

# ELECTRONIC HUMAN RESOURCES MANAGEMENT (E-HRM) ADOPTION STUDIES: PAST AND FUTURE RESEARCH

Winarto

*Universitas Methodist Indonesia, Medan*

e-mail: winarto.zip@gmail.com

## ABSTRACT

Electronic human resource management (e-HRM) systems become more widely used by profit and non-profit organization. However, the field currently lacks sound theoretical frameworks that can be useful in addressing a key issue concerning the implementation of e-HRM systems, in particular to obtain a better understanding of the factors influencing the adoption of e-HRM systems. The objective of this paper is to provide a foundation towards the development of a theoretical framework for the implementation of e-HRM systems and develop a conceptual model that would reflect the nature of e-HRM systems' adoption through systematic literature review. Adopting Crossan and Apaydin's procedure of systematic review, this paper investigated 21 empirical papers of electronics human resources management, then categorized them into 4 characteristics which influence the adoption; System and technology characteristics; Organizational characteristics; User/individual characteristics, and Environmental and contextual characteristics. Finally, the e-HRM adoption research framework is drawn and based on the framework; avenues for future research are discussed.

Keywords: e-HRM, technology adoption, Technology Acceptance Model

## ABSTRAK

*Manajemen sumber daya manusia elektronik (selanjutnya disebut dengan e-HRM) semakin banyak digunakan oleh organisasi profit dan nonprofit. Namun, bidang dan topik ini belum memiliki kerangka teori yang mapan, yang dapat digunakan untuk menganalisis isu-isu terkait penerapan e-HRM, terutama mengenai faktor-faktor yang mempengaruhi adopsi sistem e-HRM. Tujuan penelitian ini adalah untuk memberikan landasan bagi pengembangan kerangka teoritis untuk implementasi sistem e-HRM dan mengembangkan model konseptual yang akan menggambarkan adopsi sistem e-HRM melalui tinjauan literatur sistematis. Mengadopsi prosedur dan metode Crossan dan Apaydin untuk melakukan telaah literatur secara sistematis, paper ini menyelidiki 21 publikasi empiris manajemen sumber daya manusia elektronik dari 2 database internasional; Business Source Premier dan Social Science Citation Index (SSCI), kemudian mengelompokkannya ke dalam 4 karakteristik yang mempengaruhi adopsi e-HRM; (1). Karakteristik sistem dan teknologi, (2). Karakteristik organisasi, (3). Karakteristik pengguna / individu, dan (4). Karakteristik lingkungan dan kontekstual. Paper ini juga menggambarkan kerangka penelitian adopsi e-HRM serta usulan-usulan untuk penelitian mendatang.*

*Kata kunci: e-HRM, adopsi teknologi, model penerimaan teknologi*

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## 1. Introduction

Information systems (IS) are increasingly influencing human resource management (HRM) practices in organizations. The rapid development of the Internet and information technology during the last decade has enhanced the adoption of electronic Human Resource Management (hereafter called e-HRM).

Marler and Fisher (2013) argued that e-HRM literature is still at an early stage when compared to either the general IT/IS literature or strategy literature, because early e-HRM studies begin appearing in international publication around 1995 (Strohmeier, 2007).

While some organizations implement the e-HRM technology as a means of facilitating the HRM practices and increased research interest on e-HRM, the field currently lacks sound theoretical frameworks that can be useful in addressing a key issue concerning the implementation of e-HRM systems, in particular to obtain a better understanding of the factors influencing the adoption of e-HRM systems. Since academic interest and research in e-HRM adoption have increased, the review of literature review is needed to identify the e-HRM adoption research trend as well as to find the literature gaps that will be valuable for future research in order to enhance the understanding of e-HRM adoption.

Given the widespread use of e-HRM systems and the potential advantages and disadvantages associated with them, the main purpose of the present article is to provide a review of the factors that affect e-HRM acceptance and adoption. IS adoption and acceptance, in this case e-HRM systems, is not merely about the technology and its advanced features, but some other factors also determine the IS adoption within organizations. From the theoretical perspective, the review may offer directions for e-HRM research by

explaining the factors such as system and technology, organizational characteristics, users and individuals' characteristics as well as environmental and contextual factors which influence e-HRM adoption. From managerial and practitioners perspectives, the review also provides useful insights on how e-HRM may be implemented within organizations, where multi and holistic factors are behind the IS adoption.

This literature review employs a research question: what factors do influence e-HRM adoption in organizations and how those factors are categorized according to four main groups or characteristics; system and technology, organizational, users/individual as well as environmental and contextual factors? The review covered all technology application and implementation which related to the Human Resource Management practices such as e-recruitment, e-selection, and e-training. Thus, the objective of this paper is to provide a foundation towards the development of a theoretical framework for the implementation of e-HRM systems and develop a conceptual model that would reflect nature of e-HRM systems' acceptance and adoption.

This paper will be presented as follows. In the next section, the theoretical underpinning and the methodology that is used to compile empirical research from two popular academic databases through systematic literature review are explained. Then, following that, the systematic literature review result will be presented and followed by the discussion and the implication for the practice and future research.

## 2. Literature Review

Electronic Human Resource Management is defined as the planning, implementation, and application of

information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR activities (Strohmeier, 2007).

E-HRM can be used for some HR-related activities. It can be used for transactional activities (for instance those that involve day-to-day transactions and record keeping); traditional HRM activities for example recruitment, selection, training, compensation and performance management; and transformational activities that add value to the organization, and may be used to manage HR across the whole employee lifecycle (Parry, 2011).

From the theoretical perspective, e-HRM is introduced by organizations to improve efficiency and service delivery, to increase the strategic orientation of the HR function, to improve standardization and organizational image and to empower managers. E-HRM outcomes are mainly related to efficiency, service delivery and standardization, relational outcomes and potential improvements in organizational image (Parry & Tyson, 2011).

As electronic human resource management (e-HRM) systems become more widely used, previous research suggested that e-HRM contributes to increase the value of HR function (e.g. Parry, 2011; Wahyudi & Park, 2014) and organizational innovation (Lin, 2011). Nevertheless, the diverse positive consequences of e-HRM implementation within organizations are not taken for granted. It means that e-HRM is just a technology, which has other factors to be successfully adopted and implemented.

Additionally, from the Human Resource practices (e.g. recruitment, selection, performance appraisal), changing from manual/traditional way to electronic processing requires good understanding on how the e-HRM adoption and implementation may

effectively work. People may be afraid of the privacy risks invasion when they submit their job application through the e-recruitment (Harris et al., 2003). Further, in organizational level, although the e-HRM may reduce cost and speeding up processes (Strohmeier, 2007), the e-HRM technology requires installation, maintenance and changes costs which make the organization to think about cost and benefits of the e-HRM system.

### **3. Research Method**

As explained in the previous part, a systematic literature review is conducted to find and select relevant papers for this review. This research adopted the procedure of Crossan and Apaydin (2010) when they conducted a systematic literature review on organizational innovation. The step by step, planning, execution and reporting, that have been taken in the systematic literature review process will be described below.

#### **3.1 Planning phase**

Two main activities in the planning phase are defining the objectives of the research and identified the key data source. Firstly, the objective of the literature review is to identify and draw the framework of the all relevant factors influencing e-HRM adoption in organizations. In addition, two databases were used, ISI Web of Knowledge's Social Sciences Citation Index (SSCI) and Business Source Premier, to generate all the relevant literature from 1995 to 2014.

#### **3.2 Execution phase**

The execution phase includes the collection and organization of the data as well as the data processing and analysis. The process must identify initial selection criteria such as keyword and search terms, and classify the research papers/publications. The first step in the review process was an extensive search

for scholarly peer-reviewed journal articles through two search engines: EBSCO Business Source Premier, ISI Web of Knowledge. This research used those two databases to enlarge the number of available article and increase the probability that the most relevant papers are included. The research only focused on papers which were published between 1995 and 2014.

The research used several keywords to find the relevant research papers. E-HRM researchers use different e-HRM terminologies in their research which generally refer to information system-supported way of performing HR policies and practices (Strohmeier, 2007). After exploring the e-HRM terminologies used by e-HRM researchers, then they were used as keywords. Specifically, by multi-searching in those two databases, the keywords used were the combinations of e-HRM and the synonyms/interchangeable terms (e-selection, e-recruitment, employee self-service systems, e-compensation, e-benefits, HR portal, virtual HR, web-based HR, e-learning HR, and Human Resources Information System), derivatives of adoption, derivatives of acceptance, and derivatives of diffusion.

The process resulted in an initial pool of 104 papers; 39 papers from EBSCO Business Source Premier and 65 papers from ISI Web of Knowledge. Based on that initial pool, all of those papers were listed in a spreadsheet and then sorted it out to find the duplicates papers, where the title is the same. This resulted in 48 papers must be dropped; 13 papers from EBSCO Business Source Premier and 35 papers from ISI Web of Knowledge, and therefore the rest of the paper was 56 articles.

Because those papers are from two different databases, it is still possible to have the duplicate problem. Thus, the final screening was combining all of those

papers and deleting the duplicates as well as irrelevant papers, for instance the papers are not related to e-HRM adoption research such as e-learning adoption and acceptance in medical school. Also, to keep the task manageable and to provide some guarantee of quality research, only studies published in refereed international journals and only articles that have been conducted empirical research were considered. Work published in books, research notes, open journals, conference or working papers was excluded and judged as irrelevant papers. This resulted in 35 papers must be eliminated, and therefore, there were 21 papers to be reviewed.

### **3.3 Reporting Phase**

After reading these articles, a summary of each paper was compiled in a table (see Appendix 2), including the research problem, the main variables/hypotheses, the theoretical lenses/ underpinning, research methods and the findings/conclusion. The next section will synthesize and discuss the findings of the literature review.

## **4. Results and Discussion**

E-HRM systems have practical values in organizations. However, many e-HRM studies are still lack of theoretical consideration and little is reported in the academic literature the adoption of such system (Tansley & Watson, 2000). Therefore, the literature review is purposefully to find an explanation of the various, multi-dimensional factors that contribute to e-HRM adoption in the organization. Before explaining that, the various theoretical underpinning and methods used in the 21 research papers will be discussed in the following section.

### **4.1 Theoretical Underpinning in e-HRM adoption research**

Most of the e-HRM adoption

research use the theory proposed by Davis, the Technology Acceptance Model. Seven research papers use the Technology Acceptance Model as the theoretical lens. It is not a surprising result, because Technology Acceptance Model is the common and popular theory in e-HRM adoption research. Perceived usefulness and perceived ease of use have been known as the important variables to the success of new technology adoption and lack of user acceptance could impede the IS adoption (Davis, 1989).

Several theories also have been used in the e-HRM adoption research, for instance Theory of Planned Behavior (TPB), Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), signaling theory, change management theory, and contingency theory. Surprisingly, 10 research papers do not mention specifically the theoretical theory they used. Each theory in the e-HRM adoption research based on the systematic literature review will be discussed below.

Theory of Planned Behavior (TPB) is one of competing models in Information Technology acceptance. Specifically, Theory of Planned Behavior extends the Theory of Reason Action (TRA) to predict human behavior and then it is used to predict individual acceptance of Information System (IS). While TRA only has 2 main constructs, attitude toward behavior and subjective norm, the Theory of Planned Behavior adds a construct, perceived behavioral control, as an additional determinant of intention and behavior (Venkatesh et al., 2003). Lin (2010) applies the Theory of Planned Behavior to investigate the influence of job seeker attitude, subjective norm, and perceived behavioral control on the intention to use job search website.

Although the Technology Acceptance Model is popular in Information System research, the theory

has been criticized (Legris et al., 2003). Further, Unified theory of acceptance and use of technology (UTAUT) was developed to distinguish between intention to use and actual usage (Venkatesh et al., 2003). They argue that intention to use will affect the actual use of IS acceptance. This theory has been applied to investigate the effects of language standardization on the acceptance and actual use of e-HRM systems (Heikkila & Smale, 2011).

In addition, TAM has to be integrated into a broader model and related to human and social change processes (Legris et al., 2003). Thus, several e-HRM adoption research in this systematic review have integrated the Technology Acceptance Model with another theory, such as signaling theory, contingency theory and change management theory. Kashi and Zheng (2013) integrate the Technology of Acceptance Model with signaling theory, in particular to explore the potential effects of visual characteristics and users' impression of recruitment website.

Wahyudi and Park's (2013) also integrate the Technology Acceptance Model with contingency theory. The contingency theory highlights that outcome variables depend on best fit and contextual factors. In their research, Wahyudi and Park suggest that the leadership style in the organizations as the contextual factor in the e-HRM adoption.

Change management theory has been integrated with the Technology Acceptance Model to explore the Human Resources (HR) portal implementation (Ruta, 2005). The implementation of HR portal is very complex process. Before HR portal implementation, employees interact with person, but after the HR implementation, employees must become familiar with the information technology and accept interaction with computers. The change process must be well

managed by the organizations so that the employees accept the HR portal and organizational change smoothly run.

To conclude, mostly the type of theories used in adoption studies is in one-sided way which tends to the positivism approach. In addition, the researchers used a single theory to explore the e-HRM adoption, although there are few studies which combine two kinds of theories, such as contingency theory and change management theory.

#### **4.2. Research Methodology in e-HRM adoption research**

E-HRM research employs quantitative and qualitative approach as the research methodology. Specifically, e-HRM adoption researchers use a wide range of research methodology, such as survey research, exploratory case study, action research, and mixed methods. Each of the research methodology will be explained below.

Survey research is the most popular research methodology in the e-HRM adoption research. In this systematic literature review, 13 research papers employ survey research. The e-HRM researchers mostly employ this kind of research methodology because the theoretical foundation of e-HRM is based on psychology discipline, such as the Theory of Rational Action, the Theory of Planned Behavior, the Technology Acceptance Model or UTAUT. Using the survey research, e-HRM researchers assess to find any relationships and test any hypotheses between independent variables, such as perceived usefulness, perceived ease of use, and dependent variables, such as intention to use and actual use. Furthermore, the e-HRM researchers also develop more complex model in order to test mediating variables or mediator variables which influence the relationship between independent variables and dependent variables.

From the qualitative research approach, e-HRM researchers also employ the case study and action research approach as the research method. Usually, they conduct their research in an organization or more; then they interviewed the employees and people who use the e-HRM system. Further, they also used secondary data to support the data analysis (e.g. Panayotopoulou et al., 2010). Finally, the data are analyzed and compared through within-case analysis and cross-case analysis. In addition, few e-HRM researchers employ mixed method. Generally, they conduct survey research using questionnaire and then followed focus group discussion or interview (e.g. Panayotopoulou et al., 2007).

In conclusion, though there were few studies employed qualitative research, most of the research method in e-HRM adoption used survey research. The survey research is the appropriate one. The Technology Acceptance Model, Theory of Planned Behavior (TPB), Unified Theory of Acceptance and Use of Technology (UTAUT) are basically coming from psychology to find a single truth by hypothesizing and testing the relationship between independent and dependent variables.

#### **4.3 E-HRM adoption research framework**

The systematic literature review has yielded an important framework of e-HRM adoption research. After reading all the research articles and making a summary, the analysis has identified several main factors which influence e-HRM adoption and the outcomes (expected and actual ones) of e-HRM implementation (Appendix 1). The factor influencing e-HRM adoption has been synthesized and grouped based on the theoretical underpinning and important variables/constructs.

#### 4.4 Discussion

The main purpose of the systematic literature review is to identify the factor influencing e-HRM adoption. The review has resulted in a framework which consists of four groups which influence e-HRM adoption; system and technology, organizational, users/individuals and environmental and contextual factors. This e-HRM framework sits in the position that system and technology itself is not enough. There are others factors that will influence e-HRM be accepted and adopted. Any issues and opportunities in each factor will be discussed below.

##### 4.4.1 System and Technology Characteristics

System and technology emphasize on the fact that technology characteristics can affect the IS adoption (Chakrabortya & Mansor, 2013). E-HRM is basically a computerized system that helps the information processes in human resources practices, such as selection and recruitment processes, training, or performance appraisal. Thus, the e-HRM system and technology must ensure the reliability of information which flows within and outside organizations. Based on this systematic literature review, various numbers of system and technological factors contribute in influencing e-HRM adoption. The system and technological factors are external variables which ultimately influence on internal beliefs, attitudes, intentions, and usage.

Technological Acceptance Model is the basic theoretical foundation for system and technological characteristics. The model explains that the system quality, perceived ease of use and perceived usefulness are the important factors that determine the user's attitude toward his or her intention to use and actual usage of IS as well as reflect

feelings of favorableness or un-favorableness toward using the technology.

Furthermore, based on the signaling theory, user's impression is an important factor that influences the user to adopt and use the technology. It encourages the user to apply a job offered by an organization (Kashi & Zheng, 2013). Thus, the e-HRM system must pay attention to the possible effect of website and its features which could improve/decrease the IS adoption and acceptance, for example language standardization (Heikkila & Smale, 2011).

##### 4.4.2 Organizational Characteristics

E-HRM adoption within organization can be influenced by organizational characteristics. Some important factors of organizational characteristics are found in this systematic literature review. Firstly, the level of e-HRM adoption in organization can be influenced by high level of management commitment and top management support (Troshani et al., 2011). The management commitment and the support from top management can make decision which encourages the employees to accept and adopt e-HRM in organizations.

Secondly, organizational size and degree of centralization are important factor in successful e-HRM adoption (e.g. Panayotopoulou et al., 2010). Organization with large numbers of employees can use and adopt e-HRM to support their business processes because potential benefits can be spread across large user bases, although in the same time, it has complexity issue. Further, the degree of centralization affects e-HRM adoption when decisions are made at higher hierarchical levels in the organization which ultimately increase the level of e-HRM adoption.

In the e-recruitment case (Llorens, 2011), organizational status is the

important factor which may encourage the potential applicants to apply for a job. It is argued that the organization with high organizational status will have more possibilities to hold candidate pool quality and the overall quality of new hires.

#### **4.4.3 Users/Individuals Characteristics**

This literature review finds a range of individual and users factors influencing e-HRM adoption. System and technological factors are about the system and technology quality which will be run and used by the users. The level of adoption will be different among users because they have different skills and knowledge about IT as well as their prior experience working with IT. User's gender, age, application-specific efficacy and educational level are found as important factors which will influence the degree of e-HRM adoption in individual level.

#### **4.4.4 Environmental and Contextual Factors**

Environmental and contextual factors describe the area where organizations conduct their business, and include industry characteristics, and supporting infrastructure (Chakrabortya & Mansor, 2013). Firstly, the degree of Internet penetration in the country and society is an important factor which influences the e-HRM adoption. It is because the e-HRM technology implementation depends on the Internet and its supporting infrastructure. Secondly, social and peer influence is found as the significant factor which will influence the adoption of e-recruitment, particularly user's intention to use the system.

#### **4.4.5 E-HRM Adoption and Outputs**

The literature review focuses on a range of factors influencing e-HRM adoption which has been explained above.

Furthermore, based on the systematic literature review, a range of constructs has been used in different research, to measure the e-HRM adoption. Some research measures the user's attitude towards the e-HRM adoption. However, measuring the user's attitude is not enough, therefore some research propose to use behavioral measurement, such as intention to use, usage behavior and actual system usage.

The literature review also identifies the outcomes of e-HRM adoption in individual level and organizational level. In individual level, the e-HRM user will have high system satisfaction (Wickramasinghe, 2010) and less occupational strain (Konradt et al., 2006). Furthermore, in organizational level, the e-HRM adoption research uses several indicators to measure the outcomes of e-HRM adoption. Because the role of HR will be transformed and facilitated by the used e-HRM systems, e-HRM adoption research assesses the outcomes by measuring the HRM effectiveness, effective communication, reduce cost and be more efficient, increase the value of HR as well as improve business process.

### **5. Conclusion, Implications & Limitations**

There are some opportunities for researchers to further investigate the adoption of e-HRM and ultimately contribute to the theoretical and practical of e-HRM research. First of all, almost 10 papers do not clearly explain the theoretical foundation of their research. Future research must clearly decide and state the theoretical lenses for empirical analysis. Further, it is suggested to employ and combine two different theories as the theoretical lenses to obtain more understanding on how e-HRM system be adopted and accepted. Secondly, most of the e-HRM adoption employed cross-sectional data and not longitudinal



in nature. Thus, future research can employ the longitudinal data which will investigate before and after the adoption of e-HRM, as well as explain the actual outcomes of e-HRM for HR practices and business processes within organizations. As well, future empirical studies may also test the e-HRM adoption framework across different industries and explore the mechanism that exists in the e-HRM adoption. Also, while many studies have emphasized the technological determinism, further studies may shed more light on the nature and strength of the contextual factors which force or hinder the e-HRM adoption.

### 5.1 Managerial Implications

In addition to contributing to research and theoretical perspectives, this study also contributes to managerial and practice. Usually, most people believe that the IS technology has potential advantages when it is implemented; without giving much attention on the other vital factors. Thus, there is a need to take a more holistic perspective by

observing e-HRM practice from system and technology, organizational, users/individuals and contextual/environmental perspectives.

### 5.2 Limitations

While the literature review provides a direction for future research, the systematic literature review has some limitations. Firstly, this research has not offered detailed propositions linking the elements/characteristics in the e-HRM framework. Secondly, the research used two popular databases to find the relevant papers. Those databases may have omitted some relevant research as well. However, the careful procedure of the systematic review has reduced the probability to omit the relevant papers. For future research, it is suggested to find the relevant papers directly from peer-reviewed journals. This framework hopefully will provide a means to help integrate the research in e-HRM studies in order to advance both research and practices.

## REFERENCES

- Chakrabortya, A. R., & Mansor, N. N. (2013). Adoption of human resource information system: a theoretical analysis. *Procedia - Social and Behavioral Sciences*, 75, 473-478.  
<https://doi.org/10.1016/j.sbspro.2013.04.051>
- Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: a systematic review of literature. *Journal of Management Studies*, 47(6), 1154-1191.  
<https://doi.org/10.1111/j.1467-6486.2009.00880.x>
- Davis, D. F. (1989, September). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.  
<https://doi.org/10.2307/249008>

- DeLone, W. H., & McLean, R. E. (1992). Information system success: the ques for the dependent variable. *Information System Research*, 3(1), 60-95.  
<https://doi.org/10.1287/isre.3.1.60>
- Florkowski, G. W., & Olivas-Lujan, M. R. (2006). The diffusion of human-resource information-technology innovations in US and non-US firms. *Personnel Review*, 35(6), 684-710.  
<https://doi.org/10.1108/00483480610702737>
- Harris, M. M., Hoye, G. v., & Lievens, F. (2003). Privacy and attitudes towards Internet-based selection systems: a cross-cultural comparison. *International Journal of Selection and Assessment*, 11(2-3), 230-236.  
<https://doi.org/10.1111/1468-2389.00246>
- Heikkila, J.-P., & Smale, A. (2011). The effects of ‘language standardization’ on the acceptance and use of e-HRM systems in foreign subsidiaries. *Journal of World Business*, 46(3), 305-313.  
<https://doi.org/10.1016/j.jwb.2010.07.004>
- Huang, J., & Martin-Taylor, M. (2013). Turnaround user acceptance in the context of HR self-service technology adoption: an action research approach. *The International Journal of Human Resource Management*, 24(3), 621-642.  
<https://doi.org/10.1080/09585192.2012.677460>
- Kashi, K., & Zheng, C. (2013, March). Extending Technology Acceptance Model to the e-recruitment context in Iran. *International Journal of Selection and Assessment*, 21(1), 121-129.  
<https://doi.org/10.1111/ijsa.12022>
- Keller, C. (2005). Virtual learning environments: three implementation perspective. *Learning, Media and Technology*, 30(3), 299-311.  
<https://doi.org/10.1080/17439880500250527>
- Konradt, U., Christophersen, T., & Schaeffer-Kuelz, U. (2006). Predicting user satisfaction, strain and system usage of employee self-services. *International Journal of Human-Computer Studies*, 64(11), 1141-1153.  
<https://doi.org/10.1016/j.ijhcs.2006.07.001>
- Lapointe, L., & Rivard, S. (2005). A multilevel model of resistance to information technology implementation. *MIS Quarterly*, 29(3), 461-491.  
<https://doi.org/10.2307/25148692>

- Legris, P., Ingham, J., & Colletette, P. (2003). Why do people use information technology? a critical review of the technology acceptance model. *Information and Management*, 40(3), 191-204.  
[https://doi.org/10.1016/S0378-7206\(01\)00143-4](https://doi.org/10.1016/S0378-7206(01)00143-4)
- Lin, H.-F. (2010). Applicability of the extended theory of planned behavior in predicting job seeker intentions to use job-search websites. *International Journal of Selection and Assessment*, 18(1), 64-74.  
<https://doi.org/10.1111/j.1468-2389.2010.00489.x>
- Lin, L.-H. (2011). Electronic human resource management and organizational innovation: the roles of information technology and virtual organizational structure. *The International Journal of Human Resources Management*, 22(2), 235-257.  
<https://doi.org/10.1080/09585192.2011.540149>
- Llorens, J. J. (2011). A model of public sector e-recruitment adoption in a time of hyper technological change. *Review of Public Personnel Administration*, 31(4), 410-423.  
<https://doi.org/10.1177/0734371X11421498>
- Marler, J. H., & Fisher, S. L. (2013). An evidence-based review of e-HRM and strategic human resources management. *Human Resources Management Review*, 23, 18-36.  
<https://doi.org/10.1016/j.hrmr.2012.06.002>
- Martins, L. L., & Kellermanns, F. W. (2004). A model of business school students's acceptance model of a web-based course management system. *Academy of Management Learning and Education*, 3(1), 7-26.  
<https://doi.org/10.5465/AMLE.2004.12436815>
- Mueller, D., & Strohmeier, S. (2011). Design characteristic of virtual learning environments: state of research. *Computers and Education*, 57, 2505-2516.  
<https://doi.org/10.1016/j.compedu.2011.06.017>
- Ngai, E., & Wat, F. (2006). Human resource information systems: a review and empirical analysis. *Personnel Review*, 35(3), 297-314.  
<https://doi.org/10.1108/00483480610656702>
- Panayotopoulou, L., Galanaki, E., & Papalexandris, N. (2010). Adoption of electronic system in HRM: is national background of the firm relevant? *New Technology, Work and Employment*, 25(3), 253-269.  
<https://doi.org/10.1111/j.1468-005X.2010.00252.x>

- Panayotopoulou, L., Vakola, M., & Galanaki, E. (2007). e-HR adoption and the role of HRM: evidence from Greece. *Personnel Review*, 36(2), 277-294.  
<https://doi.org/10.1108/00483480710726145>
- Parry, E. (2011). An examination of e-HRM as a means to increase the value of the HR function. *The International Journal of Human Resource Management*, 22(5), 1146-1162.  
<https://doi.org/10.1080/09585192.2011.556791>
- Parry, E., & Tyson, S. (2011). Desired goals and actual outcomes of e-HRM. *Human Resource Management Journal*, 21(3), 335–354.  
<https://doi.org/10.1111/j.1748-8583.2010.00149.x>
- Payne, S. C., Horner, M. T., Boswell, W. R., Schroeder, A. N., & Stine-Cheyne, K. J. (2009). Comparison of online and traditional performance appraisal systems. *Journal of Managerial Psychology*, 24(6), 526-544.  
<https://doi.org/10.1108/02683940910974116>
- Rahim, M. M., & Singh, M. (2007). Understanding benefits and impediments of B2E e-business system adoption. *Journal of Internet Commerce*, 6(2), 3-17.  
[https://doi.org/10.1300/J179v06n02\\_02](https://doi.org/10.1300/J179v06n02_02)
- Ruta, C. D. (2005). The application of change management theory to HR portal implementation in subsidiaries of multinational corporations. *Human Resource Management*, 44(1), 35-53.  
<https://doi.org/10.1002/hrm.20039>
- Stone, D. L., Lukaszewski, K. M., Stone-Romero, E. F., & Johnson, T. L. (2013). Factors affecting the effectiveness and acceptance of electronic selection systems. *Human Resource Management Review*, 23(1), 50–70.  
<https://doi.org/10.1016/j.hrmr.2012.06.006>
- Stonebraker, P. W., & Hazeltine, J. E. (2007). Virtual learning effectiveness: an examination of the process. *The Learning Organization*, 11(3), 209-225.  
<https://doi.org/10.1108/09696470410532987>
- Strohmeier, S. (2007). Research in e-HRM: review and implications. *Human Resource Management Review*, 17, 19-37.  
<https://doi.org/10.1016/j.hrmr.2006.11.002>
- Strohmeier, S., & Kabst, R. (2009). Organizational adoption of e-HRM in Europe. *Journal of Managerial Psychology*, 24(6), 482-501.  
<https://doi.org/10.1108/02683940910974099>

- Sun, P.-C., Tsai, R. J., Finger, G., Chen, Y.-Y., & Yeh, D. (2008). What drives a successful e-learning? an empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education, 50*, 1183-1202.  
<https://doi.org/10.1016/j.compedu.2006.11.007>
- Tansley, C., & Watson, T. (2000). Strategic exchange in the development of Human Resource Information Systems (HRIS). *New Technology, Work and Employment, 15*(2), 108-122.  
<https://doi.org/10.1111/1468-005X.00068>
- Teo, T. S., Lim, S. G., & Fedric, S. A. (2007). The adoption and diffusion of human resources information systems in Singapore. *Asia Pacific Journal of Human Resources, 45*(1), 44-62.  
<https://doi.org/10.1177/1038411107075402>
- Tong, D. Y. (2009). A study of e-recruitment technology adoption in Malaysia. *Industrial Management & Data System, 109*(2), 281-300.  
<https://doi.org/10.1108/02635570910930145>
- Troshani, I., Jerram, C., & Hill, S. R. (2011). Exploring the public sector adoption of HRIS. *Industrial Management & Data Systems, 111*(3), 470-488.  
<https://doi.org/10.1108/02635571111118314>
- van Raaij, E. M., & Schepers, J. J. (2008). The acceptance and use of a virtual learning environment in China. *Computers & Education, 50*, 838–852.  
<https://doi.org/10.1016/j.compedu.2006.09.001>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly, 27*(3), 425-478.  
<https://doi.org/10.2307/30036540>
- Voermans, M., & Veldhoven, M. v. (2007). Attitude towards e-HRM: an empirical study at Philips. *Personnel Review, 36*(6), 887-902.  
<https://doi.org/10.1108/00483480710822418>
- Wahyudi, E., & Park, S. M. (2014). Unveiling the value creation process of electronic human resources management: an Indonesian case. *Public Personnel Management, 43*(1), 83-117.  
<https://doi.org/10.1177/0091026013517555>
- Wickramasinghe, V. (2010). Employee perceptions towards web-based human resource management systems in Sri Lanka. *The International Journal of Human Resource Management, 21*(10), 1617–1630.

<https://doi.org/10.1080/09585192.2010.500486>

Wilson-Evered, E., & Härtel, C. E. (2009). Measuring attitudes to HRIS implementation: A field study to inform implementation methodology. *Asia Pacific Journal of Human Resources*, 47(3), 374-384.

<https://doi.org/10.1177/1038411109106863>

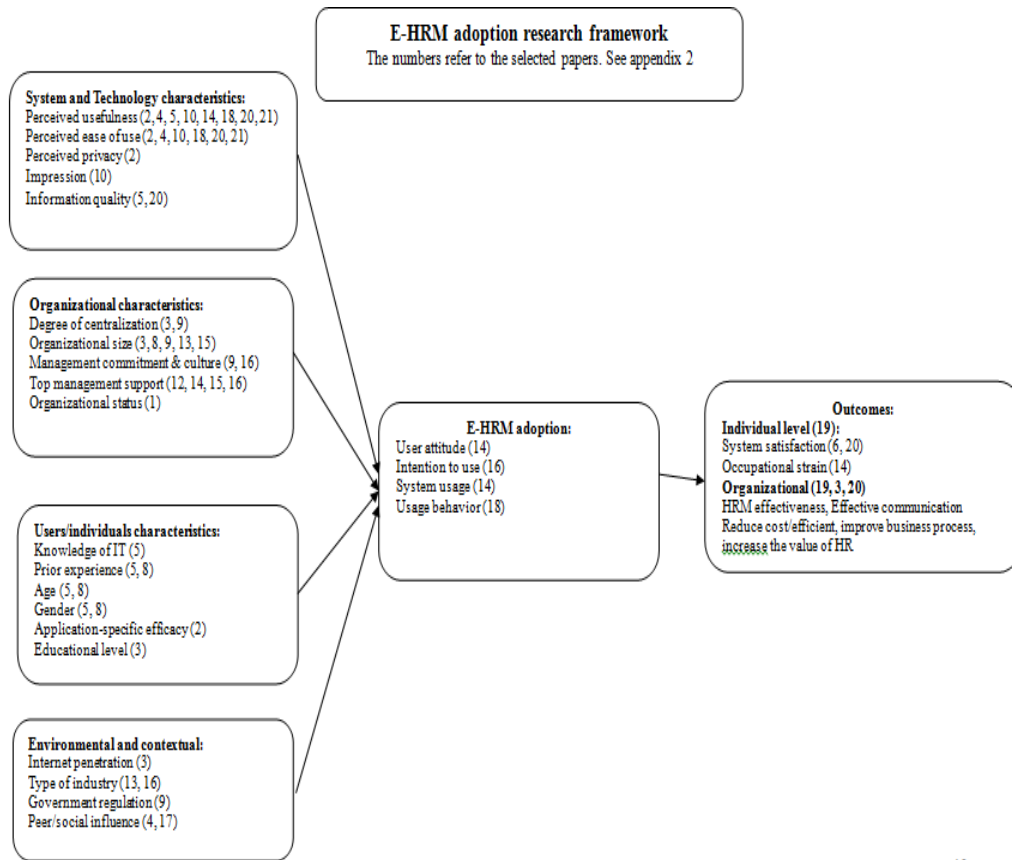
Winkler, S., König, C., & Kleinmann, M. (2013). What makes human resource information successful? managers' perceptions of attributes for successful human resource information. *The International Journal of Human Resource Management*, 24(2), 227-242.

<https://doi.org/10.1080/09585192.2012.680068>

Yoo, S. J., Han, S. H., & Huang, W. (2012). The roles of intrinsic motivators and extrinsic motivators in promoting e-learning in the workplace: a case from South Korea. *Computers in Human Behavior*, 28(3), 942-950.

<https://doi.org/10.1016/j.chb.2011.12.015>

## Appendix 1 E-HRM Adoption Research Framework



## Appendix 2 List of the research papers

No	Authors	Research Questions/Research Problem	Variables/ and Hypotheses	Theoretical Underpinning	Method	Findings
1	Llorens, 2011	Public sector E-recruitment adoption framework in the US	high-status and low-status organizations and its impact on candidate pool quality and the overall quality of new hires	Windolf's typology framework for e-recruitment adoption	Survey	<ul style="list-style-type: none"> <li>- e-recruitment technologies will hold the potential candidates</li> <li>- The role of third-party e-recruitment is important</li> </ul>
2	Tong, 2009	The employed jobseekers' perceptions and behaviors of third-party e-recruitment technology adoption in Malaysia.	Perceived usefulness (PU), perceived ease of use (PEOU), behavioural intention (BI), perceived privacy risk (PPR), Performance	Technology Acceptance Model (TAM)	Survey	Perceived usefulness, perceived privacy risk, performance expectancy, application-specific self-efficacy affect employed

			expectancy (PE), Application specific self-efficacy (ASSE), Perceived stress (PS)			jobseekers' perceptions and behaviors
3	Panayotopoulou, Galanaki, & Papalexandris, 2010	how the national background affects the use of e-HRM	<ul style="list-style-type: none"> <li>- Organizational level factors: size, firm performance, educational level of the members</li> <li>- HRM Context: centralization of HRM functions, strategic importance of HRM function, internal communication, training</li> <li>- National culture, internet penetration, economy</li> </ul>	None specific	Mix between survey and secondary data Cluster analysis	socio-cultural context, organizational context and HRM characteristics affect e-HRM adoption
4	Lin, 2010	Predicting job seeker intentions to use job-search websites	<ul style="list-style-type: none"> <li>- Attitudinal belief structure: Perceived Usefulness, Perceived ease of use</li> <li>- Normative belief structure: Peer Influence, External Influence</li> <li>- Behavioral control belief structure: perceived behavioral control</li> </ul>	Extended Theory of Planned Behavior		attitudinal, normative, and behavioral control beliefs influence user adoption intentions
5	Voermans & Veldhoven, 2007	attitude towards electronic human resource management (E-HRM)	<p>IT experiences: ease of use, usability, output quality, user support</p> <p>Preferred HR role: employee champion, change agent, administrative expert, strategic partner</p> <p>Control variable: job experience, length of service, knowledge of IT, age, gender</p>	Technology Acceptance Model (TAM)	Survey	Perceived usability is related to attitude towards e-HRM
6	Payne, Horner, Boswell, Schroeder, & Stine-Cheyne,	Compare employee reactions to the use of an online performance appraisal (PA) system	Rater accountability, Security of the ratings, Quality of the evaluation,	None specific	Survey	Employees rate with the online version reported significantly



	2009	to the traditional paper-and-pencil (P&P) approach	Satisfaction with the PA, Utility of the PA, Participation in the PA			higher levels of rater accountability and employee participation than employees rate with the traditional instrument
7	Panayotopoulou, Vakola, & Galanaki, 2007	the transformation in the role of the HR function in Greek firms, as a result of the use of internet and technology	-	None specific	qualitative and quantitative methodology, which involved focus groups and questionnaires	<ul style="list-style-type: none"> <li>- E-HRM for facilitation of staffing procedure and communication.</li> <li>- e-HR adoption differs by sector type</li> <li>- Organizational culture, employee IT skills, collaboration of HRM and IT are the critical factor for adoption</li> </ul>
8	Wickramasinghe, 2010	investigate employee perceptions towards web-based electronic HRM systems in Sri Lanka	<b>Organizational characteristics:</b> size, sector, age of e-HRM system <b>System conditions and performance:</b> time related, cost related, organizational performance <b>Individual characteristics:</b> age, gender, prior experience	None specific	Survey	The web-based HRM system acceptance is assessed based on the user satisfaction and system usage. It is influenced by organizational characteristics, system condition and individual characteristics
9	Troshani, Jerram, & Hill, 2011	The factors that influence the organizational adoption of HRIS in public sector organizations.	<b>Environment context:</b> Regulatory compliance, Successful adoptions <b>Organizational context:</b> Technology competency, Management commitment, size, centralization	None specific	qualitative exploratory	Environment context and organizational context have deep influenced the e-HRM adoption.
10	Kashi & Zheng, 2013	Factors influencing applicants' behavioral intentions to apply for jobs online	Perceived usefulness Perceived ease of use Behavioral intention Impression	Technology Acceptance Model (TAM) and signaling theory	Survey	Perceived usefulness, perceived ease of use behavioral intention impression are

						related to apply for jobs online
11	Ngai & Wat, 2006	examine the status and extent to which industries in Hong Kong have adopted HRIS; to empirically investigate mainly the perceptions of HR professionals of the benefits and barriers to implementing HRIS in Hong Kong; and to study whether HRIS adopters and non-adopters differ in their perceptions of the benefits and barriers to implementing HRIS in small, medium, and large companies	Perceived benefits Perceived barriers	None specific	Survey, descriptive statistic	the quick response and access to information that it brought, and the greatest barrier was insufficient financial support. Moreover, there was a statistically significant difference between HRIS adopters and non-adopters, and between small, medium, and large companies, regarding some potential benefits and barriers to the implementation of HRIS.
12	Wilson-Evered & Härtel, 2009	Attitudes to HRIS implementation	Organizational culture Organizational climate Leadership	None specific	Survey	The success of the implementation of new HRIS systems is to understand the staff groups' particular needs, concerns and opinions.
13	Strohmeier & Kabst, 2009	Factors influence the cross-national organizational adoption of electronic human resource management (e-HRM) in Europe.	<b>Major general:</b> size, industry, demography, the work organization, employment status, configuration of HRM <b>Contextual influence factors:</b> national business system	None specific	Survey	- e-HRM is a common practice throughout Europe - Major general determinants of e-HRM adoption are size, work organization, and configuration of HRM
14	Konradt, Christophersen, & Schaeffer-Kuelz, 2006	Explore attitudinal and behavioral patterns when using employee self-service (ESS) systems	Usefulness Organizational Support Ease of use System usage User satisfaction Occupational Strain	an expanded technology acceptance model (TAM)	Survey	organizational support and information policy were positively related to ease of use, (b) usefulness was positively related to satisfaction and system usage, (c) ease of use and usefulness

						were negatively related to user strain and (d) ease of use fully mediates the relation between organizational support and strain as well as between information policy and strain
15	Teo, Lim, & Fedric, 2007	The relationship between innovation, organizational and environmental characteristics, and the adoption of HRIS	<b>Organizational characteristics:</b> Top management support Size, HRIS expertise <b>Environmental characteristic:</b> Competition Decision to adopt Extent of HRIS adoption	None specific	Survey	Top management support, organization size and HRIS expertise are positively related to the adoption of HRIS. organization size has a significant relationship with the extent of HRIS adoption
16	Ruta, 2005	The application of change management theory to hr portal implementation in subsidiaries of multinational corporations	IT user acceptance Intention to use Corporate culture Firm industry Industry characteristic Top management	Change management theory and IT acceptance	Case study	When change management principles are integrated with an IT user acceptance model in developing an implementation plan, the individual acceptance of HR portal use will increase. In cross-national implementation of an HR portal, general implementation plans should be adapted to the local context in order to increase the actual use of the HR portal in the subsidiary. In cross-national implementation of an HR portal, unique

						implementation plans should be developed that consider the local context in order to increase the actual use of the HR portal in the subsidiary.
17	Heikkila & Smale, 2011	The effects of language standardization on the acceptance and use of e-HRM systems in foreign subsidiaries	effort expectancy Performance expectancy Social influence facilitating conditions	Unified Theory of Acceptance and Use of Technology (UTAUT)	Qualitative approach	Language standardization will affect the acceptance and use of e-HRM systems
18	Huang & Martin-Taylor, 2013	how HR can drive and influence users' acceptance within the context of HR self-service technology adoption in an organization	Perceived usefulness Perceived ease of use Usage behavior	Technology Acceptance Model	Action research	HR can play a more proactive role in shaping and reshaping users' perceptions towards accepting such a technology
19	Rahim & Singh, 2007	the experiences of two large Australian universities in introducing two different types of B2E e-business systems	<b>Perceived benefits: (individual benefits)</b> efficient, up-to-date information, time saved, <b>Organizational benefits:</b> cost reduction, improved business process <b>Perceived impediments:</b> inadequate resources, lack of trust, low awareness, and change management difficulties User satisfaction	None specific	Exploratory case study	Receive benefits from cost cutting but mixed findings were found with regard to benefits experienced by individuals using those B2E systems. A variety of impediments including the difficulties in justifying the costs of B2E e-business systems, change management, and problems with consultants do affect smooth introduction of B2E systems. Hence, organizations planning to adopt these systems should be aware that the journey to establish electronic

						business with employees requires considerable management support and promises significant organizational benefits.
20	Wahyudi & Park, 2014	success enabler of e-HRM acceptance and e-HRM value creation in the public sector	perceived usefulness, perceived ease of use, HRM strength, e-HRM usage	Technology Acceptance Model Contingency theory	Survey	perceived usefulness (PU) and HRM strength are found to be a strong predictor of e-HRM usage the core business functions of an organization, HRM strategy and IT management, should be clearly aligned and integrated
21	Winkler, Konig, & Kleinmann, 2013	Managers' perceptions of attributes for successful human resource information	Ease of Use Information Quality Perceived Usefulness User Satisfaction Information use	Technology Acceptance Model	Survey	Information Quality is a key perceived usefulness, user information satisfaction and information use