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A Measure of Impact of Electronic Human Resource Management (e-HRM) On Organization Performance: The Mediating Effects Of Competitive Advantage: An Exploratory Factor Analysis

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ABSTRACT

This study talks about the relationship of organization performance and electronic human resources management. The subject of organization performance a common theme in literature where there are many pieces of research that based on their various analyzes offers a range of assertions (Aleali & Qasim, 2011). Make an analysis of Exploratory factors (EFA) is for tool validation used in this research it is one of the objectives of the research. The questionnaire was taken the user in this study of the eight studies, namely: Al-Awadh, M. A. (1996), Saleh, M. M. (2014). Al.Hmouze, L.H. (2016), Atallah, A. A. (2016), Bharti, P. (2015). Al Shobaki, M. J. et al (2017), and Stone, D. L., et a l (2015), and Quansah, N. (2013). It consists of three constructs and five-component 100 questionnaires collected after distributed, construct separately EFA was done for each. The results show that all of the three constructs have three component or dimension, The factor loading for every item in each construct is> 0.6, The Kaiser-Meyer-Olkin values were above the recommended threshold of 0.6 (Kaiser, 1974) and Bartlett's Test of Sphericity reached statistical significance indicating the correlations were sufficiently large for exploratory factor analysis. All the Cronbach's alpha values were above the threshold value of 0.70, this means the items All are reliable in this study. The found a valid and reliable instrument for measuring in this study for the activity of organizational performance components in the e-HRM.

Keywords: *organisational performance, Competitive advantage, e-HRM*

I. INTRODUCTION

To gain sustainability of organisation performance, it is achievable by both short term and long term measurable outcomes. These outcomes include financial, human/social and environmental outcomes. Anyhow, the focus should be the ways these outcomes contribute to the long-term economic survival and adaptation of the organisation. Anastasia (2008) conducted the study how to measure the impact of e-HRM on organizational performance, observed that there is a serious limitation that

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literature pointed out the link between e-HRM and organizational performance as a "black box", i.e., lack of clarity, regarding what exactly leads to what.

The HRM policies managing systems may influence organisational performance indirectly through e-HRM outcomes. However, a direct effect of e-HRM policies on organisational performance may also be present (Sabarwal, 2014). Organizational Performance was defined as the Based on a combination of factors business, including work processes, group/team interaction and communication, and climate that promotes innovation, leadership, creativity, corporate cultural policies, and loyalty (Khan et al., 2014). the define of E-HRM is the (planning, implementation and) application of information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR activities Strohmeier, S. (2007).the Competitive Advantage is work on development of organization to have defendable position in the market against its rivals (Li et al; 2007).

II. MATERIALS AND METHOD

Self-administered survey is Data collection in this study. The questionnaire was taken the user in this study of the six studies, namely: Al-Awadh, M. A. (1996), Saleh, M. M. (2014). Al.Hmouze, L.H.(2016), Atallah, A. A.(2016), Bharti, P. (2015). Stone, D. L., et a l(2015), and Quansah, N. (2013). Al Shobaki, M. J. et al (2017).

The study is designed to validate the questionnaire to verify the main study will be achieved smoothly with no problematic issues. A survey was carried out by using a structured questionnaire, with a sample of 100 participants. The questionnaire was prepared based on previous literature connected to the constructs involved in the proposed conceptual model. A total of 49 items for three constructs, and five questions for demographics variables were asked. Participants were asked to indicate their agreed or disagreed for each statement using the ten-point Likert scale ranging from "1 strongly disagree SD" to "10 strongly agree SA". As stated by Awang et al., (2016) that 10 points of Likert scale are more effective than 5 points of Likert scale in operating of the measurement model (Awang et al., 2016).

In order to assert the validity of the questionnaire to measure what want be measured, it should be pretested on a small sample of the same target population who have same characteristics (Hair et al., 2003). Instead of simply filling in the questionnaire, the participants are asked to give feedback to the items, overall look of the questionnaire, wordings and design. The purpose of this pre-test type is to reveal if the survey is understandable or not. Another type of pre-test called non-collaborative pre-test, which the participants do not aware it is a pre-test and fill in the questionnaire as if it is true, this type of pre-test allows the researcher to control the choice of analysis and the standardization of the questionnaire (Cooper and Schindler, 2011).

Issa and Michael (1995) suggested that a sample size for pre-test between 10 to 30 are appropriate and has some benefits. Before collecting the data, the survey instrument has been pre-tested for content validity as suggested by Dillman (2001). A panel of academicians in faculty of business and management in Al-Hussein Bin Talal University have reviewed the items for content validity and clarity. Following their comments, redundant and ambiguous items were either deleted or rewritten. Their comments were as follows, the question belongs to dimension and measures what needs to be measured, and possible to add the role of e-HRM in speed of operations.

The survey questionnaire was self-administered delivered to the sample. Data from 100 valid questionnaires were collected for the pilot test. It was filtering and screened for completeness and those were not completed and given extreme values (which indicates they weren't serious in filling the questionnaire) were eliminated.

Simple random sampling technique was used in the pilot study after determining the sample frame. The advantages of this sampling are avoiding the bias and achieve subjectivity in collecting the data. The sample of the pilot study cannot be considered as representative of the whole population of the study; moreover, the findings of the pilot study will not be used in the field study to test the conceptual framework and to deduce conclusions.

III. Exploratory Factor Analysis (EFA)

In multivariate statistics, Exploratory Factor Analysis (EFA) is a statistical technique used to detect the underlying structure of a number of variables. It is a method within factor analysis which total objective is to determine the basic relationships between intended measured variables (Norris and Lecavalier, 2010). It is mainly utilized by researchers when developing instruments (group of questions used to measure a certain topic) and works to state a group of latent constructs, it is advised when the researcher has no previous hypothesis about factors of measured variables (Fabrigar et al.,1999). EFA is employed to obtain data summarizing and filtering. Data summarizing is usually used to recognize appropriate framework of the study variables under the accurate factors, whereas data reduction is a statistical method to exclude uncorrelated items and decrease the number of items within each variable (Hair et al., 2006).

Kaiser-Meyer-Olkin (KMO) and Bartlett's test were utilized in this study; the KMO measure of sampling adequacy (MSA) is a statistic that indicates the proportion of variance in the variables that might be caused by underlying factors. High values (close to 1.0) generally indicate that a factor analysis may be useful with the data. If the value is less than 0.50, the findings of the factor analysis won't be useful. Bartlett's test of Sphericity examined the hypothesis that your correlation matrix is an identity matrix, which would indicate that your variables are unrelated and therefore unsuitable for structure detection. Small values (less than 0.05) of the significance level indicate that a factor analysis may be useful with your data (Hair, 2010). The KMO ranges from 0 to 1, but the generally acceptable index is over 0.6 (Awang, 2012, 2015). Total variance explained was also conducted as an extraction process of items to reduce them into a manageable number before further analysis. In this process, items with eigenvalues exceeding one are extracted into different components. Additionally, the component matrix and rotated were conducted and only items with a factor loading value above 0.6 were considered for further analysis (Awang, 2012 and Hoque et al., 2016). As well data normality was carried out, in the process of the EFA reliability analysis for the measuring items was conducted and only item with Cronbach alpha 0.7 and above was acceptable for further analysis (Sekaran, 2003 and Nunnally, 1978).

IV. Descriptive Statistics

The data in the descriptive statistics described trends in the respondents filling the questionnaire Bryman and Bell, (2007). If the results of standard deviation are between 0.5 and 1 then the answers will consider around the mean, but if the answers are above 1, this indicates significant variations in the respondents' answers (Sekran and Bougie, 2009). The standard deviations of all items are above 2, which indicate that the answers vary a lot and they aren't consistent around the mean. Table 2 below presents also skewness and kurtosis for all items. Data normality for each construct was tested; the tests examined each variable to identify deviation from normality. Awang, (2015) stated that, the normality assessment can be carried out through the measure of skewness for each item. The absolute value of skewness 1.0 or lower indicates that the data in question is normally distributed.

Table 2: Descriptive Statistics

Item	No	Mean	Std. Deviation	Skewness	Kurtosis
Q1	00	5.78	2.631	-.214	-.603
Q2	00	5.87	2.509	-.410	-.427
Q3	00	6.02	2.546	-.255	-.655
Q4	00	6.01	2.805	-.344	-.888
Q5	00	5.87	2.448	-.289	-.441
Q6	00	5.75	2.548	-.286	-.641
Q7	00	5.84	2.553	-.178	-.689
Q8	00	5.24	2.590	.114	-.806
Q9	00	5.85	2.634	-.203	-.886
Q10	00	5.67	2.598	-.214	-.910

Q11	00	5.45	2.524	.035	-.800	
Q12	00	5.32	2.651	-.048	-.902	
Q13	00	5.43	2.660	-.101	-1.052	
Q14	00	5.23	2.613	-.094	-.919	
Q15	00	5.55	2.657	-.210	-.895	
Q16	00	5.68	2.582	-.238	-.748	
Q17	00	5.81	2.537	-.377	-.586	
Q18	00	5.58	2.633	-.138	-.760	
Q19	00	5.36	2.721	-.137	-.916	
Q20	00	5.45	2.488	-.116	-.695	
Q21	00	5.46	2.552	-.012	-.808	
Q22	00	5.59	2.474	-.177	-.644	
Q23	00	5.23	2.411	-.047	-.899	
Q24	00	4.78	2.600	.141	-.963	
Q25	00	4.74	2.639	.167	-1.019	

Q26	00	4.55	2.687	.219	-1.026	
Q27	00	4.60	2.857	.273	-1.161	
Q28	00	4.44	2.826	.329	-1.104	
Q29	00	4.84	2.806	.176	-1.019	
Q30	00	4.89	2.711	.193	-.967	
Q31	00	4.94	2.785	.092	-1.096	
Q32	00	4.95	2.657	.177	-.907	
Q33	00	5.64	2.721	-.164	-.927	
Q34	00	4.61	2.514	.212	-.675	
Q35	00	4.84	2.620	.140	-.960	
Q36	00	4.46	2.645	.380	-.789	
Q37	00	4.71	2.479	.247	-.728	
Q38	00	4.74	2.545	.208	-.886	
Q39	00	4.02	2.539	.533	-.660	
Q40	00	4.40	2.655	.400	-.887	

Q41	00	4.36	2.615	.357	-.843
Q42	00	4.40	2.429	.271	-.884
Q43	00	4.38	2.554	.203	-.959
Q44	00	5.25	2.739	-.048	-.873
Q45	00	5.47	2.683	-.040	-.925
Q46	00	4.95	2.672	.301	-.815
Q47	00	5.33	2.559	.096	-.724
Q48	00	5.31	2.569	.140	-.565
Q49	00	5.55	2.805	.060	-.915

V. Exploratory Factor Analysis (EFA) for independent variable (EHRM)

Table 3: KMO and Bartlett's Test of Sphericity for each construct

Constructs	Number of components	Number of item	KMO	Approx. Chi-Square	Degree of freedom	Sig.
EHRM	3	25	0.916	2781.300	300	0.000
Competitive advantage	1	6	0.913	714.175	15	0.000
Organization performance	1	13	0.928	1366.259	78	0.000

Different items were subjected to principal components to assess the dimensionality of the data. The Kaiser-Meyer-Olkin values were above the recommended threshold of 0.6 (Kaiser, 1974) and the Bartlett's Test of Sphericity reached statistical significance indicating the correlations were sufficiently large for exploratory factor analysis. The KMO measures the sampling adequacy (which determines if the responses given with the sample are adequate or not). Kaiser, 1974 and Hoque et al., 2016 recommend 0.6 (value for KMO) as minimum (hardly accepted), values between 0.7-0.8 acceptable, and values above 0.9 are superb. Bartlett's test is another indication of the strength of the relationship among variables. Table 3 above presents the result of the Principal Component Analysis (PCA) with Varimax rotation for the items. The results indicate the Bartlett's Test of Sphericity for all constructs was significant at P-value <0.05 with various degree of freedom for each construct. The Chi-square of each construct varied from one another, whereby, the EHRM, competitive advantage and organization performance had 2781.300, 714.175 and 1366.259 correspondingly. However, the measure of sampling adequacy by Kaiser-Meyer-Olkin (KMO) for the construct is higher than the minimum value 0.60, whereas 0.916, 0.913 and 0.928 are KMO values for EHRM, competitive advantage and organization performance respectively. The results above proved that the KMO values were above the recommended value 0.60. Consequently, it is recommended that the data is appropriate to proceed with factor analysis process, since the values of the two measures (KMO and Bartlett's Test) were close to 1.0 and significance close to 0.0 respectively.

KMO guidelines: Kaiser (1974) says: » 0.90 marvelous » 0.80 meritorious » 0.70 middling » 0.60 mediocre » 0.50 miserable » below 0.50 unacceptable » above 0.60 acceptable (Tabachnick & Fidell ,2001).

Table 4: Total Variance Explained for EHRM **construct**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.974	59.894	59.894	14.974	59.894	59.894
2	1.982	7.927	67.821	1.982	7.927	67.821
3	1.506	6.024	73.845	1.506	6.024	73.845

Extraction Method: Principal Component Analysis.

The standards of extracted factors number depend on eigenvalue, variance percentage and factor significance, only factors with eigenvalue above 1 were significant, as well the account greater than 60% considered satisfactory. Three factors were extracted explaining 73.84% of its total variance. This was decided based on eigenvalues and cumulative variance. Factors were obliquely rotated using

Varimax rotation. Items that load on the Table 4 reveals the total variance explained. It shows the estimate of the total number of common factor, the eigenvalues correlated with the factor, the percentage of the total variance associated with the factor, and the cumulative percentage of total variance accounted for by the factor. Using the Kaiser (1970) criterion of retaining only function with eigenvalues of 1 or above. No absolute threshold has been adopted, for the social sciences a minimum of 60% cumulative variance is quite commonly accepted (Hair et al, 2006). The Table 4 above shows the actual factors that were extracted. If we look at the section labelled "Extraction Sums of Squared Loadings," it tells us only those factors that met cut-off criterion (extraction method). In this case, there are two factors with eigenvalues greater than 1.

Table 5: Rotated Component Matrix

	Component		
	1	2	3
L2	.816		
T4	.769		
T2	.747		
T3	.745		
L1	.738		
T1	.713		
C2	.691		
L3	.687		
T5	.646		
L5	.621		

C1	.621		
C3	.605		
L4			
S3		.840	
S4		.813	
S5		.795	
S2		.772	
S1		.692	
C5		.667	
C4			
R2			.874
R1			.801
R3			.783
R4			.766
R5			.677

The EFA results for EHRM construct in Table 5 indicates the items which have a factor loading above the recommended value of 0.60 and delete the less than 0.6, showing convergent and discriminant validity of the scales, interpreting that the these items are appropriate for further analysis. According to Hair et al., (1997) the factor loading of +/- 0.30 meet the minimal standard while loading of +/- 0.50 were considered significant. The Table 5 above also measured the validity of the items of the EHRM construct depicts that each items was appeared to have a value above benchmark (0.6).

VI. EFA for Competitive Advantage (mediator)

Table 6: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.086	84.771	84.771	5.086	84.771	84.771

Extraction Method: Principal Component Analysis.

Total variance explained shows the items with eigenvalue above 1.0 are extracted in one component (Pallant, 2007). As can we see, the output manifests that factor analysis has extracted into one component with total eigenvalue 5.086. This indicates that the items are grouped into one component and good for further analysis the total variance explained is 84.771%.

Table 7:

Component Matrix

	Component
	1
A5	.958
A2	.933
A4	.930

A3	.925
A6	.894
A1	.884

The Table 7 above explains the EFA outcomes for competitive advantage construct and indicates that most of items have a factor loading above the benchmark of 0.60, showing convergent and discriminant validity of the scales and no items should be excluded, inferring that most items are appropriate for further analysis. Only one component was extracted, the solution cannot be rotated.

VII. EFA for Organization Performance (dependent variable)

Table 8: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	.158	70.444	70.444	9.158	70.444	70.444

Extraction Method: Principal Component Analysis.

Total variance explained is a process of items to decrease them into a manageable number before doing a further analysis. In this process, items with eigenvalue exceeding 1 are extracted in certain components (Pallant, 2007). The outputs in Table 8 above uncover that factor analysis has extracted into one component with total eigenvalue 9.158. This means that the items are classified into one component and recommended for further analysis. The total variance explained is 70.444.

Table 9:

Component Matrix

	Component
	1
P5	.888
P7	.888
P9	.884
P4	.873
P3	.872
P2	.865
P12	.855
P10	.842
P1	.833
P11	.826
P13	.803
P6	.738
P8	.722

In the Table 9 above the EFA findings related to organization performance construct showed the items which have a factor loading above the required value of 0.60, showing convergent and discriminant validity of the scales, and the items that didn't achieve the required value have been deleted.

Table 10: Reliability Values

Construct	Component/s	Items per component	Cronbach's Alpha (above 0.7)	Status
EHRM	3	12;6;5 respectively	0.959; 0.939; 0.921 respectively	Reliable
Competitive advantage	1	6	0.963	Reliable
Organization performance	1	13	0.964	Reliable

Reliability refers to how free the scale is from random error and is frequently measured using a statistic known as Cronbach's alpha (α). It is a measure of internal consistency which means the degree to which items in your scale measure the same underlying attribute or construct. It ranges from 0 to 1 with higher values indicating high levels of reliability Nunnally, (1978). The Cronbach's alpha values for three EHRM components, competitive advantage and organization performance were 0.959; 0.939; 0.921; 0.963 and 0.964. All the Cronbach's alpha values were above the threshold value of 0.70 (Awang, 2015), meaning an acceptable internal consistency. From the results and analysis above, it seems the most items of each construct of the pilot study are reliable and considerable for further study.

Rule of thumb of Cronbach's alpha: Coefficient alpha range description from 0.8 to 0.95 is very good reliability, from 0.7 to 0.8 is good reliability, from 0.6 to 0.7 is fair reliability, < 0.6 is poor (Awang, 2015).

Table 11: items no before and after pilot study.

Construct	**Items before pilot study**	**Items after pilot study**	**No of items deleted**
EHRM	25	23	2
Competitive advantage	6	6	0
Organization performance	13	13	0
Total	44	42	2

Table 11 shows the number of items before and after the pilot study. For the EHRM construct there were 25 items before the pilot study. After the pilot study only 23 items were retained for the actual study, and two items only have been deleted due to its lower factor loading (< 0.6). The 13 items were relevant for the organization performance construct, indicated no items were deleted; all of them get required cut-off point. As well, the competitive advantage construct had 6 items before the pilot study and the same items remained after the pilot study.

VIII. CONCLUSION

In this study, validity and reliability for measurement were demonstrated effectiveness of e-HRM components in organization performance the effect of competitive advantage the mediator as a relationship between them. And through the above this instrument can be used in order to measure the effectiveness of electronic human resources management on the target organization from this study it was found that this study valid and reliable.

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