

DETERMINANTS OF THE IMPLEMENTATION LEVEL OF ELECTRONIC HUMAN RESOURCES MANAGEMENT (E-HRM) IN JORDANIAN SHAREHOLDING COMPANIES

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Abstract:

The main objectives of this study were: identifying the key determinants of the implementation level of E-HRM applications in Jordanian shareholdings companies. In order to achieve the research objectives, a conceptual framework was developed. The conceptual framework tied together the major factors proposed to determine the company's level of implementation of E-HRM applications. A survey research was carried out where the sample was collected from Amman Stock exchange Market database. The target population under investigation was all the shareholding companies. The random sample has covered only 50% of the total number of these companies which were (257) companies in total. The survey was targeted to HR managers in shareholding companies. The data was collected using a self-administered structured questionnaire.

The main findings of study were: the implementation level of E-HRM is considered to be moderate. About 60% of the variations of the implementation level of E-HRM can be explained by internal factors whereas about 14% of variations can be explained by external factors. The adopters and non- adopters of E-HRM were found to be different in terms of their internal and external environmental characteristics in many ways.

At the end, the research has come up with several recommendations that were suggested for policy-makers in shareholdings companies in order to improve their level of implementation of E-HRM application.

Keywords: HRM, E-HRM, Human Resources, HRIS, Implementation of E-HRM, HRM Application

Introduction

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 implementation 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” implementation 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 Jordan. These geographical locations show strikingly different cultural considerations. Electronic human resource management in Jordan is in its initial stages of adoption. There are changes taking place in the IT landscape of Jordan. This study has come to find out where Jordan stands in terms of IT adoption especially in the HR field and at what level E-HRM is being implemented, at major Jordanian organizations such as the Jordanian shareholding companies.

The basic theme of this study is based upon exploring the relationship between internal and external organizational factors and the implementation level of E-HRM in Jordanian shareholding companies. It is important for two reasons. **First**, It provides some insights into the implementation of E-HRM by Jordanian companies, which should help Human Resource (HR) practitioners, acquire a better understanding of the current status, benefits, and barriers to the

implementation of E-HRM. **Second**, HR professionals should be informed about the advanced state of E-HRM implementation in Jordan, while some general insights are offered about which kind of organizations should take an adoption of E-HRM into consideration.

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 implementation level of E-HRM in shareholding companies in Jordan.

Research Problem

This study has come to cover the gap in the previous studies by identifying the main organizational factors (internal and external) that are associated with implementation level of electronic human resource management (E-HRM) in shareholding companies in Jordan, as a developing country, as to the best knowledge of the researcher there have been no prior studies tackling such problem before. The study problem will mainly try to answer the following questions:

- 1) To which extent Jordanian shareholding companies implement E-HRM applications in human resource management functions?
- 2) What are the key determinants of the implementation level of electronic human resource management (E-HRM) in Jordanian shareholding companies?
- 3) How do HR managers perceive the benefits of the use E-HRM applications?
- 4) What are the main factors inhibiting the implementation level of E-HRM in shareholding companies?
- 5) Are there any differences among Jordanian shareholding companies with respect to the level of implementation of E-HRM?

Research Objectives

The key objectives of this study are as follows:

- 1) To develop a theoretical framework that outlines the hypotheses relationship between the internal and external organizational factors and the extent of the level implementation of electronic human resource management (E-HRM) through the integration of Innovation Diffusion Theory and Technology-organization-environment model and the implementation studies in the area of E-HRM.

- 2) To identify to which extent the E-HRM functions are implemented by the Jordanian shareholding companies.
- 3) To examine the nature of relationship (strength and direction) between the internal and external organizational factors and the extent of the level of implementation of E-HRM in Jordanian shareholding companies.
- 4) To find out if there any differences or similarities among companies in respect to the level of implementation of E-HRM (adopted vs. non- adopted) based on their organizational demographic characteristics such as type, size, and experience.
- 5) To provide the decision makers with recommendations that might help the HR unit in these companies to improve their use of E-HRM applications.

Research Importance

The major potential contributions of the present study can be summarized in the following points:

1. To the best knowledge of the researchers, this study is considered to be one of the first attempts undertaken in the Jordanian environment to study the relationship between the internal and external organizational factors and the level of implementation of E-HRM in shareholding companies. Most of the adoption studies in Jordan have been conducted at the individual level or in other management activities.
2. An integrated framework will be developed to examine the relationship between the internal and external organizational factors and the level of implementation of E-HRM in shareholding companies. This framework integrates ideas and elements from the Diffusion Theory and Technology-organization-environment model and the adoption studies in the area of HRM.
3. As can be shown in the literature, the body of the research on the implementation of E-HRM is heavily oriented to organizations in developed countries. This research will extend its scope to include developing countries like Jordan.
4. A better understanding of the factors that are mainly associated with the level of implementation of electronic human resource management (E-HRM) might be useful for both managers and practitioners.

Empirical Studies

In order to identify empirical studies with E-HRM as a main focus, a scholarly Internet search engine (scholar.google.com) was used and several online data bases that cover all leading journals not only in the fields of human resource and general management but also in information systems, the recently developing field of E-HRM, as well as industrial and organizational behavior. A number of studies related to E-HRM can be found in various HR Journals. However, many of them are conceptual or non-empirical studies.

Research Model

Based on existing studies on using Innovation Diffusion Theory [Rogers, 1995.] and Technology-organization-environment model [Tornatzky, L. and Fleischer, M 1990, the main variable categories that examine the relationship between the internal and external organizational factors and the implementation of E-HRM applications. In Innovation Diffusion Theory, an organization's decision to adopt e-business could be influenced by the innovation's characteristics such as its relative advantage, compatibility, complexity, Trialability, and Observability. The Technology-organization-environment model on the other hand, also evaluated an organization's decision to implement an innovation based on 1) technological (i.e. the technologies relevant to the organization) 2) organizational attributes (i.e. company size, resources available, quality of human resources) and (3) environmental factors (i.e. business environment). The components of the study's model can be seen in Figure (1):

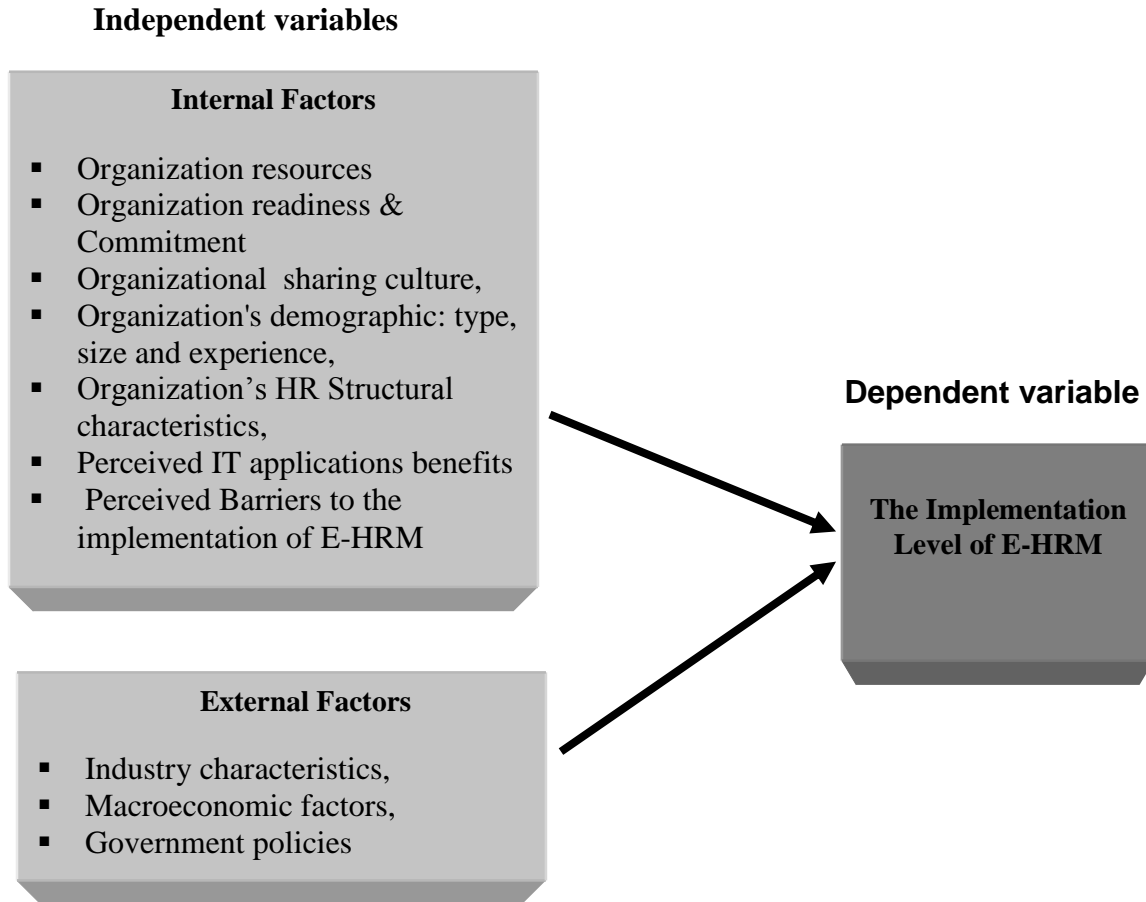


Figure (1): Research Model

Research Hypotheses: Based upon literature review, and the study framework, it proposes the following null- hypotheses:

H_{o1}: There is no statistically significant relationship between the internal factors (organization resources, organization readiness and commitment, organizational sharing culture, organizations demographic characteristics such as type, size and experience, organization's structural IT characteristics, perceived IT applications attributes /benefits of E-HRM applications, perceived barriers to the implementation of E-HRM) and the implementation level E-HRM in shareholding companies in Jordan..

H_{o2}: There is no statistically significant relationship between the external factors (industry characteristics, macroeconomic factors, and government policies) and the implementation level E-HRM in shareholding companies in Jordan.

H0.3: There are no statistically significant differences (i.e. variation) between the adopters' companies of E-HRM and the non-adopters in terms of their evaluation of internal environmental factors.

H0.4: There are no statistically significant differences (i.e. variation) between the adopters' companies of E-HRM and the non-adopters in terms of their evaluation of external environmental factors.

Research Design

Research Type: This research uses two research scientific approaches, the descriptive analysis is undertaken to describe the characteristics of the variables, and also to get a general idea on E-HRM. Empirical investigation is used to test the research hypotheses, and to explain the nature of variables relationships.

Research population and Sampling Design: In designing the sample, the researchers must specify 1) the sampling frame, 2) the sample selection process, and 3) the size of the sample (Churchill 1995). The sample frame refers to the list of population elements from which the sample will be drawn. The sample selection process requires the form of the sample to be specified. In the present study, the sample was collected from a Amman Stock exchange Market database. The target population under investigation is all the shareholding companies. The random sample has covered only 50% of the total number of these companies which are in total (257) companies. Table (1) demonstrates the sample sectors and the number of companies in each sector.

Table (1): Study population

Sectors	Number of Companies	Size of sample
Banks & Financial Services	49	25
Insurances	27	14
Real estate	37	19
Other Services	55	27
Industrial	89	45
Total	257	130

Sources: ase.com.jo (2010)

Data Collection Methods

Two data collection methods are used to support this work. Secondary data are obtained from various books, periodicals and the internet. The empirical part of the study will discuss the relationship between the internal and external organizational factors and the implementation level E-HRM in shareholding companies in Jordan. Based on the literature several hypotheses are formed and will be tested with the help of an interview survey. The survey was targeted to HR managers in shareholding companies. The data was collected by using a self-administered structured questionnaire.

The questionnaire was reviewed by some of HRM practitioners, academicians and E-HRM consultants in a small selection of five companies. Based on the comments from them, the questionnaire was modified and distributed. The details items and scales are presented in the following points:

1. **General information:** this part of the questionnaire includes general questions about the surveyed companies' profile, and the profiles E-HRM usage. It includes questions related to the type of the company, size; and business experiences; It also asked whether the company has a particular department for HRM; and other demographic characteristics.
2. **The dependent variables (the level of implementation of E-HRM applications):** this scale contained different E-HRM applications and participants were asked to indicate the extent to which their companies implement E-HRM on those activities. Responses ranged from 1= not implemented at all to 5= highly implemented.
3. **The independent variables:** All the independent variables used in this study (i.e. Organization resources, Organization readiness and commitment, Organizational sharing culture, Organization's demographic, type, size and experience, Organization's HR Structural characteristics, Perceived IT applications attributes /benefits of E-HRS applications, Perceived Barriers to the implementation of E-HRM, Industry characteristic, Macroeconomic factors, Government polices) consist of ten main constructs. Total of (90) questions captured the two adoption factors under investigation. Responses to the items are made on a 5-point Likert Scale ranging from 1 = strongly disagree to 5 = strongly agree.

Data Analysis Techniques

For the analysis, the collected data was coded into the SPSS –statistical analysis program. The analysis part consists of several different statistical analyses and tests. At first some descriptive analyses was made to describe the data. Next, the measurement constructs of the study model were formed applying a regression analysis is conducted in order to test the hypotheses and find out the key factors that explain the extent of the adoption of internet and IT applications in human resources management. In this study different descriptive and inferential statistical methods have been used to analyze the data:

- a. Cronbach`s Alpha and Pearson correlation to test reliability and consistency between variables.
- b. Pearson correlation and Multiple Regression to test the main hypotheses of the study.
- c. Discriminant analysis is used to differentiate between the adopters and non-adopters of E-HRM in terms of their evaluation of internal and external environmental factors.

Research Descriptive Analysis

Companies Profiles: Table (2) below, demonstrates the descriptive analysis for the actual and the respondent number of companies for each sector.

Table (2): Number of Actual and Respondent Companies by Sector

Sectors	Actual Number of Companies	Size of sample (50%)	Respondent Number of Companies	Rate of Respondent of size of sample
Banks & Financial Services	49	25	25	100%
Insurances	27	14	14	100%
Real estate	37	19	15	79%
Other Services	55	27	27	100%
Industrial	89	45	40	89%
Total	257	130	121	93%

From the table above, it can be noticed, that 121 companies responded to the questionnaire. The response rate is there of 93% percent of the size of sample.

The Extent of Implementation Level of E-HRM Functions

Table 3 below, demonstrates the descriptive analysis for the questions measuring the level of implementation of E-HRM functions. The table below (3) shows that there are a moderate level of E-HRM functions in shareholding companies since their mean are more than the mean of the scale* which is (3). The level of implementation is found to be 61.2%, which indicates moderate adoption (implementation) of E-HRM. (*Mean of the scale = $\Sigma \text{Degrees of the scale} / 5 = 1+2+3+4+5 / 5 = 3$).

Table 3: Measuring the Extent of Implementation Level of E-HRM Functions

Question Number	HR Functions	Mean	Std. Deviation
10	Employee record-keeping	3.64	1.4060
11	<i>Recruitment and selection</i>	3.50	1.1840
12	<i>Training and development</i>	2.88	1.4447
13	<i>Payroll \ Benefits management</i>	2.95	1.5832
14	<i>Performance appraisal</i>	2.95	1.5187
15	<i>Internal and external communication</i>	3.34	1.5250
16	<i>Self-service including web portal</i>	2.96	1.4487
17	Turnover tracking/analysis	2.79	1.4073
18	Career Development	2.80	1.5143
19	<i>worker compensation</i>	2.79	1.4712
	Average	3.06	---

The table shows that the highest levels of implementation are: employee record keeping, recruitment and selection, internal and external communication respectively.

Hypotheses Testing

This section presents a statistical examination for the research hypotheses. The main purpose for these tests is to identify whether to accept either the null hypotheses, which was assigned by the symbol H_0 , or the alternative hypotheses, which was assigned by the symbol H_a . The core mechanism of the hypotheses testing is to identify whether the actual sample mean is deviated

from the mean of the hypothesized sampling distribution by which a certain value that will prove that it is wrong. Regarding the decision criteria which will be used as a base to compete this deviation with, the researcher has chosen the most common decision criteria which is the significance level at less than 0.05 , it presents the critical probability in choosing between the null hypothesis and the alternative hypothesis .(William, 2000). The assumption that will be based on this significance level states that “if the probability of observed data is smaller than the level of significance then the data suggests the null hypothesis should be rejected and vice versa”.

It is also important to note that when the hypothesis is investigating the relationship between all the sub-variables or dimensions of the main variables and other complex variable as well, the multiple regression test or F-test should be used but when examining the sub-hypothesis which investigate the relationship between underneath the main one, the simple regression test or t-test should be used.

First Hypothesis Testing:

Multiple regression test was used to test the main hypothesis; Table (4) illustrates the analysis and the final results:

Ho1 There is no statistically significant relationship between the internal factors (organization resources, organization readiness and commitment, organizational sharing culture, organizations demographic such as, type, size and experience, Organization's HR Structural characteristics, perceived IT applications attributes /benefits of E-HRM applications, perceived Barriers to the implementation of E-HRM) and the implementation level of E-HRM in shareholding companies in Jordan.

Table (4): Testing the Relationship between the Internal Factors and the Level of Implementation of E-HRM

F calculated	F tabulated	F Sig	R	R²	Test Result
23.052	2.09	.000	.770	.592	Rejected

According to the SPSS analysis, it is found that F calculated = 23.052 is greater than F tabulated = 2.09. According to the decision rule, this hypothesis H_{1.a} is accepted, meaning; “Internal environmental Factors” have a significant relationship with the level of implementation of E-

HRM. R. square value exhibits the capability of the independent variable in predicting the dependent variable; indicating that only (.592) of the variation in level of implementation of E-HRM is explained by the internal factors. It indicates to the goodness of fit of the study model. Since increasing the affect of internal factors will increase the implementation level of E-HRM.

Table (5) exhibits the beta coefficient for each independent factor of this study. It gives measure of the contribution of each factor to the model. A large value indicates that a unit change in this predictor factor has a large effect on the criterion variable (The level of implementation of E-HRM). As it can be noticed form the same table that the Beta coefficients of perceived benefits of IT applications and organization readiness and commitment are the most important determinant internal factors associated with the level of the implementation of E-HRM in shareholding companies which are .435 and .400 respectively.

Table 5: Coefficient of the Multiple Regression Model (Internal Factors)

Model	Un-standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-.215	.639		-.337	.737
▪ Organization resources	.012	.111	.011	.105	.916
▪ Organization readiness & Commitment	.485	.167	.400	2.906	.004
▪ Organizational sharing culture,	.143	.125	.132	1.146	.254
▪ Organization's demographic: type, size and experience,	.296	.081	.230	3.660	.000
▪ Organization's Structural IT characteristics,	.247	.178	.189	1.389	.167
▪ Perceived IT applications benefits	.923	.150	.435	6.147	.000
▪ Perceived Barriers to the implementation of E-HRM	-.457	.089	-.339	-5.163	.000
a. Dependent Variable: Level of Implementation					

Second Hypothesis Testing:

Multiple regression test was used to test the main hypothesis; Table (6) illustrates the analysis and the final results:

Ho2. There is no statistically significant relationship between the external factors (industry characteristics, macroeconomic factors, and government policies) and the implementation level E-HRM in shareholding companies in Jordan.

Table (6): Testing the Relationship between the External Factors (Taken Together) and the Level of Implementation of E-HRM

F calculated	F tabulated	F Sig.	R	R²	Test Result
6.399	2.68	.000	.375	.141	Rejected

According to the SPSS analysis, it is found that F calculated = 6.399 is greater than F tabulated = 2.68. According to the decision rule, this hypothesis is rejected meaning; External Factors have a significant relationship with the level of implementation of E-HRM. R square value exhibits the capability of the independent variable in predicting the dependent variable; indicating that only (.141) of the variation in level of implementation of E-HRM is explained by the external factors.

Table (7): Coefficient of the Multiple Regression Model (External Factors)

Model	Un-standardized Coefficients		Standardized Coefficients	T	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.309	.452		2.898	.004
	▪ Industry characteristics	.328	.162	.198	2.031	.044
	▪ Macroeconomic factors	.316	.158	.272	2.004	.047
	▪ Government policies	.045	.147	.041	.309	.757
a. Dependent Variable: Level of Implementation						

From table (7), it can be noticed that according to coefficient of the multiple regression model analysis, macroeconomic factor is the highest one within the external factors that determining the implementation level of E-HRM

Third Hypothesis Testing:

The chi- square test was used to test this hypothesis; Table (8) illustrates the discriminant analysis and the Chi-square results.

Ho.3. There are no statistically significant differences (i.e. variation) between the adopters' companies of E-HRM and their counterpart of non-adopters according to their evaluation of internal environmental factors. Taken together.

The Chi-square test was employed to distinct between adopters' group and non-adopters' group of E-HRM in terms of their evaluation of internal environment factors. The computed chi-square is with degrees of freedom (7). The obtained chi-square value (75.591) exceeds the critical value (69.24) at (0.00). Table (7) the decision, therefore, is to reject the null hypothesis and conclude that the internal factors is statistically discriminate between adopters and non -adopters of E-HRM

Table (8): Summary of Canonical Discriminant

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	Test Result
1	.943	100.0	100.0	.697	Rejected
Test of Function(s)	Wilks' Lambda	Chi-square	Df	Sig.	
1	.515	75.391	7	.000	

In addition to the chi-square test, the Univariate F statistics test was used to determine the significance of each independent factor (internal factors).

Table (9): The Univariate F statistics (ANOVA) of Internal Factors

	Internal Factors	Wilks' Lambda	F	df2	Sig.	Test Result
1	Organization resources	.814	26.798	117	.000	Rejected
2	Organization readiness & Commitment	.702	49.588	117	.000	Rejected
3	Organizational sharing culture.	.926	9.402	117	.003	Rejected
4	Organization's demographic: type, size and experience	.892	14.211	117	.000	Rejected
5	Organization's HR Structural characteristics	.944	6.993	117	.009	Rejected
6	Perceived IT applications benefits	.958	5.141	117	.025	Rejected
7	Perceived Barriers to the implementation of E-HRM	.857	19.476	117	.000	Rejected

According to the SPSS analysis: It can be noticed from above table (9) that all internal factors are found to be significant taken separately , therefore, one should reject the null hypotheses for all internal factors and conclude that there were significant differences between adopters and non-adopters in terms of their evaluation of internal factors i.e., organization resources, organization readiness & commitment, organizational sharing culture, organization's demographic: type, size and experience, organization's structural IT characteristics, perceived IT applications benefits, perceived barriers to the implementation of E-HRM .

Fourth Hypothesis Testing:

The chi- square test was used to test this fourth hypothesis; Table (10) illustrates the discriminant analysis and the chi-square results.

Ho.4. There are statistically no significant differences (i.e. variation) between the adopters' companies of E-HRM and their counterpart of non-adopters in terms of their evaluation of external environmental factors.

According to the SPSS result, it can be noticed from Table (10) that the computed chi-square (11.070) with degrees of freedom (3) exceeds the obtained chi-square value (4.50) at (0.00), The decision, therefore, is to reject the null hypothesis and conclude that the external factors is statistically discriminate between adopters and non -adopters of E-HRM, taken together.

Table (10): Summary of Canonical Discriminant

Function	Eigen value	% of Variance	Cumulative %	Canonical Correlation	TEST Result
1	.099	100.0	100.0	.300	Rejected
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.	
1	.910	11.070	3	.011	

In addition to the chi-square test, the univariate F statistics test was used to determine the significance of each independent factor (external factors), taken separately. Table (11) summarizes the computed value of F ration and its significant level for each factor in the external factors. A closer look at the computed univariate F. Value in Table (4.22) indicates that the industry characteristics factor and macroeconomic factor are found to be significant while the government policies factor was not significant.

Table (11): The Univariate F statistics (ANOVA) of External Factors

External Factors	Wilks' Lambda	F	df2	Sig.	TEST RESULT
Industry characteristics	.963	4.527	119	.035	Rejected
Macroeconomic factors	.937	7.936	119	.006	Rejected
Government policies	.969	3.775	119	.054	Accepted

Comparative Analysis: Adopters vs. Non-Adopters

This section presents a comparative analysis based upon the adoption of E-HRM (Adopted vs. Non- Adopted). The researcher wanted to find out whether adopters and non-adopters' group of E-HRM are similar or differ according to their evaluation of internal and external factors

Internal Environmental Factors:

1. The Perceived Benefits \advantages of the Use of E-HRM

Detailed Table (12) differentiates between them according to their tendency towards the benefits of the use E-HRM applications in their companies. The results of mean for each group (adopters and non- adopters,) the mean differences and t-test can be seen in the same table.

Table (12): The main differences between the adopters and non-adopters concerning their Perceived Benefits of the Use of E-HRM

No.		Group(1)	Group(2)	Mean Diff.	t. value	Sig.
20	- Facilitation of the recruitment process	3.7273	2.6970	1.0303	5.855	.000
21	- Streamlining HR processes	3.9659	2.9697	0.9962	6.369	.000
22	-. Reducing manpower	3.5909	3.2424	0.3485	1.993	.049
23	- Reducing data re-entry and data may be used immediately	4.1023	3.4242	0.6781	3.998	.000
24	- Standardizing programs and procedures	4.0000	3.2121	0.7879	4.979	.000
25	- cost effectiveness	3.8182	3.2424	0.5758	3.935	.000
26	-.Reduction in paperwork	4.0909	3.5152	0.5757	2.995	.003
27	- Security concerns	4.1932	3.7273	0.4659	2.621	.010
28	- Accurate HR information	4.1932	3.6970	0.4962	2.816	.006
29	- Improves decision making	3.9773	3.6061	0.3712	1.893	.061
30	- Enhancing competitiveness	3.8750	3.6364	0.2386	1.178	.241
31	. Tracking and controlling	4.0455	3.5455	0.5000	2.380	.019
	Average				5.239	.000

It is quite obvious from the above table that adopters' group tend be more positive than non-adopters concerning their perceptions of the benefits of E-HRM applications .The adopters' group of companies are attached more importance to the benefits of E-HRM in its ability of facilitating the recruitment process, streamlining HR process and reducing data re-entry and other benefits with the exceptions of improving decision making and enhancing competitiveness.

2. The Perceived Barriers of the Use of E-HRM

Detailed Table (13) differentiates between the two groups according to their tendency towards the barriers inhibiting them from the use E-HRM applications in their companies. The results of mean for each group (adopters and non- adopters) the mean differences and t-test can be seen in the same table.

Table (13): The differences between the Adopters and the Non-adopters Concerning their Perception Barriers of the Use of E-HRM.

No.		Group (1)	Group (2)	Mean diff.	t. value	Sig.
32	- The advantages of E-HRM are outweighed by the cost implications	2.6932	3.6667	-0.9735	-4.562	.000
33	- Our organization lacks the technology needed for E-HRM	2.4318	3.3333	-0.9015	-4.276	.000
34	- We have concerns related to the lack of security of E-HRM	2.4091	3.6061	-1.197	-5.346	.000
35	- E-HRM technology is not compatible with other systems we use.	2.2955	3.4242	-1.1287	-5.091	.000
36	- Shortage of financial resources has hindered the acquisition of new IT application in E-HRM	2.3068	3.5758	-1.269	-5.597	.000
37	- Extra resources are not obtained for E-HRM implementation	2.2159	3.6061	-1.3902	-6.261	.000
38	- The management does not get to know the technology behind IT applications in E-HRM well enough	2.3295	3.7273	-1.3978	-5.729	.000
39	- Our Staffs do not have relevant skills for E-HRM	2.4091	3.6970	-1.2879	-5.653	.000
40	- Difficulty in changing the organization's culture	2.4773	3.7879	1.3106	-5.691	.000
41	- Employees feeling that technology is changing too rapidly	2.4091	3.4848	1.0757	-4.833	.000
42	- Fearful of changing the way they do things	2.5909	3.6061	-1.0152	-4.147	.000
43	- Lack of commitment and involvement	2.3977	3.6364	-1.2387	-5.158	.000

	by all					
44	- Lack of time to do the necessity analysis to determine what or how to automate:	2.3523	3.7576	-1.4053	-6.010	.000
45	- A lot of paper work that is difficult to computerize	2.5114	3.6667	-1.1553	-4.637	.000
46	- Not perceived as an advantage at all	2.3636	3.7273	-1.3637	-5.574	.000
47	- lack of confidence in the ability of computer vendors to provide ongoing service and support after implementation	2.3977	3.6667	-1.269	-5.529	.000
48	- Lack of expertise(s) in IT	2.5114	3.7576	-1.2462	-4.991	.000
49	- Inadequate knowledge in implementing the system	2.2727	3.9394	-1.6667	-7.012	.000
50	- No suitable E-HRM or software	2.5455	3.8788	-1.3333	5.645	.000
	Total				7.182	.000

According to the results of t-test and mean reported in the above table, it can be concluded that the adopters' group are significantly different from the non-adopters' group concerning their perceptions of barriers inhabiting their companies from the use of E-HRM applications. The non-adopters' group has ranked the following barriers as the highest ones comparing to their counterpart (adopters' group): Inadequate knowledge in implementing the system, lack of time to do the necessity analysis to determine what or how to automate, the management does not get to know the technology behind IT applications in E-HRM well enough, and our staffs do not have relevant skills for E-HRM applications.

Research Findings & Discussion:

The hypotheses testing have arrived to the following results and conclusions that compare with the previous general findings or observations:

1. Findings indicate that the implementation of E-HRM (adoption) within the sample under study is considered to be moderate. This implies that there are some variations among shareholdings companies in terms of their level of implementations of E-HRM applications. This

might be due to the fact that some of the management of these companies would prefer to use traditional methods or still thinking to have such system in the future.

2. Findings indicate that there is a significant relationship between the internal factors (organization resources, organization readiness and commitment, organizational sharing culture, organizations demographic, organization's structural IT characteristics, perceived IT applications attributes /benefits of E-HRM applications, perceived barriers to the use of E-HRM) and the implementation level E-HRM in shareholding companies in Jordan taken together. This result is supported by the previous studies such as Fillis et al. 2003, Panayotopoulou, 2005, Lai Wan, Hooi, 2006, Ngai & Wat, 2006, Kovach et al. 2007, Junaid et al 2010). This implies that all the internal factors mentioned in the research model play an important role in determining the level of implementation of E. HRM. ; The result indicated that about (.592) of the variation in level of implementation of E-HRM is explained by the internal factors when they are taken together. The perceived benefits of IT applications and organization readiness and commitment are found to be the most important determinant of internal factors that are associated with the level of the implementation of E-HRM in shareholding companies

3. Findings indicate that there is a relationship between company's external environmental factors (Industry characteristics, Macroeconomic environment and Government policies and support) and the level of implementation when they are taken together. This result is consistent with the opinion of Chong et al., 2009, R square value has exhibited that only (.141) of the variation in level of implementation of E-HRM is explained by the external factors. However, the macroeconomic factor is the most significant factor within the external factors determining the implementation.

4. Figure (2) below, illustrates the research model adjusted according to independent variables' R square value. Each significant variable within the internal and external factors is listed in a descending order reflecting its significance in implementing E-HRM. In addition R square values are presented for the internal factors and the external factors.

5. The study also aimed to find if there are any similarities or differences in the characteristics of the companies which adopted E-HRM and those which did not in terms of their internal and external environmental factors attributes. Findings indicate that there are significant differences between the adopters and non-adopters in terms of their internal environmental factors attributes, either taken together or separately. This result implies that it is possible to differentiate

between the two groups (adopters and non-adopters) in terms of their internal environmental attributes : organization resources, organization readiness & commitment, organizational sharing culture, organization's demographic: type, size and experience, organization's structural IT characteristics, perceived IT applications benefits, perceived barriers to the implementation of E-HRM . This result is supported by previous studies such as (CedarCrestone, 2005, Panayotopoulou et al. 2006, Teo et al. 2007, Lin 1997, Junaid 2010).

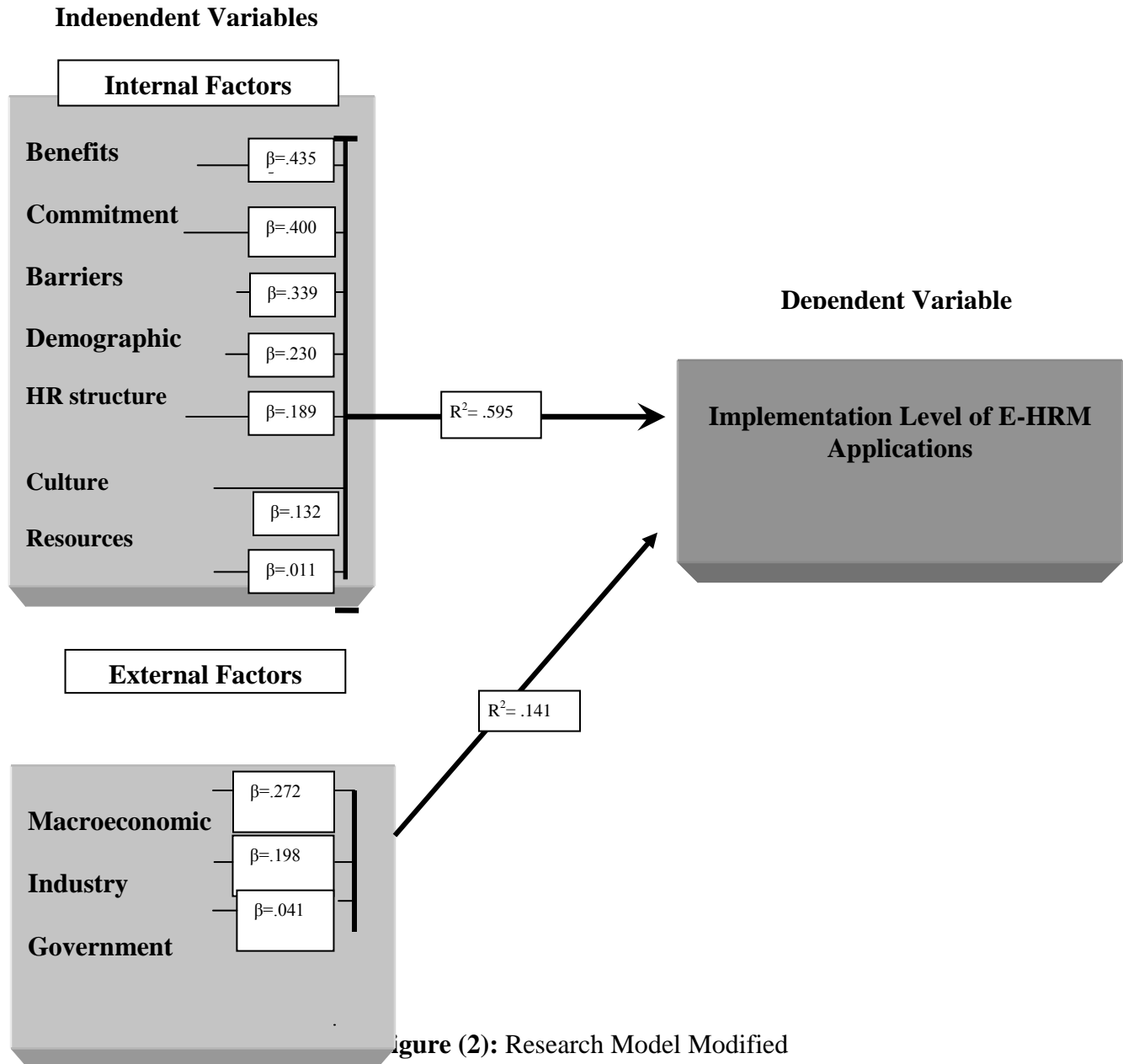


Figure (2): Research Model Modified

6. Findings indicate that there are significant differences between the adopters and non-adopters in terms of their external environmental factors attributes, taken together. However, taken separately, the industry characteristics factor and macroeconomic factor within external environmental attributes are the only factors found to be significantly different between adopters and non-adopters. This result is supported by previous studies such as (Boon et al, 2009; Ngai & Wat, 2400).

7. A summary profile for the difference between the adopters and non-adopters is given in Table (14)

Table (14): Analysis for the Two Groups Means in Terms of the Components of Internal and External Environment.

Independent Factors	Profile Analysis	
	Adopters	Non-Adopters
(1) Internal Factors		
1. Organization resources	Much higher	Much lower
2. Organization readiness & Commitment	Much higher	Much higher
3. Organizational sharing culture.	Slightly higher	Much lower
4. Organization's demographic: size and experience	Higher	Lower
5. Organization's Structural IT characteristics	Slightly higher	Slightly lower
6. Perceived IT applications benefits	Slightly higher	Higher
7. Perceived Barriers to the implementation of E-HRM	Slightly lower	Much higher
(2) External Factors		
1. Industry characteristics,	Slightly higher	Slightly lower
2. Macroeconomic factors	Slightly higher	Slightly lower
3. Government policies	Slightly higher	Slightly lower

*The Comparisons is made in terms of the differences between each group mean (i.e., adopters' group mean; non-adopters' group mean) from the overall mean of each factor.

8. The results of differences between the two groups (i.e., adopters and non-adopters) in terms of their mean scores on the variables (taken separately) consisting of each independent factors (internal and external) were presented and discussed.
9. Concerning their evaluation of the attributes of the “perceptions of the benefits of E-HRM applications” construct, findings indicate that the adopters’ group of companies was found to be more positive to all mentioned benefits of E-HRM applications than non-adopters. This result is supported by previous studies such as (Ngai and Wat, 2004; Toe at al., 2007). However, concerning the perceived barriers inhibiting the use of E-HRM, the non-adopters were found be more negative than their counterparts (adopters). This result is also supported by previous studies such as (Verhoven & Williams 2008; Panayotopoulou et al., 2006).
10. Concerning their evaluation of the attributes of the “ Organization Readiness and Commitment” construct, findings indicate that the adopter’s group and non -adopter are found to be different significantly in all of these attributes of this construct .The results also indicate that the adopters’ group put more emphases in these attributes than their counterpart of non-adopters. This result is supported by previous studies such as (Beveren & Thompson, 2002).
11. Concerning their evaluation of the attributes of “Organizational Sharing Culture” construct, the results also indicate that the adopter group are found to be more positive toward all the attributes of this construct than non -adopters except for the two attributes which are found to be not significantly different between them “Our company has a positive attitude toward new IT applications in E-HRM” and “Our employees accommodate themselves very quickly to technological changes”. This result is supported by previous study such as (Urbano & Yordanova, 2008; Ezzamel, et al., 1996).
12. Concerning their evaluation of the attributes “Organization’s IT Structural Characteristics of HR Unit” factor, the results indicate that some of the attributes of this factor are found to be significantly different between the two groups while others are not. However, the result of mean also indicate the adopters’ group has higher mean in all attributes of this factor than the non-adopters’ group.
13. To be more specific about the tendency toward each attribute in this construct, the following attributes are the only ones found to be significantly different between the two groups: HRM actively participates in listening and reacting on employees (employee champion), HRM actively participates in changing the organization (change agent) , and our company usually

absorbed new technologies In E-HRM. This result is supported by previous study such as (Strohmeie & Kabst, 2009).

14. Findings indicate that the level of adoption of E.ERM of the two groups (i.e. adopters and non-adopters) is found to be differ in terms of their number of employees (i.e. Size) and number of years in business (experience), however, it is not found to be different in terms of their type of business (service Vs. Industry). This result implies that while size and experience of the companies can be considered important determinants of the level of implementation of E-HRM applications but not their type of business. This result is in conflict with the results of previous studies such as (Ball, 2001) and (Panayotopoulou, 2006). It could be due the differences of the environments where each filed study was conducted.

15. Concerning the attributes of the “Industry characteristics” factor, the results indicate that each attribute of this factor was regarded as important in differentiating between the two groups (adopter vs. non adopter) except two attributes: “Local vendor support in terms of quality of technical encourage us to adopt E-HRM and “we can usually find help quickly when having questions on how to work with these applications”. However, the mean score results indicate that the adopters’ group have higher mean score in all these attributes than non-adopters’ group of E-HRM. In comparison to other attributes of this characteristics, “the technological diffusion in E-HRM is quite large in our area of business” is regarded the highest one to differentiate between the two groups.

16. Concerning their evolution of the attributes of the "Macroeconomic environment" factor, the mean score results indicate that the adopter’s group are found to be higher than non -adopter in all of the attributes of this construct except two attributes which are” the availability of qualified human resources locally encourage our company to use E-HRM and “the quality of local work force encourage our company to use IT applications in HRM”.

17. Concerning their evaluation of attributes of the " Government policies and support" factor , the results of the mean score indicate the adopters’ group are not differ significantly in their evaluation of all the attributes of this construct. This implies that “government policies and support” factor is not considered as an important determinant for shareholding companies to adopt E-HRM applications.

Research Conclusions:

The study has arrived at the following conclusions:

1. The implementation level of E-HRM practice is considered to be moderate at all.
2. This study provides valuable insights into the implementation of E-HRM applications practices in shareholding companies in Jordan. Consistent with prior research, we find that internal and external environmental attributes have influenced the implementation level of E-HRM practices in Jordan. However, it showed that the implementation level of E-HRM is much more determined by the company's internal environment characteristics (0.597) than its external environment (0.14).
3. The study shows the most important internal determinant factors that are associated with the implementation level of E-HRM practice ranked from the highest to the lowest are: the perceived benefits of E-HRM applications, the perceived barriers of the use of E-HRM, organization readiness and commitment, organization resources, demographic characteristics, Structural IT characteristics of HRM and organization sharing culture.
4. In brief, this research shows that a about 27% of companies are still practicing conventional HRM as compared to E-HRM. The main barriers in the implementation of E-HRM among the respondent companies are the lack of expertise and IT professionals. However, technical infrastructure for E-HRM seems to be in place and would not be a problem if the companies decide to implement E-HRM.
5. The research shows that the most important external factors that determined the implementation level of E-HRM practice ranked from the highest one are: macroeconomic factors, industry characteristics, and government policies and support.
6. The research shows that adopters of E-HRM are different from the non-adopters in terms of their internal and external environment characteristics. The adopter's group can be described as :
 - Devoting more resources to the use of E-HRM applications, mainly, they have more sufficient human resource and also have more necessary knowledge to use E-HRM technology.
 - Having more readiness and commitment to adopt E-HRM applications, mainly, their top management has an open attitude toward technological changes in HR and they are more willing to make large investment acquiring new IT applications in HRM.
 - Perceived positively much more benefits of the use of E-HRM applications.

- Perceived negatively much less barriers of the use of E-HRM applications.
 - Concerning demographic characteristics: mainly, they are larger size and having more experience in business.
 - Concerning sharing culture, mainly their employees can accommodate themselves very quickly to technological changes and HRM play an important strategic role in their companies.
 - Concerning the industry characteristics, they depend more on using specialists hired from outside to control their resources during E-HRM adoption.
 - Concerning macroeconomic characteristics, they see the change agents' promotion efforts motivate them much more from their perspective to adopt E-HRM applications.
 - Concerning the government policies and support, they see the attitude of government toward technology is more positive for their company to adopt E-HRM.
7. The type of business variable was not found to be important to differentiate between the two groups concerning their adoption or implementation of E-HRM technology.
8. Government support and policies were not considered to be important to differentiate between the two groups concerning their adoption or implementation of E-HRM technology. This might be attributed either to insufficient policies and support to motivate companies to adopt E-HRM applications or unawareness of respondents to these policies.

Implications and Recommendations

According to the previously presented results and analysis, the researchers could recommend the following whether the companies intend to enhance their level of implementation of E-HRM practice or intend to adopt it:

1. The improvement of the implementation level of E-HRM practice requires special emphasis on a number of the company's internal characteristics. For example, the top management should devote more human and financial resources to improve the level of involvement in E-HRM practice
2. For potential adopters of E-HRM, management should match its company's profile with the profile of those already practicing E-HRM. This will help the management to identify and implement the required changes within their organization.
3. As for the role of E-HRM in the future of HRM, we would argue that E-HRM is a tool that can facilitate the transition from an administrative to a more strategic role for HRM, enabling it

to improve the quality of its services. Within this conclusion, E-HRM adoption and use can be facilitated through using an organizational culture, which facilitates the integration of technology in organizational processes and functions and promotes the collaboration between different departments such as HR and IT, in order to adopt this change. In addition, employees' IT skills and attitudes play a crucial role in the above-mentioned integration. So, HRM needs to invest in supporting people to develop the necessary skills and attitudes in order to actively participate and use the new services. It also needs to invest in communicating the benefits of these services, in order to eliminate any resistance or reluctance to use the new services.

4. To enhance the transformation of traditional HRM practices to E-HRM, the change agent (e.g. government) has an important role to play. The provision of financial assistance, infrastructure facilities and support services by the government is very much encouraged.

5. More aggressive promotional efforts could be undertaken to encourage companies to participate in training programs that are aligned with the adoption of E-HRM applications. The unions or Industry or Commercial Chambers can enhance their support by encouraging the participation of more companies in conferences on HR issues to keep up with current trends.

References:

- Adamson, L. & Zampetti, R. (2001). *Web-based Manager Self-Service: Adding Value to the Work*. Web-Based Human Resources, McGraw-Hill, New York.
- Alleyne, C. (2003). “The Impact of the Use of HR Internet Applications on Manager’s Satisfaction with the HR Function”, unpublished PhD dissertation, Cranfield University, Cranfield.
- Alleyne, C. (2007). Using the HR Intranet: An Exploratory Analysis of its Impact on Managerial Satisfaction with the HR Function, *Personnel Review*, and Vol. 36, and No.2 pp 295-236.
- Ball, K.S. (2001). “The use of human resource information systems: a survey”, *Personnel Review*, Vol. 30 No. 6, pp. 677-93.
- Barney, J. and Wright, P. (1998). on *Becoming a Strategic Partner: The Role of HR in Gaining Competitive Advantage*. *Human resource management*, 37 (1).
- Beatty, A. (2001), “A Framework for Transforming your HR Function”, in Walker, A. (Ed.), *Web-Based Human Resources*, McGraw-Hill, New York, NY, pp. 150-72.
- Bernardin, J. (1989). Innovative approaches to personnel selection and performance appraisal. *Journal of Management Systems*, 1, 1, 25-36.
- Beveren J. & Thmpson, H. (2002) *The Use of Electronic Commerce by SME in Victoria , Australia* *Journal of Small Business Management* Vo. 40 3) 250-253
- Bontis, N., Fearon, M. and Hishon, M. (2003). “The E-Flow Audit: an Evaluation of knowledge Flow within and Outside a High-Tech Firm”, *Journal of Knowledge Management*, Vol. 7 No. 1, pp. 6-19.
- Byars, Lloyd L. & Rue, Leslie W. (2004). *Human Resource Management*, 7e. The McGraw-Hill Companies.
- CedarCrestone. (2005). *The CedarCrestone 2005 Workforce Technologies and Service Delivery Approaches Survey*, 8th Annual Edition influence of Internet and Information Technology on Work and Human Resource Management, 2003 survey, Peter Baloh and Peter Trackmen.
- Chapman, D.S., & Webster, J. (2003). The Use of Technologies in the Recruiting, Screening, and Selection Processes For Job Candidates. *International Journal of Selection and Assessment*, 11(2/3), 113-120.
- Chong, A. Ooh, K, Lin B. and Raman, M (2009). Factors Affecting the adoption Level of C-Commerce: An Empirical Study, *Journal of Computer Information System*, Vol. 7 pp 11-23.

- Clark, T Grant D. Hejijtes M. (2000). Researching Comparative and International Human Resource Management , International Studied Management and Organization 29, viol.4 6-23.
- Cronina, B. Ray Morath Pat Curtina and Michael Heil. (2006). , Human Resource Management Review, Volume 16, Issue 3, September, Pages 416-430.
- Drucker, P. (2001). The Essential Drucker. Oxford, UK: Butterworh-Heinemann
- E.W.T. Ngai and F.K.T. Wat (2004). Human Resource Information Systems: a Review and Empirical Analysis, Personnel Review, Vol. 35 No. 3, 2006 pp. 297-314.
- Ezzamel ,M , Lilley,,S., Wilkinson,A., Willmott , H. (1996). Practices and Practicalities In Human Resource Management¹ Human Resource Management Journal, Volume 6, Issue 1, pages 63–80, .
- Floyd, S. W. and Lane, P. J. (2000). “Strategizing Throughout the Organization: Managing Role Conflict in Strategic Renewal,” Academy of Management Review, 25: 1, 154-177.
- Galanaki, E. (2002).The decision to recruit online: a descriptive study. Career Development International, 7 (4), 243-
<http://www.ituarabic.org/hresources/15thHRMeeting/Documents/Doc10-EHR.doc>
- Haines, V. Y. & Petit. A. (1997). Conditions for Successful Human Resource Information Systems. Human Resource Management, 36(2), 261-275.
- Hair, R.E. Anderson, R.L. Tathama and Black, W. (1998). Multivariate Data Analysis, 5th ed. Prentice Hall, New Jersey.
- Heery, E., Noon, M. (2001). Dictionary of Human Resource Management. Oxford University Press.
- Jeyaraj, A., Rottman, J. W. and Lacity, M. C. (2006). “A Review of the Predictors, Linkages and Biases in IT Innovation Adoption Research,” Journal of Information Technology (21:1), 1-23.
- Junaid, Z Muhammad & Shaukat, Norazuwa Mat. (2010). An Analysis of E-Human Resource Management Practices: A Case Study of State Bank of Pakistan, European Journal of Social Sciences – Volume 15, Number 1.
- Keim, T. and Weitzel, T. (2008). “An Adoption and Diffusion Perspective on HRIS Usage”, in Torres-Corronas, T. and Arias-Oliva, M. (Eds), Encyclopedia of Human Resource Information Systems, IGI Global, Hershey, PA, pp. 18-23.

- Kovach, K.A. and Cathcart, C.E. Jr (1999). “Human Resource Information Systems (HRIS): Providing Business with Rapid Data Access, Information Exchange and Strategic Advantage”, *Public Personnel Management*, Vol. 28 No. 2, pp. 275-81.
- Kovach, K.A., A.A. Hughes, P. Fagan and P.G. Maggitti. (2002). *Administrative and Strategic Advantages of HRIS*. *Employment Relations Today*, 29: 43-48.
- Lai Wan Hooi. (2006). *Implementing e-HRM: The Readiness of Small and Medium Sized Manufacturing Companies in Malaysia*, *Asia Pacific Business Review*, Volume <http://www.informaworld.com/smpp/title%7Edb=all%7Econtent=t713634263%7Etab=issueslist%7Ebranches=12-v12>, Issue 4, pp. 465 – 480.
- Lau, G. and Hooper, V. (2008). “Adoption of E-HRM in Large New Zealand Organizations”, in Torres-Corronas, T. and Arias-Oliva, M. (Eds), *Encyclopedia of Human Resource Information Systems*, IGI Global, Hershey, PA, pp. 31-41.
- Lee, I. (2005). *The Evolution of E-recruiting: a Content Analysis of Fortune 100 Career Websites*. *Journal of Electronic Commerce in Organizations*, 3, 57-68.
- Lin, C (1997). *Human Resource Information Systems: Implementation in Taiwan*, *Research and Practice in Human Resource Management*, 5, (1), pp. 57–72.
- Lin, Y.Y. (1997). *Human resource management in Taiwan: A Future Perspective*, *International Journal of Human Resource Management*, 8(1), 29-43.
- Martin, G., Reddington, M. and Kneafsey, M.B. (2009). “Web 2.0 and Human Resources: ‘groundswell’ or hype?” *Research Report*, Chartered Institute of Personnel and Development, London. *Public Service Commission of Kenya: Strategic Plan; 2004-2009*.
- Morgeson, F., Delany-Klinger, K., Mayfield, M., Ferrara, P., & Campion, M. (2004). *Self-Presentation Processes in job Analysis: A Field Experiment Investigating Inflation in Abilities, Tasks, and Competencies*. *Journal of Applied Psychology*, 89(4), 674–686.
- Mumford, A. (2003). *Learning Styles in E-learning*, Chartered Institute of Personnel and Development, available at: [www.cipd.co/ .uk/subjects /lrnanddev/elearning/l/inel. Htm? IsSrChRes ¼ 1](http://www.cipd.co.uk/subjects/lrnanddev/elearning/l/inel.htm?IsSrChRes¼1) (retrieved on 3/2/2010).
- Meade, J. (2000). “Web-Based HRIS Meets Multiple Needs”, *HR Magazine*, August, pp. 129-33.
- Nah, F.F.-H., Lau, J.L.-S., & Kuang, J. (2001). *Critical Factors for Successful Implementation of Enterprise Systems*. *Business Process Management Journal*, 7 (2), 285-96.

Panayotopoulou, L. Maria Vakola and Eleanna Galanaki. (2007). E-HR Adoption and the Role of HRM: Evidence from Greece, *Personnel Review* Vol. 36 No. 2, pp. 277-294.

Peter Baloh and Peter Trkman. (2003). Influence of Internet and Information Technology on Work and Human Res Informing science, [/www.informingscience.org/proceedings/IS2003Proceedings/docs/071Baloh.pdf](http://www.informingscience.org/proceedings/IS2003Proceedings/docs/071Baloh.pdf) Public sector use of technology in managing human resources.

Remus, U., (2007). Critical success factors for implementing enterprise portals: A comparison with ERP implementations. *Business Process Management Journal*, 15, 538-552.

Roehling, M.V., Boswell, W.R., Caligiuri, P., Feldman, D., Graham, M.E., Guthrie, J.P., Morishima, M. and Tansky, J.W. (2005). “The Future of HR Management: Research Needs and Directions”, *Human Resource Management*, Vol. 44 No. 2, pp. 207-12.

Rogers, E.M. (1995). *Diffusion of Innovations*, the Free Press., New York.

Tornatzky, L. and Fleischer, M. (1990). *The Processes of Technological Innovation*. Lexington Books, New York.

Rue, H.J.M., Bondarouk, T.V. and Looise, J.C. (2004). E-HRM: Innovation or Irritation? An Exploration of Web-Based Human Resource Management in Large Companies, *Purdue University Press/Lemma Publishers*, Utrecht.

Ruel, Huub and Bondarouk, Tatyana, "E-HRM: Innovation or Irritation" (2004). *ECIS 2004 Proceedings*. Paper 110. <http://aisel.aisnet.org/ecis2004/110>.

Ruta, C.D. (2005). “The Application of Change Management Theory to the HR Portal Implementation in subsidiaries of multinational corporations”, *Human Resource Management*, Vol. 35, p. 53.

Sambrook, S.E-l.e. (2003). “E-learning in Small Organizations”, *Education Training*, Vol. 45 Nos 8/9, pp. 506-16.

Stanton, J. M. (1999). Validity and Related Issues in Web-based hiring. *The Industrial Psychologist (TIP)*, 36, 69–77.

Strohmeier, S. (2006). “Coping with Contradictory Consequences of E-HRM”, *Proceedings of the First European Academic Workshop on Electronic Human Resource Management*, Enschede, the Netherlands, October 25-26.

- Teo, T. S. H., Soon, L. G. & Fedric, S. A. (2001). Adoption and Impact of Human Resource Information Systems (HRIS), *Research and Practice in Human Resource Management*, 9(1), 101-117.
- Tsui A.S. (1987). Defining the Practice and Effectiveness of the HR Department a Multi – Consistency proved Human Resources Management Vol.26. No.1 35-64.
- Ulrich, D. (2000). “From e-Business to e-HR”, *Human Resource Planning*, Vol. 23 No. 2, pp. 12-21.
- Urbano D& Yordanova D. (2008). Determinants of the adoption of HRM practices in tourism SMEs in Spain: an exploratory study Springer-Verlag, 2:167–185.
- Walker, A.J. (2001). “How the Web and other Key Trends are Changing Human Resources”, in Walker, A. (Ed.), *Web-Based Human Resources*, McGraw-Hill, pp. xiii-xxviii.
- Wright, P. M. & Dyer, L. (2000). *People in the E-Business: New challenges, new Solutions*.
- Yeh, C. Y. (1997). Human Resource Information Systems: Implementation in Taiwan. *Research & Practice in Human Resource Management*, 5(1), 57-72.
- Zampetti, R., Adamson, L. (2001). "Web-based Employee Self-service: a Win-win Proposition for Organizations and Employees", in Walker, A. (Eds), *Web-Based Human Resources*, McGraw-Hill, New York, NY, pp.15-23.