

Measuring the Effectiveness of e-HRM in Selected Service Organization

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I. ABSTRACT

Practice based e-HRM started earlier than academic research into e-HRM. And as the promises of the vendors of e-HRM technology are not achieved and the investments to be made in e-HRM are high, scientific research can be of value for identifying the reasons for not achieving these promises. In this research, effectiveness of e-HRM is compared between two organizations i.e HCL Technologies and Xavient Information Systems. This paper elaborates on the development of a framework for measuring the effectiveness of e-HRM. Before the research framework could be developed, the context of e-HRM had to be explored. This has lead to the development of a preliminary theoretical framework that was expected to cover the important aspects affecting e-HRM effectiveness. The preliminary theoretical framework contained three constructs, the e-HRM goals, the use of e-HRM, and the effectiveness of the HR system, that were expected to determine the effectiveness of e- HRM. The framework can also be used for general research into the effectiveness of e-HRM, although it needs to be researched more intensively. After the analysis, it is found that HCL technologies and Xavient Information Systems have been using the e-HRM technology in an effective way. There is a gap between organizations' belief in the value of the web-based-technologies and what organizations are actually achieving from e-HRM. There is a need to understand the reasons for this gap and the involvement of researchers can contribute to a greater understanding of this gap.

There is a lot of research conducted on the effectiveness of HRM. Several studies have

contributed to the knowledge about the effects of different e-HRM applications. These studies concentrate on implementation aspects and factors e.g. gender, age, IT experience of employees, usefulness of the technology, ease of use of the technology, and other factors to understand the success of these applications. The use of e-HRM technology also has an impact on the HR department (Ruël et al.; 2004). Several studies have reported on this impact. Little research however, is conducted on the impact of e-HRM on the HR system as a whole. Moreover, there is a need for a method to measure e-HRM effectiveness. This research is aimed to give some insights in how to measure these aspects.

II. INTRODUCTION

Although the Human Resource (HR) function was an early adopter of computing technology, it spent the last decade playing catch-up to other business functions in terms of integrating Information Technology (IT) into their processes. During the nineties, organizations became experienced in using IT for Human Resource Management (HRM). As within many business functions, IT has become an important tool for supporting the processes of the HR function and the HR function is now closing the gap in terms of applying new IT capabilities to traditional functions. To be able to explain how some of the new IT solutions work for supporting the HR function, it is important to know what is meant with HR function. For this research the HR function is understood as:

The HR function is the way in which tasks needed for HRM are organized and the way they are executed. In other words, the HR function includes the tasks and responsibilities of HR professionals, managers and employees with respect to HRM.

The IT for supporting HRM used to be grouped under the name HR Information Systems (HRIS). These technologies were directed towards the HR department itself (Ruël et al.; 2004). They have the purpose to support the HR department staff to execute the processes of the HR function. There is however, a change occurring in the use of IT for supporting the HR function. Where HRIS were directed to support the HR professionals in performing their HR tasks, electronic HRM (e-HRM) applications are, besides directed to support HR professionals in performing their HR tasks, also directed to support managers and employees performing their HR tasks.

“E-HRM is a way of implementing HR strategies, policies, and practices in organizations through a conscious and directed support of and/or with the full use web-technology-based channels” (Ruël et al.; 2004). These web-technology-based channels provide the managers and the employees of the organization with information as well with the ability to complete HR-related transactions.

In practice however, the results mentioned above are often not achieved as the investments to be made in such technologies are high. Therefore, it is important that the promised results are achieved.

III. INTRODUCING e-HRM

The HR function of an organization is responsible for complying with the HR needs of the organization. As with other business functions, strategies, policies and practices have to be implemented to ensure smooth operation of the organization and prepare the organization in such a way that smooth operation can be guaranteed in the (nearby) future. Using e-HRM technology is a way of implementing these HR strategies, policies and practices. The e-HRM technology supports the HR function to comply with the HR needs of the organization through web-technology-based channels (Ruël et al.; 2004). The e-HRM technology provides a portal which enables managers, employees and HR professionals to view, extract, or alter information which is necessary for managing the HR of the organization. e-HRM can be understood as:

- E-HRM is the cheapest way of providing some HR activities.
- E-HRM, enables managers access to relevant information and data, conduct analysis, make decisions and communicate with others without being dependant on HR professionals.
- E-HRM, enables employees to control their own personal information and update this information, make own decisions concerning their own situation without being dependant on HR professionals.
- E-HRM affects the efficiency and the effectiveness of the HR system by reducing cycle times, increasing data accuracy, and reducing HR staff,
- E-HRM enables the HR system to increase efficiency and effectiveness of the organization by improving the capabilities of both managers and employees in taking better, timelier decisions.
- E-HRM enables the HR system to create value for the organization in new ways.

The use of e-HRM technology, as it is a way to implement HR strategies, policies and practices, is expected to have an impact on how the HR function operates. Moreover, it is aimed to improve the HR system. The impact of e-HRM technology on the HR system however, is expected to be dependent on the way the technology is used. It is dependent on what and how the technology supports the HR function but also on how the technology is constructed. This is on its turn affected by what the organization is trying to achieve with the technology, or in other words, what the e-HRM goals of the organization are. The e-HRM goals and the actual use of the e-HRM technology thus have an impact on the HR system. Therefore, these aspects will all be considered during this research.

IV. THEORETICAL FRAMEWORK FOR MEASURING e-HRM EFFECTIVENESS

The preliminary theoretical framework consisted out of three blocks that together are expected to enable the measurement of the effectiveness of e-HRM. These blocks are:

- E-HRM goals
- The use of e-HRM
- The impact of e-HRM on the effectiveness of the HR system



Fig.1 Preliminary theoretical framework

V. LITERATURE REVIEW

As Internet has transformed our lives and the way we communicate, how we learn, how we work and spend free time, in essence- it has more or less changed every aspect of human society one can think of, In this aspect, **Baloh (2003)** deals with the influence of Internet and information technology on work and human resource management. As we know to deal with e-hrm, computer training is necessary in some organizations, so **Wagner (2004)** identified and empirically tests factors that may influence learners' use of a computer-based training support system (TSS). The areas of research and theory were drawn from human-computer interaction, information and business management, and adult education. **Bondarouk (2005)** presented results from the first quantitative study on the contribution of e-HRM to HRM effectiveness and said that E-HRM is coming to a more full-grown stage within organizational life. Much was assumed and expressed about the advantages of e-HRM, however scientific proof of these advantages was scarce. There is a need for technology innovation and HRM integration for the effectiveness of e-HRM. Therefore **Wang (2005)** adopted a three-strategy model for global technology innovation and organizational development i.e. personnel strategy, system strategy and organizational strategy. He found that the personnel strategy could play a crucial role in enhancing the effects of human resource management (HRM) and entrepreneurship by supporting the main dimensions of HRM. **Alleyne (2007)** explored the impact of the use of the human resources (HR) intranet at managerial levels in terms of internal customer satisfaction with the HR function. Using role theory, he examined both the changing role of managers' expectations of the HR function as an internal service provider and HR's use of intranet applications to provide these services. **Panayotopoulou (2007)** investigated the transformation in the role of the HR function in Greek firms as a result of the use of internet and technology. His study was based on both quantitative and qualitative methodology. An analysis should be done whether e-HRM is of benefit to an

organization or not which was investigated by **Ruel (2007)**. The study was conducted in the Ministry of Internal Affairs in the Netherlands, where e-HRM in the form of employee self-service applications was introduced. The study showed that individual assessment of e-HRM applications influences HRM technical and strategic effectiveness. **Foster (2008)** analyzed e-HRM in context of HRM transformation. The use of technology in HR (e-HRM) is well established for the purposes of improving HR operational processes and allowing distributed access to employees and managers. Likewise, several organizations have successfully adopted new HR business models using technology as a platform for a transformative change at the human capital level. **Ngai (2008)** examined the perceptions of the importance of the internet to human resource management (HRM) and understand the existing human resource practices and needs of the internet to support HRM functions. Various independent variables such as job satisfaction, professional commitment, organizational commitment etc. influenced the effectiveness of HRM as a dependent variable which was investigated by **Sanayei (2008)**. E-HRM is a combination of IT and HR, **Ruel (2009)** highlighted the importance of mutual understanding between these two fields. The e-HRM field is fed and complicated by two academic backgrounds: studies oriented towards IT implementation and 'pure' HRM studies. The former usually investigate the usage of IT for HR purposes and mainly focus on the growing sophistication of technology and the qualities necessary for its adoption. E-HRM technology is also been used by Implementation Support System and **Srivastava (2010)** gave this concept of e-HRM as an Implementation Support System (ISS). It is used for better skills understanding, creative abilities and talents of human resources at a very quick time there must be a concept of e-HRM. **Yusoff (2010)** examined the relationship between HR roles and e-HRM by adoption of TAM. In his study, he compiled an overview of e-HRM and TAM (Technology Adoption mOdel). His study has proposed a set of HR roles that will be most significantly influence the attitude towards e-HRM. **Zafar (2010)** stated that the knowledge-intensifying process of the economy and the correlated rise of organizational networks, with their greater dependency on qualified and committed employees, identify the need for a form of HRM that meets the demands and needs of the management and the employees. e-HRM is a web based solution that takes advantage of the latest web application technology to deliver an online real-time Human Resource Management Solution. This definition given by **Gupta (2011)**. It is comprehensive but easy to use, feature-rich yet flexible enough to be tailored to the specific needs. It also refers to the processing and transmission of digitized information used in HRM, including text, sound and visual images, from one computer or electronic device to another.

VI. RESEARCH METHODOLOGY

Problem statement

According to Bondarouk (2005), E-HRM is coming to a more full-grown stage within organizational life. Much is assumed and expressed about the advantages of e-HRM; however scientific proof of these advantages is scarce. No clarity exists about the answer to the question

whether e-HRM contributes to HRM effectiveness. Ruel (2007) says both profit and not-for-profit organizations have been replacing face-to-face HRM activities with web-based HRM tools, for employees and managers since the 1990s. There is a 'gap' between e-HRM in a technical sense (the available functionality) and the use and adoption of it in organizations Bondarouk (2005). An analytical framework given by Maatman (2006) which was used within a Dutch Ministry & developed in foreign will be used in this research to check whether it will be applicable for measuring the effectiveness of e-HRM in HCL Technologies and Xavient Information Systems.

The goals for implementing e-HRM are aimed at the improvement of the HR system of the organization. It is therefore expected that the use of e-HRM technologies has an impact on the performance of the HR system, but also on the structure and characteristics of the HR function. This research aims to measure the effectiveness of e-HRM in HCL Technologies and Xavient Information Systems.

Objectives of the study

As mentioned earlier, organizations have in recent years heavily invested in IT for the support of different business functions. The HR functions of organizations are no exception. IT has been developed for the support of different parts of the HR function. The use of these technologies has however preceded the scientific research about the impact of these technologies. It is therefore not clear what the impact of some of these technologies is. This is also the case for the use of e-HRM to support the HR function. There are a lot of aspects of e-HRM that remain unclear. However, the goals for implementing e-HRM are aimed at the improvement of the HR system of the organization. It is therefore expected that the use of e- HRM technologies has an impact on the performance of the HR system, but also on the structure and characteristics of the HR function. The objective of this research is as follows:

- To compare the effectiveness of e-HRM in HCL Technologies & Xavient Information Systems

Hypothesis of the study

In view of research carried out by collecting information from the knowledgeable persons, reviewing the existing literature and in harmonization with the above-mentioned objectives, the study intends to test the following null & alternate hypotheses:

H₀ :There is significant difference between the effectiveness of e-HRM implemented in HCL Technologies & Xavient Information Systems

H₁ :There is no significant difference between the effectiveness of e-HRM implemented in HCL Technologies & Xavient Information Systems

Research design

Exploratory cum descriptive research is used in this study.

Scope of the study

The universe of this study is IT sector of Delhi. For the purpose of study a sample of two organizations i.e. HCL Technologies and Xavient Information Systems have been taken. Judgmental Sampling is used in this study and two organizations of IT sector have been taken based on the convenience.

The sample size of this research study includes 76 employees of HCL Technologies and Xavient Information systems. Out of which, 38 employees are from HCL Technologies and 38 from Xavient Information Systems.

Methods of analysis

To achieve the stated objective, two organizations of IT sector have been approached through well-structured questionnaire for studying the effectiveness of e-HRM. The questionnaire was filled from the employees of both the organizations. SPSS (Statistical Package for the Social Sciences) has been used for analysis and to compare responses of HCL Technologies and Xavient Information Systems frequency and independent sample t-test has been applied.

To achieve the objective of comparing the effectiveness of e-HRM between HCL Technologies and Xavient Information Systems, Likert's 5-point scale (Strongly Disagree, Disagree, Neither Agree Nor Disagree, Agree, Strongly Agree) is used. A score of 1 for the response 'Strongly Disagree', 2 for 'Disagree', 3 for 'Neither Agree Nor Disagree', 4 for 'Agree', 5 for 'Strongly Disagree' is assigned. SPSS (Statistical Package for the Social Science) is used for analysis of data. It is a computer program used for statistical analysis of data. Mainly 3 tests have been used in this research study. These are: Reliability Analysis, Frequency Distribution & Independent Sample t-test.

1. Reliability Analysis

In this research study, internal consistency reliability is used. Results of internal reliability analysis give a coefficient alpha or Cronbach's alpha. This coefficient varies from 0 to 1, and a value of 0.6 or less generally indicates unsatisfactory internal consistency reliability. From Table 1, it is clear that value of Cronbach's alpha is more than 0.7 for all variables, it indicates satisfactory consistency reliability between all variables.

2. Frequency Distribution

From Table2, it is clear that e-recruitment, e-leave, e-profile, e-attendance and e-overtime is used by both the organizations. E-Claims and e-learning are not used by any of the organizations completely. There is no other activity used by both the organizations except given in the table.

3. Independent Sample t-test for Organization-wise Analysis

t-test is used for examining hypotheses about means. The Independent Sample t-test could be conducted on the mean of two independent samples of observations. In this research study, this test is used on the mean of responses given by employees of two independent organizations i.e. HCL Technologies and Xavient Information Systems. Based on the framework used for this study, this test has been applied.

Variables	Cronbach's Alpha	N(No. of items)
1. E-HRM Goals		
Cost Reduction	0.758	5
Client Service Improvement	0.728	3
Improving Strategic Orientation of HRM	0.709	3
Allowing Integration of dispersed HR functions	0.725	2
2. Use of E-HRM		
Value & uniqueness of HR activities	0.767	8
Time spent on HR activities	0.774	3
3. Effectiveness of the HR system		
Performance Indicators of HR effectiveness	0.827	13
Jobs of HR professional	0.76	12

Table 1: Reliability analysis test showing value of Cronbach's alpha

e-HRM functions	Valid	Frequency	Percent	Valid Percent	Cumulative Percent
e-Recruitment	Yes	76	100.0	100.0	100.0
e-Leave	Yes	76	100.0	100.0	100.0
e-Claims	No	52	68.4	68.4	68.4
	Yes	24	31.6	31.6	100.0
	Total	76	100.0	100.0	
e-Profile	Yes	76	100.0	100.0	100.0
e-Learning	No	18	23.7	23.7	23.7
	Yes	58	76.3	76.3	98.7
	Total	76	100.0	100.0	
e-Attendance	Yes	76	100.0	100.0	100.0
e-Overtime	Yes	76	100.0	100.0	100.0
Any Other, please specify	No	76	100.0	100.0	100.0

Table 2: Frequency table for e-HRM functions

VI. DISCUSSION OF RESULTS & CONCLUSIONS

Reliability analysis is done to calculate a number of commonly used measures of scale reliability and also provides information about the relationship between individual items in the scale. As the value of Cronbach's alpha came from reliability analysis is more than 0.7 for all variables, it indicates satisfactory consistency reliability between all variables.

Frequency Distribution test shows that both organizations are using various e-HRM functions i.e. e-Recruitment, e-Leave, e-profile, e-Attendance & e-Overtime. e-Claims & e-learning are not used completely in any of the organization.

Independent Sample t-test is used on the mean of responses given by employees of two independent organizations i.e. HCL Technologies and Xavient Information Systems. Based on the framework used for this study, this test has been applied.

e-hrm goals

From the analysis, it is found that both the organizations (HCL Technologies & Xavient Information Systems) have same goals of e-HRM Technology. These are:

1. Cost reduction / efficiency gains.
2. Client service improvement / facilitating management and employees.
3. Improving the strategic orientation of HRM.
4. Allowing integration of a dispersed HR function

*Use of e-hrm**Strategic Value of HR activities*

From the analysis, it is found that there is no significant difference exists between the opinions of employees of both organizations towards value and uniqueness of HR activities after implementation of e-HRM technology. It means e-HRM technology affects the efficiency, productivity, quality of services offered by organizations, cost of production, service or delivery and the ability to develop new markets, products or services. It also distinguishes one organization from other, contributes the creation of customer value and is helpful in aligning HR policies with organization's strategy. Therefore, it can be said that e-HRM is being used for various strategic HR activities in both the organizations. Each HR activity has its own value and is unique for both the organizations.

Time Spent on HR activities

From the analysis, it is clear that there is no significant difference exists between the opinions of employees of both organizations towards time spent on HR activities after implementation of e-HRM technology. It means e-HRM technology reduces time spent on developing long term policies, administration activities, supporting managers and employees. Therefore, it can be said that e-HRM is being used reducing the time spent on HR activities before implementation of e-HRM.

User acceptance of the technology

From the analysis, it is clear that there is no significant difference exists between the opinions of employees of both organizations towards accepting e-HRM technology. It means e-HRM technology is clear and understandable by all employees, it is easy to learn, the senior management has been helpful in the use of e-HRM technology and necessary knowledge and resources are available for using the e-HRM technology in the organization. Therefore, it can be said that e-HRM is completely accepted by the employees of both the organizations.

Effectiveness of the HR system

1. HR performance indicators (HR effectiveness)

From the analysis, it is clear that there is no significant difference exists (the value of significant level is more than 0.05) between the opinions of employees of both organizations towards performance indicators of HR. It means e-HRM is effective at the philosophy level. It is also effective for HR policies, programmes, practices and processes. Therefore, it can be said that e-HRM is effective at all the three levels.

2. Job of the HR professional

From the analysis, it is clear that there is no significant difference exists (the value of significant level is more than 0.05) between the opinions of employees of both organizations towards different jobs or tasks of the HR professionals after implementation of e-HRM technology. It means that HRM is very helpful in performing strategic and administrative activities. HR professionals also help employees in their personal needs, participates in increasing employee commitment with the organization. It also spends its time on listening and anticipating the needs of employees. HRM also acts as a change agent for the organization. Organization also provides special training to HR professionals for using the e-HRM technology properly. Therefore, it can be said that in both the organizations, HR professionals are very helpful in performing all the HR activities and they received special training after the implementation of e-HRM technology.

VII. CONCLUSION

Both the organizations i.e. HCL Technologies and Xavient Information Systems are using e-HRM technology almost in the same way. As no significant difference exists between the opinions of employees regarding the usage of e-HRM technology in both the organizations. So, it can be said that e-HRM is effective in both the organizations. No comparison is there between the usages of e-HRM technology in these organizations. Since the implementation of e-HRM technology, organization provides special training to the HR professionals and employees for using e-HRM technology in an effective manner. e-HRM technology affects the efficiency and productivity of the organization. It also increases the quality of services offered by the organization and reduces the cost of production service or delivery. E-HRM technology also reduces time spent on developing long term policies, administration activities and supporting managers and employees. The senior management has been helpful in the use of e-HRM technology. There is integration between business strategies and HR strategies after implementation of e-HRM technology. In conclusion, e-HRM is effectively implemented in HCL Technologies & Xavient Information Systems. Hence, null hypothesis, H₀ that there is significant difference between the effectiveness of e-HRM implemented in HCL Technologies & Xavient Information Systems is being rejected and alternate hypothesis, H₁ there is no significant difference between the effectiveness of e-HRM implemented in HCL Technologies & Xavient Information Systems is being accepted.

VIII. RECOMMENDATIONS FOR FURTHER RESEARCH

a) Research instruments for measuring the e-HRM goals

For measuring the “e-HRM goals”, the following procedure is recommended when the research framework is used for research into e-HRM technologies:

- Analyze formal documents (business cases, project plans, etc.) on the content of e- HRM goals
- Conduct interviews with a project manager of the e-HRM technology project or with a person within the organization responsible for the adoption of the e-HRM technology
- Adapt the clarity of e-HRM goals questionnaire for employees, managers and HR professionals

b) Research instruments for measuring the use, or adoption of e-HRM

For measuring the “use of e-HRM technology” the following procedure is recommended when the research framework is used for research into e-HRM technologies:

- Make a list of all the HR activities provided through e-HRM for employees, managers, and HR professionals
- Determine the strategic value of the HR activities provided
- Gather and analyze data on the actual use of the technology when available (for example overviews with the amount of hits per activity)

c) Research instruments for measuring the impact of e-HRM on the HR function

For measuring “the impact of e-HRM on the HR system” the following procedure is recommended when the research framework is used for research into e-HRM technologies:

- Develop and execute a strategy to measure the HR efficiency (ROI, the productivity of HR professionals, and the cycle time of HR activities).When possible, data should be gathered before the adoption of e-HRM technologies and after the adoption of e- HRM technologies
- Analyze the results of the HR efficiency research

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