leader-member exchange

theory, which focuses on the relationship between managers and employees (Dansereau *et al.*, 1975; Bos-Nehles & Meijerink, 2018; Eisenberger *et al.*, 2013). Middle managers are key to employee motivation and changing attitudes and behavior (Eisenberger *et al.*, 2013). The Unified Theory of Acceptance and Use of Technology model (Venkatesh *et al.*, 2003) is studied to understand the adoption of e-HRM systems in several organizations. The model posits that Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions are the most important factors in determining a user's intention to use innovations. These relationships were confirmed by Obeidat (2016) while discussing the use of electronic human resource management in the Jordan Telecom Group. The adoption of information and communication technologies in human resource management has numerous benefits but also requires taking multiple factors into account when trying to understand why implementation may fail. We argue that by integrating multilevel and multidisciplinary theoretical approaches, it is possible to identify the factors affecting the adoption and use of e-HRM systems. This research makes a significant contribution by providing insights for practitioners and researchers into the importance of Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, alongside understanding how HR professionals and managers could play a vital role in the successful implementation of e-HRM systems.

6. Conclusion

The use of information and communication technologies (ICT) in human resource management (HRM) has changed organizational practices and allows for new opportunities to increase effectiveness, quality service levels, as well as the possibility of strategic decision-making. The aim of the current study is to investigate a series of theoretical and empirical models found in the literature, with respect to understanding and increasing adoption (and implementation) effectiveness within e-HRM systems. Results of the study indicated salient influences that determine e-HRM adoption and effectiveness through a multidisciplinary approach, namely Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), as well as Facilitating Conditions. The findings of the study underline that these are key constructs for understanding intention and behavior in relation to e-HRM systems. Performance Expectancy and Effort Expectancy, in particular, have been identified as important for the perception of system usefulness and ease of use, which results in users' intention to adopt. Moreover, in order to foster the active and successful use of e-HRM systems, there needs to exist managerial and HR professional support, as well as sufficient facilitating conditions. Consistent with social exchange theory, this study also underpins the importance of the relationships and interactions that employees have among them, their managers, and, at large, in between the organization. Collaboration between privacy advocates and their colleagues is essential for the successful deployment of new technologies. The conclusion was made at the end of this research and, other than contributing to

knowledge advancement, some practical recommendations have been provided for companies who are aiming to benefit from e-HRM systems. One should take into account not only the technical and functional attributes of such systems but also embrace its social as well as organizational factors. Organizations must also invest in training and user support, as well as advocate for an environment that promotes the use of technologies. Future research should explore these dynamics using empirical and longitudinal data to further explain the relationship between e-HRM systems with organizational performance and employee engagement. The study extends theoretical and practical understanding toward how the integration of different ICT tools can facilitate e-HRM adoption, implementation, use, and effectiveness in an integrated manner that covers a "pre-during-post adaption evaluation." The findings provide indications of the necessity for comprehensive consideration that is reflected by technical, social, and also organizational issues when implementing electronic human resource management systems.

Conflict of interest declaration

I certify that I have NO affiliation or involvement with any organization or entity having a financial interest (such as honoraria, educational grants, participation in speakers bureaus, membership, employment, consulting, stock ownership or other ownership interests, and expert testimony or patent licensing agreements), or a non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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