The Impact of Information System Success Factors, Human Resource Staff Satisfaction, and E-Human Resource Use on Organizational Benefit

Mazen Kamal Qteishat, Ph.D.
Assistant Professor, Department of Business, Albalqa Applied University
P.O. Box 1705, Amman 11118, Jordan

ABSTRACT

Organizations have limited resources for investment making it imperative that resources utilized provide some benefit for the organization. Electronic human resource management (E-HRM) systems have been shown to have notable benefits for the organization including cost saving capabilities. However, when implemented in practice E-HRM systems consistently fail to produce desired results. Given these issues, the current investigation sought to determine factors relating to organizational outcomes through the use of E-HRM. Specifically, the DeLone and McLean Model of Information Systems Success were modified for the analysis of E-HRM systems. The results indicate that service and information quality impact staff satisfaction with E-HRM, leading to the intent to use the system and benefits for the organization

Keyword: Electronic Human Resource Management, E-HRM, human resource management, DeLone and McLean Model, service quality, information quality.

1. INTRODUCTION

The success of modern organizations is integrally tied to their ability to create a competitive advantage through innovation[17] . While a considerable amount of innovation has occurred through the application of technology to the organization, many scholars believe that success in innovation is directly related to the ability of the organization to effectively manage and leverage information technology[29]. In short, it is not the application of information technology per se that leads to innovation; rather success in this process is contingent upon the ability of the organization to integrate and use technology in everyday operations[27]. Nowhere is this point more apparent than in the context of electronic human resource management or E-HRM. [20]Provides a basic definition of electronic human resource management noting that this process involves "the use of web-based technologies for human resource management practices and policies" (p. 111). Although this basic definition provides important insight regarding the basic mechanics of E-HRM, [4] contend that electronic human resource management is actually more complex in terms of its scope and impact on the organization. E-HRM systems can and should be integral components of the organization's operations leading to efficiency for providing the organization with a unique competitive advantage when it comes to managing its human capital[15] . It is for this reason that [22] argues that an expanded definition of E-HRM should be utilized. This author contends that E-HRM should be more broadly defined as "the (planning, implementation, and) application of information systems for both networking and supporting actors in their shared performing of HR activities" (p. 1146). The development and implementation of E-HRM within the organization has been widely advocated because of the large scope of benefits that can result for the organization.

[23]Contend that electronic human resource management systems offer the advantage of reducing the costs associated with traditional HRM systems while streamlining operations to make human resource management for effective for employees and HR professionals. More effective management of human capital within the organization can lead to improved levels of satisfaction, higher levels of motivation, and increased performance[10]. With a highly functional workforce in place, organizations are provided with a unique advantage that can improve the ability of the organization to compete more effectively and efficiently[13].

2. LITERATURE REVIEW

The true implications for electronic human resource management on the organization are detailed by Panayotopoulou,[21] who argue that the transformation is one that is reciprocal in nature. "The application of information technology to human resource management is believed to change the role of the function, while at the same time HRM allows technology to develop to its full potential" (p. 253). This process is one that is viewed as having a transformative effect on both the organization and human resource management[21]. Technology in human systems evolves to meet a unique set of needs, enabling a deeper transformation of the individuals that design, develop, and implement the system[22]. What this suggests is that electronic human resource management is more than just the application of information technology to human resource practice. If done correctly the development of E-HRM represents a substantial transformation for the organization. Despite the fact that electronic human resource management has become a foundational process for innovation and competitive advantage the development and implementation of these systems within the organization has proven to be a notable challenge. [14] Argue that because the popularity of E-HRM systems continues to grow many organizations are implementing electronic systems in an effort to keep pace with competitors. When this is done, Keebler and Rhodes argue that organizations fail to recognize the need for integration of these systems to create significant organizational change. Keebler and Rhodes contend that this issue is well illustrated by the fact that most companies report achieving no strategic benefit from the use of their electronic human resource management system.

Other scholars examining the outcomes and efficacy of electronic human resource management systems have offered similar criticisms. For instance, [25] assert that despite the widespread benefits of E-HRM reported in the literature there is a paucity of empirical evidence which effectively supports the development and implementation of these systems in practice. Further, [18] contends that in spite of the substantial

benefits that can be garnered from the development of E-HRM in theory, many companies fail to achieve these benefits often leading to increased costs for human resource management. This can have a detrimental impact on both the organization and human resource personnel as HR departments often struggle to acquire needed funding and supports for basic operations[18]. Given these issues, it is pertinent to consider the factors impacting the adoption and implementation of electronic human resource management systems within the organization.

A cursory overview of E-HRM adoption in the organization indicates that there are a wide range of barriers to successful implementation and integration of these systems in practice. [19]Consider the adoption of E-HRM systems in organizations noting that leader and manager attitudes toward these systems can have a significant impact on outcomes for implementation. Specifically Nura and coworkers contend that when leaders and managers do not support the development of E-HRM systems, personnel responsible for establishing and implementing the systems may find it difficult to acquire the financial and psychological resources needed to promote change. The lack of supports in this area can derail efforts to achieve value from the integration of E-HRM systems within the organization[19].

[26] Consider the issue from a different perspective, arguing that the implementation of E-HRM can be impeded by disconnect between theory and practice. According to these authors, there is an underlying assumption when developing electronic human resource management systems that information technology can be easily adapted to the specific requirements and activities of human resource management. While it may be possible to fit IT with HRM in some areas, in others the process represents a significant undertaking and challenge. In order to create an effective E-HRM system,[26] argues that issues such as strategy, planning, and change are required in order to ensure success. Because many of these elements are overlooked in the context of E-HRM systems, the success of their implementation is not always assured[26].

[12] Extend this argument noting that there are a number of issues that must be considered when developing and implementing electronic human resource management systems. In particular Girard and Fallery argue that E-HRM systems fail when the goals of the system are not clearly defined, when the system does not satisfy the needs of end-users, and when technology becomes the focal point of E-HRM and the needs of those impacted by the system are not integrated. While each of the issues noted by Girard Fallery is important, the issue regarding meeting end-user needs is of particular concern for the current investigation. In this research, it is argued that organizational benefit from electronic human resource management can only be garnered if human resource staff satisfaction with the electronic system promotes its use. HR staff satisfaction is viewed as a product of system quality and information quality as outlined in the DeLone and McLean Model of Information Systems Success[7].

The DeLone and McLean model was originally introduced in 1992 and sought to synthesize current knowledge regarding information system development within the organization[7]. At the core of the model is the belief that there are specific variables that will influence the choice of the individual to use a specific type of information system[8]. In particular, the model theorizes that information quality and system quality will lead to an intention to use which will, in turn, influence user satisfaction. If the user is satisfied with the system

overall, he or she will continue to utilize the system producing benefits for the employee as well as benefits for the organization[8]. Wang and Liao (2008) demonstrate that through the use of the model it is possible to create a practical understanding of technology adoption and to focus on key areas including information and system quality to promote information technology adoption for the individual.

3. CONCEPTUAL FRAMEWORK OF THE STUDY

The conceptual framework for the development of the current study was based on the DeLone and McLean Model of Information Systems Success but includes some modifications to specifically examine outcomes for E-HRM system use for human resource professionals. The three key changes to the model are reviewed below and include efforts to: understand the relationship between system and information quality on human resource staff satisfaction, understand the relationship between staff satisfaction and use, and understand the relationship between system use by HR staff and organizational benefit. Each of these areas is addressed below with supporting literature, followed by the conceptual model and hypotheses utilized for this investigation

3.1 System Quality, Information Quality and Human Resource Staff Satisfaction

Essential to the use of information systems for organizational benefit under the DeLone and McLean Model of Information Systems Success are system and information quality to facilitate staff satisfaction with the information technology system. Variables such as the ability to access information when needed, to meet work demands and to return requests quickly have been noted to be inherent to system quality[24]. Information quality, on the other hand refers to the ability to acquire information that is sufficient, that meets end-user needs, and is comprehensive in nature[6][16]. Thus, when implementing the model for human resource professionals it is imperative to examine these areas to assess if staff satisfaction is indeed produced as a consequence of electronic human resource system use.

The variables noted here are of considerable relevance to the adoption of E-HRM systems by human resource personnel. [5] Argue that level of usefulness and ease of use has been identified as critical elements impacting the use of electronic human resource management systems. When usefulness and ease of use are integrated into the development of these systems, end-users will be more satisfied with the system and find it easier to use over the long-term. Thus, as noted by Bondarouk and coworkers, these issues will have implications for engaging the employee and ensuring that he or she remains willing and able to utilize the technology system.

3.2 Human Resource Staff Satisfaction and E-Human Resource Staff Use

Although the insight provided by[4] indicates that satisfaction will indeed lead to system use, elements of satisfaction that promote system use need to be considered in order to prove that a relationship exists between satisfaction and technology use. Satisfaction with the system can be assessed though an understanding of how the technology meets end-user expectations, facilitates the ability of the end-user to meet goals, and provides high quality supports[9]. [3] Further argue that in human resource management, the ability of the system to facilitate the use of staff competencies is also essential for achieving satisfaction. If the system can meet these requirements, the end user should express considerable

satisfaction with the system, prompting its use and integration into the workplace[9].

3.3 E-Human Resource Staff Use and Organizational Benefit

Comprehensive and effective staff use of information technology has implications for the benefits that can be derived for the organization. Success in the use of any technology within the organization is contingent upon the willingness and ability of individual users to engage with the technology and utilize the technology as designed to meet the needs of the organization[30]. In short, if employees in the organization do not utilize the technology as designed and implemented with strategic objectives, it is reasonable to assume that the organization will not achieve desired benefits from the technology. [11] Utilize a survey of HR professionals and are able to demonstrate that with increased use, organizations are able to achieve cost savings, improved delivery of HR services across the organization, increased employee involvement in human resources, and enhanced communication for all departments. Thus, this element of the DeLone and McLean Model is relevant for application in this research.
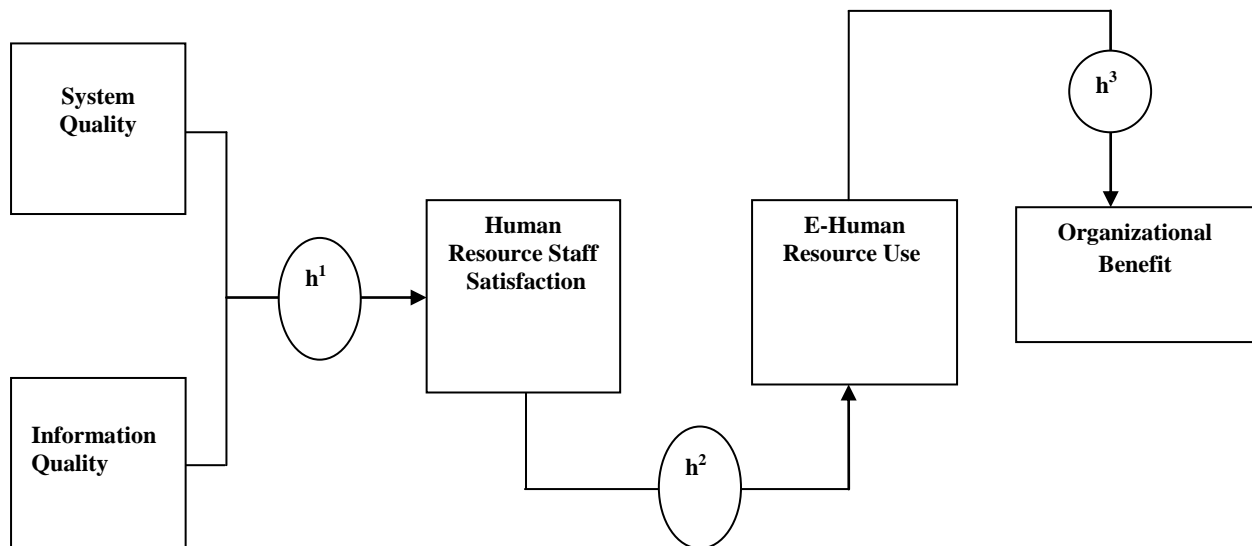

Fig1: Conceptual Model

3.4 Hypotheses:

The hypotheses of the study were developed to test each of the relationships involved in the conceptual model outlined above. These hypotheses include:

H1: System Quality, Information Quality influence Human resource staff satisfaction.

H2: Human Resource Staff Satisfaction influence E-human resource staff use.

H3: E-human resource staff use influences organizational benefit.

4. MATERIAL AND METHODS
4.1 Data Collection

Data collection for this investigation involved the development of a structured questionnaire for testing the three hypotheses proposed for this study. The questionnaire was electronically sent to 240 human resource professionals working in different industries that had adopted some type of electronic human resource management system. A total of 240 questionnaires were sent with 216 returned. This represents a response rate of 90 percent, reducing the potential for response rate bias. Of this group 193 were completed and deemed valid for the purposes of this investigation. The total sample size yields a confidence interval of 95 percent for a population with an unknown size. This sample size was deemed adequate for this investigation.

4.2 Instrument

The instrument for data collection in this investigation was designed by the researcher specifically for this study. The instrument included five sections regarding: quality service, information quality, human resource staff satisfaction, e-human resource staff use, and organizational benefits. Each of the items on the questionnaire were measured through the use of a five-point Likert scale including the following: 1 = strongly disagree; 2 = disagree, 3 = neither agree nor disagree; 4 = agree; and 5 = strongly agree. Likert scales are commonly used for provide interval data which can be utilized for analysis via the application of inferential statistics[28].

5. RESULTS AND DISCUSSION
5.1 Factor Analysis:

Data analysis for this investigation began with a review of exploratory factor analysis. This approach was employed to verify the validity of the survey questionnaire. The five key subheadings used in the questionnaire were adapted and modified directly from the DeLone and McLean Model of Information Systems Success and [1]. Statements for review made under each of the subheadings were based on the literature and an understanding of specific issues relevant to each of the subheadings. Factor analysis for the questionnaire is presented in Table 1. Only factors with a loading of > 0.5 were included to indicate the relevance of these factors to the model.

Table 1: Factor Analysis

Dimension and Items	Factor Loading
Quality Service	
1. E-Human Resource helps me to access information rapidly	.777
2. E-Human Resource information very accessible.	.877
3. E-Human Resource is easy to use the first time I access.	.826
4. E-Human Resource can flexibly adjust to new work demands.	.852
5. E-Human Resource returns answers to my requests quickly.	.802
6. E-Human Resource is versatile in addressing needs as they arise.	.838
Information Quality	
1. E-Human Resource provides sufficient information	.740
2. Information content provided by e-human resource meet my needs	.643
3. E-Human Resource output is presented in a useful format.	.800
4. E-Human Resource provide reports that seem to be just about exactly what I need	.793
5. E-human Resource produces comprehensive information.	.844
Human Resource Staff Satisfaction	
1. E-Human Resource meets the HR requirements of your area of responsibility	.827
2. The E-human Resource is of high quality.	.856
3. The E-Human Resource has met your expectations.	.824
4. Overall, I'm satisfied with Using E-Human Resource	.837
5.E-Human Resource meets the HR requirements of your area of responsibility	.785
E-Human Resource Staff Use	
1.Using E-Human Resource enables me to accomplish job's tasks	.782
2. Using E-Human Resource enables to perform work's requirements more quickly	.762
3. Using E-Human Resource improves my job performance.	.828
4. Using E-Human Resource in job increases my productivity.	.758
5. Using E-Human Resource enhances my effectiveness in the job.	.809
Organizational Benefit	
1. Using E-Human Resource enhances HR Planning	.876
2. Using E-Human Resource enhances salary advice	.828
3. Using E-human Resource increases employee benefits	.860
4. Using E-Human Resource improves the assessment and training needs	.870
5. Using E-human Resource enhances, Industrial Relations	.804

5.2 Reliability Analysis:

In an effort to assess the reliability of the instrument, Chronbach's alpha was employed. The alpha coefficient for each of the five subscales identified for the survey was evaluated and was shown to be above 0.7; a level which indicates the minimum for statistical reliability based on internal consistency[2]. The results for the reliability analysis can be found below in Table 2.

Table 2: Reliability analysis

Contract	Number of items	Alpha coefficient
Quality Service	6	.906
Information Quality	5	.815
Human Resource Staff Use	5	.863
Human Resource Staff Satisfaction	5	.882
Organizational Benefit	5	.902

5.3 Demographic Profile of Respondents:

The demographic profile of the respondents is provided below in Table 3. Most of the respondents were male (57.7) percent and a large majority were between the ages of 31 and 39 (46.8%). Further, most of the respondents (65.4%) held a Bachelor's Degree and served in a management position within their organization (63.4%).

Table 3: demographic characteristics of respondents (N = 193)

Variables	Percentages	Cumulative (%)
Gender		
Male	57.7	57.7
Female	42.3	100.0
Age		
‹ 31	18.1	18.1
31- 39	46.8	64.9
40 – 49	26	90.9
50 – 59	7.6	98.4
› 60	1.5	100.0

Education level		
Diploma	82	15.9
Bachelor	65.4	81.4
Postgraduate	18.6	100.00
Position		
Manager	63.4	63.4
Supervisor	36.6	100.0

5.4 Hypothesis Testing

Multiple regression analysis was utilized to evaluate the impact of service and information quality on satisfaction. The level of significance used for each independent variable was < .05. The β coefficient for each of the variables shows a positive result, indicating that each of the variables does indeed have an impact on staff satisfaction for the use of E-HRM systems. Analysis from the multiple regressions does indicate that quality service has the most significant impact on outcomes for satisfaction. However, information quality is also closely related to this outcome. The R2 value of 0.625 indicates that quality service accounts for 62.5 percent of the total variance in quality service, suggesting that the data does provide support for the first hypothesis proposed in the study. Table 4 provides an overview of the data collected from the multiple regression analysis of these two variables.

Table 4: H1 Results of Multiple Regression analysis

Model	Standardized Coefficient (β)	t-value	Sig.
Constant	-	2.637	.000
Quality Service	.287	2.673	.008
Information Quality	.276	4.851	.000

R^2=.625;   **F-value = 164.140;**   **Adjusted R^2= .621;**   **Significance= 0.00**

In addition to utilizing multiple regressions to establish the validity of the findings, simple regression was also employed for analysis. Specifically, simple regression was used to evaluate human resource staff satisfaction on E-HRM use as well as human resource staff use on benefits for the organization. Table 5 provides an overview of the results for simple regression regarding human resource staff satisfaction. Here the R2 value of .611 indicates that human resource staff satisfaction accounts for 61.1% of the variance in E-HRM system use. As such, these results provide support for accepting the second hypothesis proposed for this investigation. Table 6 includes results for human resource staff use and organizational benefits. Here the R2 value of .694 indicates that staff use accounts for 69.4 percent of the variance in organizational benefits, supporting the third hypothesis established for this investigation.

Table 5: H2 Results of Simple Regression analysis

Model	Standardized Coefficient (β)	t-value	Sig.
Constant	-	3.275	.000
Human Resource Staff Satisfaction	.782	17.643	.000

R^2=.611;   **F-value = 311.469**   **Adjusted R^2= .609;**   **Significance= 0.00**

Table 6: H3 Results of Simple Regression analysis

Model	Standardized Coefficient (β)	t-value	Sig.
Constant	-	6.374	.000
Human Resource Staff Use	.833	21.213	.000

R^2=.694;   **F- value = 450**   **Adjusted R^2= .693;**   **Significance= 0.00**

Table 7: Summary of results in relation to the research hypotheses

No. Hypothesis	Finding
H1: System Quality, Information Quality influence Human resource staff satisfaction.	**Supported**
H2: Human Resource Staff Satisfaction influence E-human resource staff use	**Supported**
H3: E-human resource staff use influences organizational benefit.	**Supported**

6. DISCUSSION

The results obtained from the analysis of the data provide a foundation for supporting all three hypotheses proposed for the investigation with the information reviewed in Table 5.

The results suggest that the DeLone and McLean Model of Information Systems Success when modified for the adoption of electronic human resource systems does provide a salient foundation for understanding this process. Service and information quality do impact staff satisfaction leading to greater and sustained use of the system. Continued and sustained use of the electronic human resource management system has implications for positively influencing the benefits the organization can derive from E-HRM. Much like in the model proposed by DeLone and McLean, service and information quality were shown to be almost equally weighted in terms of their relationship to user satisfaction[7][8]. This not only supports the validity of the DeLone and McLean Model, but also the research supports the use of the model in understanding the impact of electronic human resource management systems on the organization. Without the right supports for system use, human resource staff will not use the system, resulting in no net benefits for the organization.

7. CONCLUSION

The findings of this study support the need for service and information quality development in electronic human resource management systems to develop satisfaction and system use among human resource personnel. Failure to address these issues will impact the ability of organizations to reap the benefits of electronic human resource management programs. Given what is known about these systems and their use, it should be possible for organizations to more effectively and efficiently coordinate the development of E-HRM systems to achieve desired organizational outcomes.

Additionally, future research should consider an examination of human resource managers from international companies to assess if culture plays any role in shaping technology adoption and outcomes for the organization.

8. REFERENCES

[1] AlShibly Haitham (2011). Human Resources Information Systems success Assessment: An integrative model. Australian Journal of Basic and Applied Sciences, 5(5): 157-169, 2011

[2] Andrew, D.P.S., Pedersen, P.M., & McEvoy, C.D. (2011). Research methods and design in sport management. Champaign, IL: Human Kinetics.

[3] Bell, B.S., Lee, S., & Yeung, S.K. (2006). The impact of e-HR on professional competence in HRM: Implications for the development of HR professionals. Human Resource Management, 45(3), 295-308.

[4] Bondarouk, T., Ruel, H., & van der Heijden, B. (2009). e-HRM effectiveness in a public sector organization: A multi-stakeholder perspective. International Journal of Human Resource Management, 20(3), 578-590.

[5] Bondarouk, T.V., & Ruel, H.J.M. (2009). Electronic human resource management: Challenges in the digital era. International Journal of Human Resource Management, 20(3), 505-514.

[6] Chang, C.S., Chen, S.Y., & Lan, Y.T. (2012). Motivating medical information system performance by system quality, service quality and job satisfaction for evidence-based practice. BMC Medical Informatics and Decision Making, 12, 135-147.

[7] DeLone, W.H., & McLean, E.R. (2003). The DeLone and McLean Model of Information Systems Success: A ten-year update. Journal of Management Information Systems, 19(4), 9-30.

[8] DeLone, W.H., & McLean, E.R. (2004). Measuring e-Commerce success: Applying the DeLone and McLean Information Systems Success Model. International Journal of Electronic Commerce, 9(1), 31-47.

[9] Eom, S.B. (2011). Relationships among e-learning systems and e-learning outcomes: A path analysis model. Human Systems Management, 30(4), 229-241.

[10] Furtmueller, E., Wilderom, C., & Tate, M. (2011). Managing recruitment and selection in the digital age: E-HRM and resumes. Human Systems Management, 30(4), 243-259.

[11] Gainey, T.W., & Klaas, B.S. (2008). The use and impact of e-HR: A survey of HR professionals. People & Strategy, 31(3), 50-55.

[12] Girard, A., & Fallery, B. (2010). Human resource management on internet: New perspectives. Journal of Contemporary Management Research, 4(2), 1-14.

[13] Hooi, L.W. (2006). Implementing e-HRM: The readiness of small and medium sized manufacturing companies in Malaysia. Asia Pacific Business Review, 12(4), 465-485.

[14] Keebler, T.J., & Rhodes, D.W. (2002). E-HR: Becoming the "path of least resistance." Employment Relations Today, 29(2), 57-66.

[15] Laumer, S., Eckhardt, A., & Weitzel, T. (2010). Electronic human resources management in an e-business environment. Journal of Electronic Commerce Research, 11(4), 240-250.

[16] Lengnick-Hall, M.L., & Moritz, S. (2003). The impact of e-HR on the human resource management function. Journal of Labor Research, 24(3), 365-379.

[17] Lin, L. (2011). Electronic human resource management and organizational innovation: The roles of information technology and virtual organizational structure. International Journal of Human Resource Management, 22(2), 235-257.

[18] Marler, J. (2009). Making human resources strategic by going to the net: Reality or myth? International Journal of Human Resource Management, 20(3), 515-527.

[19] Nura, A.A., Kumar, M.D., & Osman, M.H. Employer's attitude towards e-human resource management adoption: Research on higher educational institutions in Sokoto State, Nigeria. Skyline Business Journal, 7(1), 1-10.

[20] Oiry, E. (2009). Electronic human resource management: Organizational responses to role conflicts created by e-learning. International Journal of Training & Development, 13(2), 111-123.

[21] Panayotopoulou, L., Galanaki, E., & Papalexandris, N. (2010). Adoption of electronic systems in HRM: Is national background of the firm relevant? New Technology, Work & Employment, 25(3), 253-269.

[22] Parry, E. (2011). An examination of e-HRM as a means to increase the value of HR function. International Journal of Human Resource Management, 22(5), 1146-1162.

[23] Parry, E., & Tyson, S. (2011). Desired goals and actual outcomes of e-HRM. Human Resource Management, 21(3), 335-354.

[24] Petter, S., DeLone, W., & McLean, E.R. (2013). Information systems success: The quest for independent variables. Journal of Management Information Systems., 29(4), 7-62.

[25] Ruel, H., & van der Kaap, H. (2013). E-HRM usage and value creation: Does a facilitating context matter? German Journal of Research in Human Resource Management, 26(3), 260-281.

[26] Ruel, H., Bondarouk, T., & Looise, J.K. (2004). E-HRM: Innovation or irritation. A explorative empirical study in five large companies on web-based HRM. Management Revue, 15(3), 364-380.

[27] Strohmeier, S. (2009). Concepts of e-HRM consequences: A categorization, review and suggestion. International Journal of Human Resource Management, 20(3), 528-543.

[28] Teddlie, C., & Tashakkori, A. (2009). Foundations of mixed methods research: Integration quantitative and qualitative approaches in the social and behavioral sciences. Thousand Oaks, CA: Sage.

[29] Wahyudi, E., & Park, S.M. (2014). Unveiling the value creation process of electronic human resource management: An Indonesian case. Public Personnel Management, 43(1), 83-117.

[30] Wu, C., & Hou, C. (2010). Design of adaptive knowledge learning and management system for large food and beverage industry based on sharing and discussion technique. Journal of Theoretical & Applied Information Technology, 21(2), 98-106.