

Identifying and ranking of Factors Affecting the Success development of E-HRM in Qazvin Municipality

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Abstract- The main objectives of this study were: identifying the key determinants of the development level of E-HRM applications in Qazvin Municipality. In order to achieve the research objectives, a conceptual framework was developed. The conceptual framework tied together the major factors proposed to determine the Qazvin Municipality level of development of E-HRM applications. A survey research was carried out where the sample was collected from Qazvin Municipality. The target population under investigation was all the Qazvin Municipality. The purpose of the paper is to use analytic hierarchy process (AHP) to ranking the effective factors on Electronic Human Resources Management. This research designed questionnaire for AHP. Questionnaires sent to 90 Manager in Qazvin Municipality. From the AHP results, we can understand that most important effective factor on E- HRM is Organizational culture. Moreover, the less important effective factor on is Attractive and friendly working environment. At the end, the research has come up with several recommendations that were suggested for Municipalities in order to improve their level of development of E-HRM application.

Keywords: HRM, E-HRM, Human Resources, HRIS, Development of E-HRM, AHP

1. INTRODUCTION

The use of e-HRM has increased greatly over recent years with most large organizations now using technology to some extent in their management of human resources (CIPD, 2005). E-HRM may improve efficiency and facilitate a shift in HR role to a more strategic level. The growing literature on this topic has discussed a range of broad goals for e-HRM introduction (Ruel, Bondarouk and Looise, 2004; Marler, 2009), including cost and efficiency savings, strategic aims and improvements in client services. However, few scholars have examined empirically whether organizations are achieving their goals through the introduction of e-HRM (Strohmeier, 2007). The goals of efficiency, improved service delivery and a strategic HR function are clearly beneficial for organizations introducing e- HRM. In order that organizations realize the benefits of new technology, rather than wasting their resources on introducing e-HRM in a way that will not enable them to achieve their goals, it is important to establish whether the commonly espoused goals of e-HRM introduction are actually achieved and to examine the factors that might affect this. In this study, we address this need through an investigation of e-HRM in case study organization. Over the past two decades, there have been a number of

studies on E-HRM. While some of them have focused on the type of applications that dominate in E-HRM (Clark et al., 2000), and the contexts necessary for the successful development of E-HRM (e.g. Yeh, 1997) as well as the conditions that support successful E-HRM (Haines and Petit, 1997), others have focused on the organizational adoption (e.g. Panayotopoulou et al., 2007; Lau and Hooper, 2008). Generally, these studies can be classified by their regional and functional focus. Concerning the regional focus, the majority of these studies are conducted in developed countries such as USA and European countries (Panayiotopoulos et al., 2007), while studies in developing countries are rare and restricted to a few countries. Concerning the functional focus, one can distinguish studies that address the adoption of general E-HRM (Lau and Hooper, 2008) from studies that focus the adoption of specific functional subset of E-HRM, such as e-recruiting (Keim and Weitzel, 2008). With most studies of "E-HRM" development being based on cases in Europe and the USA, the cultural challenges, although complex, show some consistency (Panayotopoulou et al., 2007). However, relatively few cases have been investigated outside of the most developed countries, such as in Municipality. These

geographical locations show strikingly different cultural considerations. Electronic human resource management in Municipality is in its initial stages of adoption. There are changes taking place in the IT landscape of Municipality. In this research analyzing and prioritizing organizational factors affecting on Electronic Human Resources Management have been studied. Analytic Hierarchy Process (AHP) in Qazvin Municipality.

Based upon a review of literature, a conceptual framework was developed. The conceptual framework proposes the relationship between the internal and external organizational factors and the development level of E-HRM in Qazvin Municipality.

2. LITERATURE REVIEW

E-HRM

E-HRM is the (planning, development and) application of information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR activities.

E-HRM is not the same as HRIS (Human resource information system) which refers to ICT systems used within HR departments. Nor is it the same as V-HRM or Virtual HRM - which is defined by Lepak and Snell as "...a network-based structure built on partnerships and typically mediated by information technologies to help the organization acquire, develop, and deploy intellectual capital. "E-HRM is in essence the devolution of HR functions to management and employees. They access these functions typically via intranet or other web-technology channels. The empowerment of managers and employees to perform certain chosen HR functions relieves the HR department of these tasks, allowing HR staff to focus less on the operational and more on the strategic elements of HR, and allowing organizations to lower HR department staffing levels as the administrative burden is lightened. It is anticipated that, as E-HRM develops and becomes more entrenched in business culture, these changes will become more apparent, but they have yet to be manifested to a significant degree (Martin & Reddington, 2010). A 2007 CIPD survey states that "The initial research indicates that much-commented-on development such as shared services; outsourcing and e-HR have had relatively little impact on costs or staff numbers HRM is seen as offering the potential to improve services to HR department clients (both employees and management), improve efficiency and cost effectiveness within the HR department, and allow HR to become a strategic partner in achieving organizational goals.

Traditionally HR goals have been broken into three categories: maintaining cost effectiveness, the enhancement of service for internal customers, and addressing the tactics of the business. With e-HRM there is a fourth goal added to the three categories and that is the improvement of global orientation of human resource management. HR functions that e-HRM assist with are the transactional and transformational goals. Transactional goals help reduce costs and transformational goals help the allocation of time improvement for HR professionals so that they may address more strategic issues. To add to this operational benefits have become an outcome of

the development of e-HRM. The process of payroll is an example of this, with HR being able to have more transactions with fewer problems. E-HRM has increased efficiency and helped businesses reduce their HR staff through reducing costs and increasing the overall speed of different processes. E-HRM also has relational impacts for a business; enabling a company's employees and managers with the ability to access HR information and increase the connectivity of all parts of the company and outside organizations. This connectivity allows for communication on a geographic level to share information and create virtual teams. And finally e-HRM creates standardization, and with standardized procedures this can ensure that an organization remains compliant with HR requirements, thus also ensuring more precise decision-making (CedarCrestone, 2011).

Further, there is substantial accumulated knowledge about which factors to consider when implementing e-HRM. At the same time, personnel departments still experience difficulties with implementing new technologies, and e-HRM results are not always as positive as commonly assumed. To put it differently, e-HRM projects continue to report failures (e.g. Tansley et al. 2001; Smale & Heikkilä, 2009; and were found to achieve less than expected (Chapman & Webster, 2003). For example, Gardner et al. (2003) discovered that rather than freeing up time for HR practitioners, the development of e-HRM in practice led to the replacement of administrative duties with technology-related ones. In brief, it did not improve HRM services. Other studies show that HR professionals were unsuccessful in using technology to initiate and support strategic decisions (Dery & Wailes, 2005); e-HRM technology was primarily used to simply support routine administrative HR tasks (Ball, 2001; Haines & Lafleur, 2008; Hussain et al. 2007); and line managers reported contradictory results when using e-HRM (Reddington & Hyde, 2008). In addition, utilizing the potential of e-HRM was constrained by the Complexities of people dynamics such as managing user acceptance when adapting new e-HRM systems (Grant et al., 2009).

3. METHODS AND MATERIALS

AHP METHOD

Analytic hierarchy process (AHP) The AHP was developed by Thomas L. Saaty at the Wharton School of Business in 1970s. It is an effective decision making technique based on multi-criteria decision-making methodology. The AHP is perhaps, the most widely used decision-making approach in the world and its validity is based on the many thousands of actual applications in which the AHP results were accepted and used by the cognizant decision makers (Saaty, 1994). AHP has been applied more recently in construction research (Li et al., 2000). Pairwise comparisons are basic to the AHP methodology. For pairwise comparisons, this paper uses the nine-point scale developed by Saaty (1980) and it is shown in In the above original AHP scale, weak was subsequently changed to moderate and absolute changed to extreme. The intermediate values 2, 4, 6, and 8 are defined as weak or slight, moderate plus, strong plus, and very-very strong,

respectively.

AHP methodology: AHP is a hierarchical representation of a system. A hierarchy is an abstraction of the structure of the system as a result of the decomposition of the complexity of the system into different levels, which represent functional interactions of its elements and their impacts on the entire system (Saaty, 1980). AHP requires three steps:

- (1) Establishing evaluation criteria hierarchy;
- (2) Assessing the decision maker evaluations by pairwise comparisons; and
- (3) Using the eigenvector method to derive weights for criteria and alternatives.

In AHP, logical consistency is also considered by evaluating the validity of the pairwise comparison process obtained from decision makers' preferences. The AHP procedure consists of the following steps (Saaty, 1980, 1994; Chan et al., 2006; and Wu et al., 2009).

Step1. Establish a pairwise comparison decision matrix (A). Let C1, C2, . . . , Cn denote the set of elements, while a_{ij} represents a quantified judgment on a pair of elements C_i, C_j. The relative importance of two elements is rated using a measurement scale with the values 1, 3, 5, 7, and 9 this yields an n-by-n comparison matrix A as follows:

$$A = [a_{ij}] = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & \dots & a_{nn} \end{bmatrix} \quad (1)$$

$$A = [a_{ij}] = \begin{bmatrix} \frac{w_1}{w_1} & \frac{w_1}{w_2} & \dots & \frac{w_1}{w_n} \\ \frac{w_2}{w_1} & \frac{w_2}{w_2} & \dots & \frac{w_2}{w_n} \\ \vdots & \vdots & \ddots & \vdots \\ \frac{w_n}{w_1} & \frac{w_n}{w_2} & \dots & \frac{w_n}{w_n} \end{bmatrix} \quad (2)$$

If matrix A is consistent, then we have a_{ij} = w_i / w_j = 1/a_{ji} and a_{ii} = 1 with i, j = 1, 2, . . . , n.

Step2. Normalize the decision matrix and calculate the priorities of this matrix. Before all the calculations of vector of priorities, the comparison matrix has to be normalized. For this purpose, each set of column values is summed. Then, each value is divided by its respective column total value. Finally, the average of rows is calculated and the relative weights of criteria w₁, w₂, . . . , w_i are obtained.

Step3. Do consistency checks. The relative weights, which would also present the eigenvalues of criteria, should verify:

$$A * w_i = \lambda_{max} * w_i \quad i = 1, 2, \dots, n$$

Where A represents the pairwise comparison decision matrix and λ_{max} gives the highest eigenvalue. Then consistency index (CI), which measures the inconsistencies of pairwise comparisons is calculated as:

$$CI = \frac{\lambda_{max} - n}{n - 1}$$



TABLE 1:

NINE –POINT INTENSITY IMPORTANT SCALE

Definition	Intensely of importance
Equally important	1
Moderately more important	3
Strongly more important	5
Very Strongly more important	7
Extremely more important	9
Intermediate more important	2,4,6,8

The last ratio that has to be calculated is CR. Generally, if CR is less than 0.1, the judgments are consistent and acceptable, so the derived weights can be used (Chan et al., 2006). The formulation of CR is:

$$CR = \frac{CI}{RI}$$

4. RESEACH FINDING

In this study, the AHP approach has been used for identifying and ranking of Electronic Human Resources Management (E-HRM) in Qazvin Municipality). The views of top and middle managers that selected considering purpose of the research, has been used in this approach. Research's hierarchical model has three levels and is presented in fig.2. The levels are as follows:

- Level1: The main purpose (Factors Effective on E-HRM).
- Level2: The main criteria for Factors Effective on E-HRM (Perceived Barriers to the development of E-HRM (C1), perceived usefulness (C2), user satisfaction (C3) and information quality (C4)).
- Level3: Alternatives or organizational factors affecting the Factors Effective on E-HRM (Organization's HR Structural

characteristics (A1), Management Style(A2), Managerial IT Knowledge (A3), Organization resources (A4), Top Management Support (A5), Organization readiness & Commitment (A6)).

In this research collecting views of respondents was performed using questionnaire which includes: Paired comparisons, criteria and options, views were reviewed with Expert Choice. For ranking Factors Effective on E-HRM in Qazvin Municipality, the pairwise comparison matrix was established based on judgment of experts using nine point scale shown in Table 1. Once the pairwise comparison

matrices are formed the AHP is employed to determine the criterion weights utilizing the eigenvector method shown in Eq.(2). The criteria pairwise comparison matrix was established using a nine-point scale (see Table 2). Then, the weight for each criterion was determined by using the eigenvector method (see Column 6 of Table 2). Then alternatives were compared

Based on different criteria and the four matrices (the order of the matrices is 6×6). The weight of each alternative was then determined using the eigenvector method (see Table 3).

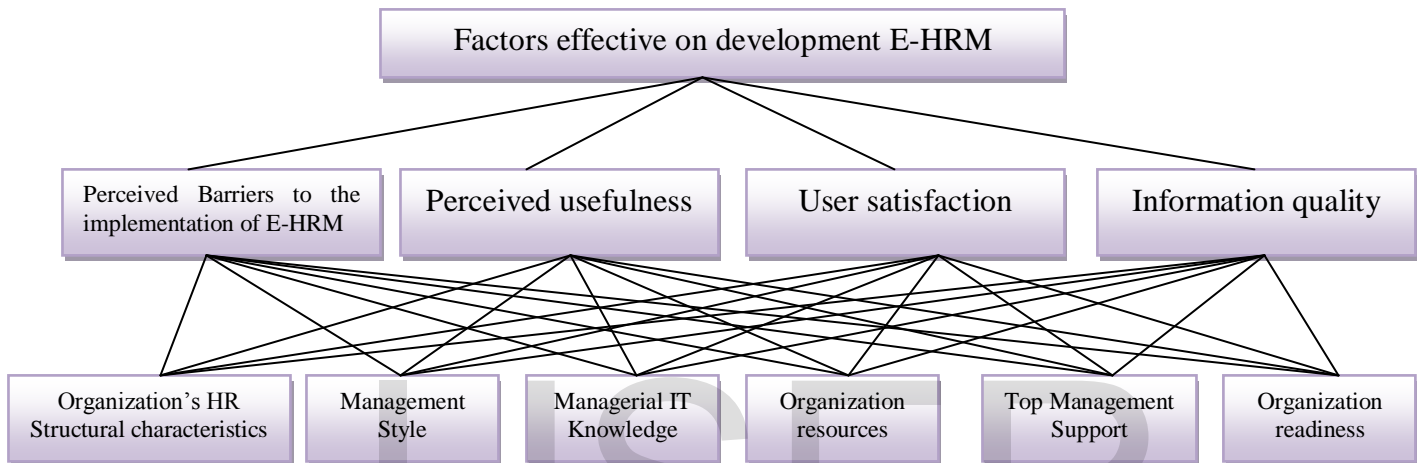


Fig 1: Research Model

TABLE 2 :
 CRITERIA PAIRWISE COMPARISON MATRIX

	C ₁	C ₂	C ₃	C ₄	Weight
C ₁	1	5	2	1/2	0.310
C ₂	1/5	1	4	6	0.059
C ₃	1/2	1/4	1	1	0.246
C ₄	2	1/6	1	1	0.386

TABLE 3:
 COMPARISONS OF THE ALTERNATIVES WITH REFERENCE TO C1~C4

	A ₁	A ₂	A ₃	A ₄	A ₅	A ₆	Weight	
C ₁	A ₁	1	1/3	1/2	1/2	1/5	1	0.077
	A ₂	3	1	1	2	1/2	1	0.171
	A ₃	2	1	1	1	1/3	1/2	0.120
	A ₄	2	1/2	1	1	1/4	1/2	0.101
	A ₅	5	2	3	4	1	3	0.375
	A ₆	1	1	2	2	1/3	1	0.156
C ₂	A ₁	1	1/2	1/3	1/4	1/5	1/2	0.059
	A ₂	2	1	1/2	1	1/2	1	0.126
	A ₃	3	2	1	2	1/2	1	0.190
	A ₄	4	1	1/2	1	1/4	1/2	0.119
	A ₅	5	2	2	4	1	3	0.355
	A ₆	2	1	1	2	1/3	1	0.151
C ₃	A ₁	1	1/2	1/2	1/2	1/5	1/2	0.069
	A ₂	2	1	3	2	1/2	2	0.221
	A ₃	2	1/3	1	1	1/3	2	0.126

C ₄	A ₄	2	1/2	1	1	1/3	2	0.132
	A ₅	5	2	3	3	1	3	0.356
	A ₆	2	1/2	1/2	1/2	1/3	1	0.096
	A ₁	1	2	1/2	2	2	2	0.216
	A ₂	2	1	1/2	1/2	1/2	1/2	0.082
	A ₃	2	2	1	3	1/3	3	0.236
	A ₄	2	2	1/3	1	1/2	1/2	0.096
	A ₅	3	2	3	2	1	2	0.251
	A ₆	1	2	1/3	2	1/2	1	0.119

Once the component weights are calculated, they were synthesized to obtain the rank scores of each alternative. The weights were synthesized from the highest level down by multiplying the weights by their corresponding parent component from the level above and then adding them for

each component within a level according to the component it affects. The results for the ranking Factors Effective on E-HRM in Qazvin Municipality are tabulated in Table 4 where it can be seen that alternative A5 (Top Management Support) has the highest weight.

TABLE 4:
 CRITERIA PAIRWISE COMPARISON MATRIX

	Weight	A ₁	A ₂	A ₃	A ₄	A ₅	A ₆
C ₁	0.310	0.077	0.171	0.120	0.101	0.375	0.156
C ₂	0.059	0.059	0.126	0.190	0.119	0.355	0.151
C ₃	0.246	0.069	0.221	0.126	0.132	0.356	0.096
C ₄	0.386	0.216	0.082	0.236	0.096	0.251	0.119
Overall priority		0.141	0.137	0.180	0.106	0.311	0.125

4.1. CONSISTENCY RATIOS

The judgments used in the process of deciding on the most suitable alternative were validated from the consistency

ratios. According to this result the calculated inconsistency ratio is below 10% and the prepared selecting matrices may be considered consistent.

5. RESULTS AND DISCUSSION

The literature analyses we conducted revealed that one stream of e-HRM literature investigates factors that should be considered when implementing e-HRM technology, and is dominated by IT-oriented scholars. A second stream focuses on studying the consequences of e-HRM systems, and is dominated by organizational (and 'pure' HRM) scholars. A consistent finding about the forty years from 1970 to 2010 is that all the development factors identified could be categorized into technological, organizational and people factors. Technology factors include requirements of the new or existing technology. Organizational factors reflect the 'hard' organizational characteristics and people factors refer to the 'soft' or individual factors influencing e-HRM implementations. Effective technical development of e-HRM does not necessarily imply organizational E-HRM effectiveness. For e-HRM to be effective, employees who must use these systems need to accept the new technology, i.e., become convinced about their value and be trained for effective usage.

Today, not only top managers and executives, but all segments of society such as researchers and scholars, and businessmen inevitably use E-HRM. E-HRM plays an essential role in all fields of a Organization. The study show that successful organization implemented E-HRM effectively and efficiently. E-HRM is considered as a valuable resource that increases the ability of managers and employees and lead to effective realization of the organization goals. In this research, Organization's HR Structural characteristics ,Management Style ,Managerial IT Knowledge, Organization resources ,Top Management Support ,Organization readiness & Commitment, that Factors Effective on E-HRM (Perceived Barriers to the development of E-HRM, perceived usefulness, user satisfaction and information quality), were analyzed and prioritized with Analytic Hierarchy Process (AHP) in Qazvin Municipality. After gathering information and analysis them using the Expert Choice, It was found that through the success factors on E-HRM, user satisfaction is the most important one, and the most important factor affecting success of E-HRM is the top management support.

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