Adopting Factors of Electronic Human Resource Management: Evidence from Bangladesh

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***Abstract*— The incorporation of information technology (IT) instincts the legacy of human resource management (HRM) towards agile HRM. To achieve agility, this paper explores the factors or determinants inducing the organisation decisions to adopt electronic human resource management (e-HRM) in organisations of Bangladesh through structural equation modeling (SEM) of data science. To realize the influencing determinants, a research model was developed based on technology-organisation-environment (TOE) model. A total number of 320 respondents were participated from 48 organisations in Bangladesh using simple random sampling. The SEM results indicate that perceived compatibility, perceived cost, top management support, organisational culture, centralisation, IT vendor support, and government support have significant influence on management decision of e-HRM adoption. The applied implication of the findings and the scope of future studies are deliberated at the end of this paper.**

Keywords—electronic human resource management (e-HRM); Technology-Organisation-Environment (TOE); human resource information system (HRIS); influencing determinant

I. INTRODUCTION

Electronic human resource management (e-HRM) is a web based system that is developed to implement human resource (HR) policies, practices, and tactics to achieve the organisational goals [1]. Adopting e-HRM in organisation for agile management of human resources is an emerging trend in business, industrial and management domain. Generally, the greater part of e-HRM studies are on developed countries, while focuses on developing countries are scarce. However, comparatively a few studies have been examined on some developing countries, but there is an acute shortage of e-HRM research on South Asia, particularly in Bangladesh.

The prime objective of this study is detecting the most significant determinants of e-HRM adoption in the organisations of Bangladesh. Scholars have claimed that the weight of discovered determinants and the relative weight of every variable may change along with IT features and its setting. Also, researchers have exposed that the most results of IT innovation research are consistently inconsistent [2]. Hence, for a specific setting (e.g., socio-cultural and socio-economic environment of Bangladesh), it is very important to comprehend the potential determinants that influence decision of e-HRM adoption in the organisations. Therefore, TOE framework [3] based research model is developed and the determinants influencing the management decisions are analised through structural equation modeling (SEM) of data science to comprehend the most influential latent variables.

The remaining part of the paper is organised as follows. Section II describes the determinants of e-HRM adoption based on technological, organisational, and environmental (TOE) model. The research model and a series of testable hypotheses are presented in section III. Section IV includes the methodology of the study. The data analysis along with interpretation is in section V. A brief discussion on findings is provided in section VI, before concluding the paper in section VII.

II. LITERATURE REVIEW

In this section, we scrutinised selected determinants for adopting e-HRM that occupied from IT innovation literature and theories.

The determinant 'relative advantage' is the trust of assured assistances in performance perfection, and savings in time and effort, costs reduction or in other means [1]. Researchers have revealed that the perceived advantage of e-HRM for HR department has a very positive association with the decision to adopt e-HRM in Singaporean firms [4]. However, Bian [5] has found insignificant influence of relative advantage on e-HRM adoption.

'Perceived compatibility' determinant is the degree to which the information system (IS) is supposed to be reliable with the potential users' existing beliefs and earlier practices [2]. Teo, Lim et al. [4] have stated that compatibility of the IT has a strong impact on e-HRM implementation. However, some scholars have indicated that compatibility does not affect IT adoption [6-8].

'Perceived complexity' determinant is the degree to which an IS is supposed to be comparatively problematic to

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understand and use [4]. Al-Dmour [9] has found that complexity is a significant determinant for e-HRM implementation in Jordan. Conversely, Bian [5] has revealed that perceived complexity is an insignificant determinant for e-HRM adoption decision in china's firms.

Researchers reported that IT is quickly adopted and implemented in an organisation if the perceived cost is less [10]. Ghobakhloo, Arias-Aranda [11] have revealed that cost is the only cause for non-adoption of e-SCM (electronic supply chain management). In contrast, the cost of EC (e-Commerce) adoption does not appear as a vital player in the adoption of EC by Korean SMEs [12].

The 'top management support' determinant is defined as the willingness of the senior executives of an organisation to allocate necessary resources for successful adoption of IT/IS project [2]. Scholars have reported that top management support is only important determinants among organisational determinants for adoption and diffusion of e-HRM [4]. On the contrary, some researchers argued that top management support is an insignificant determinant for e-HRM implementation [13].

The determinant 'organisational culture' comprises shared attitudes, customs and norms, beliefs and values [9]. Many scholars have highlighted the variable as a significant determinant for IS /IT adoption [14, 15]. In contrast with the said studies, organisational culture may be less of a vital differentiator between non-adopters and adopters of a new IS [16].

In decision-making, centralisation approach may diminish conflict among organisational units and foster IT adoption process [9]. Based on an extensive survey of North American firms, Ranganathan, Teo [17] have exposed that centralisation is a significant drivers of Web technology integration in the SCM function. On the other hand, Al-Dmour [9] has revealed that centralisation is not a vital determinant for e-HRM implementation in Jordanian firms.

'Industry pressure' determinant denotes to the degree of force that a firm senses from competitors within the industry [4]. Ghobakhloo, Arias-Aranda [11] have suggested that industry pressure is a cause of IT strategies in organisations. Some have researchers confront its significance in ITs adoption [4, 8].

'IT vendor' determinant denotes to suppliers of IT allied products and services to other companies [6]. Al-Dmour has [9] claimed that availability of IT suppliers and their support is the most significant determinant for adopting e-HRM. In contrary, Ahmadi et al. [6] did not found adequate proof that vendor support was important determinant for adopting IS applications in Malaysian hospitals.

The determinant 'government support' for IT adoption includes rules and regulations, tax incentives, national IT infrastructure, IT training and workshops and other activities [7]. Al-Dmour [9] has reported that government regulation and policy is a vital predictor to adopt e-HRM. However, some scholars have argued that the influence of government support for advanced information technology is insignificant [7, 19].

III. Conceptual Framework

A proposed conceptual model, based on TOE framework, of e-HRM adoption in organisations of Bangladesh is depicted in Fig.1. According to the TOE model, the potential influencing determinants are divided into organisational context, technological context, and environmental context. The conceptual model comprises of ten selected independent variables such as relative advantage [4, 5], perceived compatibility [6, 7], perceived complexity [4, 5], perceived cost [8, 11], top management support [6, 13], organisational culture [14, 15], centralisation [9, 17], industry pressure [5, 11], IT vendor support [6, 18], and Government support [7, 19] along with a dependent variable- e-HRM adoption.

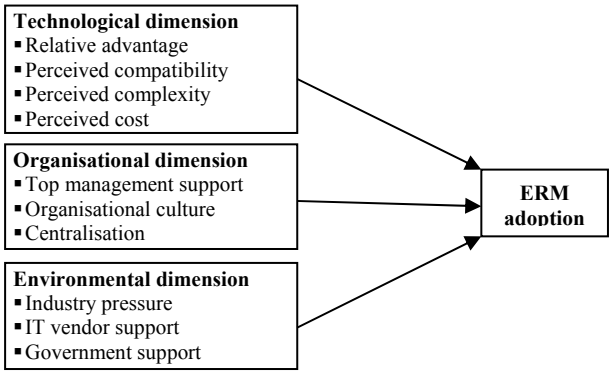

Fig. 1. Conceptual Framework of E-HRM Adoption

Therefore, the following hypotheses were described based on proposed research model:

H1: Relative advantage significantly predicted e-HRM adoption.
H2: Perceived compatibility significantly predicted e-HRM adoption.
H3: Perceived complexity significantly predicted e-HRM adoption.
H4: Perceived cost significantly predicted e-HRM adoption.
H5: Top management support significantly predicted e-HRM adoption.
H6: Organisational culture significantly predicted e-HRM adoption.
H7: Centralisation significantly predicted e-HRM adoption.
H8: Industry pressure significantly predicted e-HRM adoption.
H9: IT vendor support significantly predicted e-HRM adoption.
H10: Government support significantly predicted e-HRM adoption.

IV. Methodology of the Study

Four hundred questionnaires were sent to IT experts and HR managers of sample organisations in Bangladesh. The valid questionnaires were 320, and the response rate was 80.0% applying non-probability sampling technique. For data collection, a pre-tested and close-ended questionnaire was used adapting seven-point Likert scale. The survey period was 3-months (January 2014 – March 2014). To analise the collected data, descriptive statistics and Structural Equation Modeling (SEM) were used as statistical and data science tools. SEM analysis was employed with the 2-step methodology suggested by Hair, Black [20]. Initially, each latent variable was modeled as a separate measurement model. Finally, a structural model was analised.

V. Data Analysis and Findings

A. Sample Characteristics

A total sample of 48 firms from different sectors is considered in this paper. A 25% of these were from

education sector. The numbers of firms from the banking sector were 25.8%. However, 27.4% are manufacturing firms. The remaining 5.5% and 16.3% of the total firms were from logistics, transportation and telecommunication sector respectively. Refer to organisation size; there were 14 firms (29.17%) which have staff not more than 500. The quantity of companies with more than 500 employees is 70.83% (34 firms).

B. Validity and Reliability Analysis

Two of the most widely accepted forms of validity are discriminant and convergent validity. In table I, Average shared squared variance (ASV) and maximum shared squared variance (MSV) for all the dimensions of the constructs of this study is less than average variance extracted (AVE). Hence, this provides enough evidence that all of the 11 constructs (both independent and dependent variables) used in this paper are distinct and thus discriminant validity is established [20].

TABLE I. CONSTRUCT VALIDITY

Construct	CR	AVE	MSV	ASV
Relative advantage	0.871	0.693	0.342	0.162
Perceived compatibility	0.873	0.634	0.507	0.253
Perceived complexity	0.877	0.640	0.487	0.273
Perceived cost	0.909	0.715	0.398	0.143
Top management support	0.900	0.643	0.315	0.179
Organisational culture	0.875	0.690	0.238	0.099
Centralisation	0.917	0.637	0.429	0.490
Industry pressure	0.878	0.645	0.296	0.158
IT vendor support	0.897	0.685	0.274	0.157
Government support	0.884	0.561	0.472	0.390
e-HRM adoption	0.923	0.635	0.469	0.404

Again, the composite reliability (CR) for all the dimensions of the constructs of this study is greater than AVE. Besides, the AVE for all the dimensions is greater than 0.5. Hence there is enough evidence that all the 10 constructs used in this study exhibit convergent validity. In addition to this, CR of all the dimensions in the measurement model is greater than 0.7 while factor loadings of all the items are above the cut-off point of 0.5. This provides enough confirmation of uni-dimensionality of the constructs of interest and reliability of the measures used in this paper [20].

C. Results

TABLE II. SUMMARY OF MEASUREMENT MODEL VALIDATION OF LATENT CONSTRUCTS

Variables	CFI	RMSEA	CMIN/DF
Relative advantage	0.995	0.069	1.517
Perceived compatibility	1.000	0.000	0.701
Perceived complexity	1.000	0.010	1.012
Perceived cost	0.999	0.036	1.144
Top management support	0.997	0.042	1.191
Organisational culture	1.000	0.013	1.018
Centralisation	0.993	0.056	1.805
Industry pressure	1.000	0.021	1.049
IT vendor support	0.994	0.045	1.735
Government support	0.970	0.00	0.270
e-HRM adoption	0.991	0.058	1.376

The Table II shows the summary of results of measurement model validation of 11 constructs. Based on acceptable model fit standard, the CFI (Comparative Fit Index) value of all construct is greater than 0.9. The RMSEA (Root Mean Square Error of Approximation) value of all construct is lower than 0.08. For Ratio Chi-Square/df, the desired level as low as 3 also achieved for all 11 constructs. Generally, these statistics have given evidence of a reasonably good fit of data [20].

The structural model shows the association between 10 independent variables and the dependent variable- e-HRM adoption. Based on the results of the SEM fit indices, the model presented an accepted fit (Table III).

TABLE III. MODEL FIT SUMMARY OF STRUCTURAL MODEL

	Observed Value	Acceptable Fit Standard
Statistical Test:		
CMIN (Chi-Square)	1694.879	
DF	1206	
CMIN/DF	1.405	Less than 3 and p < 0.01
Fit Indices:		
CFI	0.901	0.90 or larger
RMSEA	0.061	Less than 0.08

Among the 10 potential determinants, it was observed that there were significant relationship between 7 determinants and e-HRM adoption (Table IV). These 7 variables are perceived compatibility, perceived cost, top management support, organisational culture, centralisation, government support, and IT vendor support. So, 7 hypotheses were accepted among 10 hypotheses on the predictors of e-HRM adoption.

TABLE IV. SUMMARY OF STANDARISED REGRESSION ANALYSIS

Relationship	Estimates	Decision
e-HRM adoption ← Relative advantage	0.245	Rejected H1
e-HRM adoption ← Perceived compatibility	0.062*	Accepted H2
e-HRM adoption ← Perceived complexity	0.103*	Rejected H3
e-HRM adoption ← Perceived cost	-0.166***	Accepted H4
e-HRM adoption ← Top management support	0.112***	Accepted H5
e-HRM adoption ← Organisational culture	0.162**	Accepted H6
e-HRM adoption ← Centralisation	0.042*	Accepted H7
e-HRM adoption ← Industry pressure	0.266	Rejected H8
e-HRM adoption ← IT vendor support	.0678**	Accepted H9
e-HRM adoption ← Government support	0.241	Accepted H10

*$P < 0.05$ level, **$P < 0.01$ level, ***$P < 0.001$ level of Significance

VI. DISCUSSIONS

The results of the standardised regression analysis demonstrate that five variables – perceived compatibility, perceived cost, organisational culture, top management support, centralisation, IT vendor support, and government support, are significant variables that inducing e-HRM adoption in organisations of Bangladesh.

Relative advantage – The result shows that e-HRM adoption is not influenced by relative advantage. A possible explanation could be that organisations have realised the benefits of e-HRM, but there are others issues such as financial and infrastructural lacking that hinders to adopt the system. This result supports the study [5, 13] while rejects findings of [4, 9]. Hence, hypothesis 1 is not supported.

Perceived compatibility – It was found to have impact on management decision to adopt e-HRM. So, for strategic HRM practice, it requires the e-HRM to be compatible with the existing systems whinin the firms. This result complies

with state-of-the-art [4, 5, 11]. Hence, hypothesis 2 is supported.

Perceived complexity – Perceived complexity of e-HRM was not revealed to be a significant determinant for e-HRM adoption decision. A possible reason would be that practice with other systems available in the organisation may decrease the perceived complexity of e-HRM. The results are congruent with the past researches of Teo, Lim et al. [4] and Bian [5]. Therefore, hypothesis 3 is not supported.

Perceived cost – Perceived cost is identified as a significant determinant inducing the decision to adopt e-HRM. This result is consistent with Ghobakhloo, Arias-Aranda [12]. Hypothesis 4 is thus supported.

Top management support – This study finds that senior executives support is vital to overcome possible internal resistance to the adoption of e-HRM, which is also supported by [1, 4]. Thus hypothesis 5 is supported.

Organisational culture – In this study, organisational culture is the significant determinant for e-HRM adoption. This indicates that organisations that have strong organisational culture are more likely to adopt e-HRM. This result supports the study [23, 24] while rejects findings of [25]. Thus, hypothesis 6 is supported.

Centralisation– Centralisation is also identified as a significant determinant inducing the decision to adopt e-HRM. This result is consistent with earlier studies [9, 14]. Hypothesis 7 is thus supported.

Industry pressure –It was not revealed to be a significant determinant inducing the adoption of e-HRM that is similar to the findings of past studies [7, 15]. Thus, hypothesis 8 is not supported.

IT vendor support – It is identified as a significant determinant inducing the decision to adopt e-HRM. This finding is consistent with Al-Dmour [9] and Sophonthummapharn [18]. Hypothesis 9 is thus supported.

Government support – It is identified significant as a determinant inducing the decision to adopt e-HRM. The result is similar to Ahmadi, Nilashi [6] and Al-Dmour [9]. The result of the present study confronts the past studies [7, 19]. Hence, hypothesis 9 is supported.

VII. Conclusion

The findings of this study suggested that perceived compatibility, perceived cost, top management support, organisational culture, centralisation, IT vendor support, and government support are the significant determinants to the adoption of e-HRM. However, the findings of this study also suggested that relative advantage, perceived complexity and industry pressure do not have any impact on the organisational adoption of e-HRM. The sample size of the study was chosen only 320. It is agreed that the bigger the sample is, the more representative the results are. We choose ten determinants to examine the decision of e-HRM adoption. The findings will be helping the HR managers to take decision on e-HRM adoption. In future research, researchers may incorporate other potential determinants that may affect the decision of e-HRM adoption.

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