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An Examination on the Effects of Technology Acceptance Model in Electronic Human Resource Management

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Abstract

The aim of the current study was to explore the relationship between clarity of electronic human resource management (e-HRM) goals, social influence, apparent usefulness, user satisfaction, user support, apparent ease of use, and mediating conditions and their influence on users' attitude regarding e-HRM. Accordingly, a sample of 167 HRs from Fortune Global 500 companies in Malaysia were selected. The technology acceptance model (TAM) was used to demonstrate these relationships. The findings revealed that, all the constructs had a positive relationship with each other. Furthermore, apparent ease of use, user satisfaction and apparent usefulness are all essential indicators that reveal the attitude of HR professionals regarding e-HRM usage, thus user education and support are essential processes in e-HRM implementation.

Keywords: Electronic human resource management, TAM, Perceived usefulness, Implementation, Malaysia

1. Introduction

The fast growth of computer-based technologies and the internet has led to remarkable changes in the society, economy, and societal culture. Information Technology (IT) has primarily transformed the way in which organizations manage their enterprises, which had resulted in the transformation of managerial processes and practices. Hence, a novel Human Resource (HR) technology specifically, the "electronic HRM" (e-HRM) has surfaced in the field of Human Resource Management (HRM) (Bissola & Imperatori, 2014; Wiblen, 2016), despite a paucity of information and studies on e-HRM (Bondarouk, Parry, & Furtmueller, 2017; Galanaki, Lazazzara, & Parry, 2019; Marler & Parry, 2016). Introduction of e-HRM in organizations is imperative in assisting HR professionals to carry out their work more efficiently, and developing them as strategic partners (Parry & Tyson, 2011). The technology of e-HRM can be used to apply HR policies, strategies, and processes. This involves the application of internet-based channels to carry out HR activities and practices (Ruel, Bondarouk, & Van der Velde, 2007). It offers a portal to enable employees, managers, and HR specialists to extract, examine, or modify the necessary related information and data, for HR managerial purposes.

Furthermore, e-HRM implementation reduces the requirement of HR professionals, as it removes the 'HR middleman' (Strohmeier, 2009). Voermans and van Veldhoven (2007) proposed a model for e-HRM research acceptance, which is founded on the "Technology Acceptance Model (TAM)" (Davis, 1993). The objective of the present study is, to evaluate the association amongst the "clarity of e-HRM goals", "social influence", "user satisfaction", "perceived usefulness", "user support", "perceived ease of use", and "mediating conditions" that influences a users' attitude regarding e-HRM.

2. Literature Review

2.1. e-HRM

In recent years, e-HRM in particular has garnered the interest of researchers in the US and Europe and other developed countries, however there is a paucity of information and research that has been carried out in developing countries. Developing countries are far less advanced compared to their developed counterparts economically, environmentally, as well as technologically. Due to this large disparity, management mechanisms as well as the market environment in developing countries

would be considerably different, thus a difference in e-HRM research results would be expected. Most of the research has been carried out in the context of developed countries. One such study was carried by Laumer, Eckhardt, and Weitzel (2010) on e-HRM in an e-business setting involving HR managers numbering 144 and a thousand employees from Germany's top companies. Their findings showed that, the main pressure on HR managers was due to keeping workers and external and internal "employer branding". Therefore, Laumer et al. emphasized on the significance of e-HRM planning, which should be efficient and effective to fill vacancies adequately and make the most of limited assets. In addition, Strohmeier (2009) and Strohmeier and Kabst (2009) carried out studies to evaluate the aspects that impact cross-national company acceptance and application of e-HRM in European countries. Subsequently, the key overall and relative influence factors were extracted and examined, through the application of logistic regression in a wide sample assessment (2,336 companies from 23 different European countries). The findings of their study showed that, e-HRM can be considered a usual practice in Europe, as almost as much as two thirds of all organizations examined, had adopted it. Furthermore, major influential factors in acceptance of e-HRM include, work organization, size of organization, and HRM structure. In addition, Voermans and van Veldhoven (2007) carried out a research on users' viewpoint regarding e-HRM usage in the Netherlands. They conducted an online questionnaire that was sent to a total of 99 managers and 257 workers of Philips Company (Electronics) in the Netherlands. The findings of their research revealed that, differences in current IT systems perceived usability, and the favored HR positions of employee champion (low preference) and strategic partner (high preference), were based on the users' positive feelings regarding e-HRM implementation. For HR directors, "user support" was a helpful indicator of an optimistic feeling regarding e-HRM systems. At around the same period, Olivas-Lujan, Ramirez, and Zapata-Cantu (2007) carried out a study to examine how top four Mexican companies use e-HRM strategy. The data obtained from their research demonstrated the importance of recognizing local characteristics and habits in order to completely comprehend the manner in which e-HRM should be implemented in organizations in emerging economies. A study carried out by Ruel et al. (2007) in the "Ministry of Internal Affairs in the Netherlands" aimed to evaluate the e-HRM contribution in HRM efficiency, since e-HRM was proposed in the method of workers "self-service applications". The results revealed that, users' evaluation of e-HRM implementation had an impact on HRM's strategic and technical efficacy. Therefore, the perceived quality and the e-HRM implementation structure, had a positive and significant influence on the technical and strategic efficacy of e-HRM. The findings of their research also revealed that, the main assumptions are that, e-HRM implementation will facilitate in the development and improve the service quality of HR, reduce expenses and facilitate the HR department to transform into an organizational strategic partner. An explorative experimental research study was conducted by H. Ruel, Bondarouk, and Looise (2004) involving five big organizations on internet-based HRM. The authors reported that, the e-HRM objectives are primarily to reduce costs and to expand HR's administrative efficiency. The findings also showed that, international organizations seem to implement e-HRM to regulate or balance HR processes and policies. On the other hand, they revealed a 'gap' between the technical or theoretical application and practical application of e-HRM amongst the five companies they investigated. Accordingly, e-HRM scarcely facilitated in increasing workers' capabilities but it led to a decrease in costs and administrative burden.

2.2. TAM

Recently, the use of technology in the HRM field has garnered the attention of many researchers. Since the 1970s, many studies have been carried out on classifying factors or conditions that help the incorporation of technology into companies (Shahreki & Nakanishi, 2016; Wiblen, Grant, & Dery, 2010), which has resulted in the emergence of several theories. The "Technology Acceptance Model (TAM)" can be considered as one of the first model that was developed in this area (Wu & Chen, 2017) which was founded on the "Theory of Reasoned Action (TRA)" (Montano & Kasprzyk, 2015). It is an important and commonly used model, in predicting user adoption and application of a particular IT. TAM identifies the unexpected relationships among belief and attitudinal concepts, external variables, and actual usage behavior (Asadi, Abdullah, Safaei, & Nazir, 2019; Asadi, Hussin, & Dahlan, 2018; Asadi, Nilashi, Husin, & Yadegaridehkordi, 2017; Scherer, Siddiq, & Tondeur, 2019; Shahreki, 2019b; Shahreki, Nakanishi, Jayiddin, & Ibrahim, 2020). However, limited studies have explored HRM technology in developing countries, despite an increasing interest in e-HRM application in first world countries. For example, Nivlouei (2014) evaluated self-reported intention of HR professionals to implement e-HRM using the "Theory of Planned Behavior (TPB)" as their conceptual model. They tested a number of technology features on attitude regarding e-HRM application, and determined the association between HR professionals and their attitudes regarding e-HRM usage. Voermans and van Veldhoven (2007) carried out an initial research among HR professionals to investigate the HR positions and responsibilities, apparent ease of use, apparent usefulness, and viewpoints regarding e-HRM usage. They recommended a model based on HR roles and TAM to evaluate the correlation between e-HRM adoption and HR roles. In another research, Noutsa, Kamdjoug, and Wamba (2017) evaluated the HRIS adoption and usage among HR professionals and HR executives. The findings of their research showed that, visibility and compatibility had a positive association with HRIS usage, while complexity had a negative association with HRIS usage. Parry (2011) carried out a research to investigate the degree to which e-

HRM was implemented and employed in small and medium-sized organizations. He concluded that, feasibility and readiness of e-HRM usage in little and average-sized enterprises, was reliant on accessibility of capital such as, technical, financial, and expertise resources, as well as employee attitudes. The relationships between different factors of attitudes regarding e-HRM usage has been largely ignored, despite it being a very important factor when implementing it in organizations. Thus, this study aims to fulfill this particular void in the e-HRM research and will contribute to a greater research project in evaluating a number of features of e-HRM application (Bondarouk, Ruël, & van der Heijden, 2009; Marler & Fisher, 2013; Shahreki, 2019a; Shahreki, Ganesan, Raman, Chin, & Chin, 2019; Strohmeier, 2009).

3. Hypotheses development

Fig. 1 presents the proposed research model. The research hypotheses are discussed in the following sub-sections.

3.1. Clarity of e-HRM attitude and objectives

According to Lai (2017), Preece (2018) and Bondarouk, Harms, and Lepak (2017), e-business and creators of systems must concentrate on enhancing user preference through improved technology accessibility and effectiveness by advocating ease of use, providing sufficient information to users, improving attractiveness, efficacy, legitimacy, and simplifying content on the website. Based on the literature and the theoretical description of e-HRM objectives, recognizing viewpoints regarding e-HRM usage, the following hypothesis was postulated:

H1: A positive correlation exists amongst clarity of e-HRM goals and viewpoints concerning e-HRM usage.

3.2. Attitude and approval of users

Baker and Crompton (2000) proposed that increased levels of user satisfaction usually result in positive behavioral intentions, whereas decreased satisfaction results in negative behavioral intentions. There is substantial amount of research on technology acceptance, which has revealed that, user satisfaction has a beneficial effect on intention (Chen, 2012; Gangwar, Date, & Raoot, 2014). Kim, Ahn, and Chung (2013) conducted a study by distributing an online survey and reported that, users' evaluations of satisfaction regarding a website had a substantial positive influence on their attitudes about using the website. Based on the literature and the theoretical explanation of user satisfaction, and the identification of attitude regarding e-HRM usage, the following hypothesis was postulated:

H2: A positive correlation exists amongst user approval and viewpoints concerning e-HRM usage.

3.3. Apparent ease of use, usefulness and viewpoints

Apparent ease of use and apparent usefulness are attitude factors, proposed by the TAM. According to the TAM, the assumption that, the technology of e-HRM is simple to apply, has a positive correlation with users' attitude about its usage (Marler & Parry, 2016), and users would thus tend to consider that, e-HRM allows them to apply the technology more effectively. According to the latest studies, a correlation exists between usefulness and ease of use, with viewpoints concerning technology usage (Olivas-Lujan et al., 2007; H. Ruel et al., 2004; H. J. Ruel et al., 2007; Strohmeier, 2007). Based on the existing literature and the theoretical description of apparent usefulness, ease of use, and the identification of viewpoints regarding e-HRM usage, the following hypotheses was postulated:

H3: A positive correlation exists amongst apparent ease of use and viewpoints concerning e-HRM usage.

H4: A positive correlation exists amongst apparent usefulness and viewpoints concerning e-HRM usage.

3.4. User approach and support

A number of studies have been carried out to demonstrate the effect of various constructs or external variables on individual's attitude such as, documentation, training, system features, and user support (Venkatesh & Bala, 2008; Venkatesh, Morris, Davis, & Davis, 2003; Venkatesh, Thong, & Xu, 2016). Based on published data, "user support" is thought to impact e-HRM attitude. Based on the previous literature and the theoretical description of user support, and identification of viewpoints regarding e-HRM usage, the following hypothesis was postulated:

H5: A positive correlation exists amongst user support and attitude concerning e-HRM usage.

3.5. User attitude and social influence

The majority of prior research has focused on social influence, as an important aspect that impacts users' attitudes and intentions towards a particular behavior (Asadi, Nilashi, et al., 2019; Dalvi-Esfahani et al., 2020; Venkatesh, Chan, & Thong, 2012; Venkatesh et al., 2016; Williams, Rana, & Dwivedi, 2015). For example, as noted by Hong, Thong, Chasalow, and Dhillon (2011), the impact of "social influence" might have a beneficial effect on users' attitude, nonetheless it was found not to be significant in their study. Laforet and Li (2005) reported that, "social influence" or reference groups strongly influenced attitude and behavior regarding online banking. Social influence has a substantially positive effect on users' behavioral intention to implement an educational portal (Pynoo et al., 2012). Based on existing literature and the theoretical description of social influence, and the identification of attitude regarding e-HRM usage, the following hypothesis was postulated:

H6: A positive correlation exists between social influence and attitude concerning e-HRM usage.

3.6. User attitude facilitating conditions

Another factor that is proposed to have an influence on behavioral intention to implement an IS are, facilitating conditions (Johnson, Lukaszewski, & Stone, 2016; Joseph, Ng, Koh, & Ang, 2007; Lin, 2011; Venkatesh et al., 2016). According to Venkatesh et al. (2016), a positive association exists between facilitating conditions and user satisfaction. Zhang, Luo, Liao, and Peng (2015) and Teo (2009) proposed that, the effects of facilitating conditions on IT usage, is significant. Therefore, the following hypothesis was postulated based on the above findings:

H7: A positive correlation exists between facilitating conditions and attitude concerning e-HRM usage.
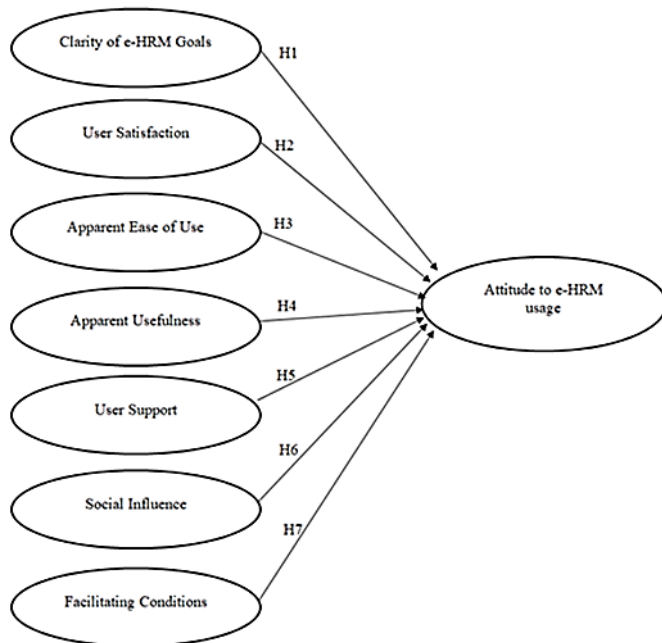

Fig. 1. Conceptual model

4. Methodology

The research methodologies used in the present study included, the sampling procedure, data collection, and statistical analysis, which are discussed as follows.

4.1. Sampling and data collection

A descriptive survey research design was adopted in the current paper to investigate the estimated criterion variables based on the attitude of HR workers concerning e-HRM usage. In the current research, data was collected from a sample of HR professional decision makers, from Fortune 500 companies in Malaysia. The organizational positions of participants included, managers (38%), directors (29.7%),

and experts (32.3%) with a mean age of 47.2 years. Around 67.2% of the participants were men while 32.8% were women. More than 89.7% of the participants had at least a university degree. Initially, 183 participants completed the questionnaire, out of which 16 were excluded from further analysis as many of the questions were left unanswered, subsequently a total of 167 questionnaires were used in this research. These questionnaires were distributed to potential participants during various seminars, programs and courses. The privacy and confidentiality of participants was assured from the beginning of the study and participants were guided on how to correctly respond to the questions. The completed questionnaires were collected after completion of the seminar, program or course. The participants' basic information including age, gender, position, and race were coded for complete confidentiality as well as to facilitate in better data management.

4.2. Research instrument

Multi-item scales were adapted from the, "Unified Theory of Acceptance and Use of Technology (UTAUT)" methods by Venkatesh, Thong, and Xu (2012), to evaluate variables in a seven-point "Likert-format scale" (with 1 as disagree strongly and 7 as agree strongly). This multi-item scale comprised of two items evaluating social influence, five items evaluating participants' attitude regarding e-HRM usage, and three items evaluating facilitating conditions. Furthermore, another questionnaire was adapted and modified from (Ruel, 2002) and (Maatman, 2006), which included; three questions related to clarity of the technology of e-HRM, as well as three items regarding "user satisfaction" modified from (Armstrong, Fogarty, Dingsdag, & Dimbleby, 2005), five items to assess apparent ease of use modified from Davis (1989), four items to evaluate apparent usefulness also modified from Davis (1989), and two items to asses user support modified from Tseng, Lan, Wang, Chiu, and Cheng (2011). Every scale item was adapted and adjusted accordingly, for evaluation in the context of e-HRM.

5. Data Analysis

A Smart PLS 3.0 software (Hair, Hult, Ringle, & Sarstedt, 2016) was used in this research to evaluate the inner and outer model parameters. This software makes an effort to maximize the dependent variables variance and offers many advantages based on the sample size, type of variables, distribution requirements and the model complexity that should be tested. In this study, the PLS path modeling was applied with a "path-weighting scheme" for the internal estimation (Chin, 2010; Wetzels, Odekerken-Schröder, & Van Oppen, 2009; Yadegaridehkordi et al., 2020). Subsequently, the non-parametric bootstrapping estimate was employed (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005) with 500 re-sampling in order to achieve the standard errors of the evaluations.

5.1 Model assessment measurement

In the current research, the "convergent validity", which is the extent to which various items calculating the same idea concur, was first tested. Then, "composite reliability" (CR), the "factor loadings", and "average variance extracted" (AVE) were used to measure convergence validity (Yadegaridehkordi, Nilashi, Nasir, & Ibrahim, 2018; Yadegaridehkordi, Shuib, Nilashi, & Asadi, 2019). As depicted in Table 1, the loading values were all larger than the recommended value of, 0.5 for all items exceeded. On the other hand, the CR values, which represent the extent to which the construct values disclosed the "latent construct", were between 0.86 to 0.93, higher than the value of 0.7, which was the recommended value. Additionally, the alpha (α) values were in agreement with Nunnally and Bernstein (1994) study results, all were greater than 0.7, which indicated the reliability and validity of the variables. The AVE, which represents the total degree of variance in the indicators through the "latent construct", were between 0.63 and 0.68, higher than 0.5, the recommended value (Hair et al., 2016).

Table 1
Loadings, validity, AVE, CR, α

First-order constructs	Items	Loadings	AVE	CR	α
Clarity of e-HRM Goals (Ceg)	Ceg 1	0.83	0.68	0.93	0.88
Scale type: Reflective	Ceg 2	0.86			
	Ceg 3	0.81			
User Satisfaction (Usa)	Usa 1	0.80	0.65	0.90	0.85
Scale type: Reflective	Usa 2	0.88			
	Usa 3	0.84			
Apparent Ease of Use (Peu)	Peu 1	0.74	0.66	0.91	0.87
Scale type: Reflective	Peu 2	0.80			
	Peu 3	0.79			
	Peu 4	0.80			
	Peu 5	0.79			
Apparent Usefulness (Pus)	Pus 1	0.78	0.63	0.86	0.82
Scale type: Reflective	Pus 2	0.86			
	Pus 3	0.84			
	Pus 4	0.80			
User Support (Usu)	Usu 1	0.86	0.66	0.91	0.87
Scale type: Reflective	Usu 2	0.72			
Social Influence (Sin)	Sin 1	0.76	0.63	0.88	0.83
Scale type: Reflective	Sin 2	0.84			
Facilitating Conditions (Fco)	Fco 1	0.77	0.65	0.89	0.84
Scale type: Reflective	Fco 2	0.83			
	Fco 3	0.81			
Attitude to Use e-HRM (Aue)	Aue 1	0.73	0.64	0.89	0.84
Scale type: Reflective	Aue 2	0.80			
	Aue 3	0.78			
	Aue 4	0.81			
	Aue 5	0.87			

The model developed by Deng, Mo, and Liu (2014), measured the discriminant validity to calculate the AVE square root between any two constructs. According to Table 2, the AVE square root values were larger than the correlation values, thus indicating that the discriminant validity has been reached (Fornell & Larcker, 1981).

5.2. Structural model

In this research, the Smart PLS 3.0 software and the PLS-SEM were used to assess the hypotheses. Table 3 summarized the structural model analysis data. The analyses revealed that there was indeed a correlation between determinants of attitude regarding e-HRM usage. The "path coefficients" (β), the "squared multiple correlations" (R2), and the "predictive relevance of endogenous variables" are all shown in Table 3, which were calculated using Stone-Geisser's Q2. The findings revealed that, the seven independent variables, explain 51% of the variance in attitude to implement e-HRM and Q2 is 0.35, which in agreement with Cohen (2013) findings, a medium predictive relevance. The data demonstrated that, Usa, Sin, Ceg, Pus, Peu, Usu, and Fco, were considerably linked to attitude to implement e-HRM. Thus, all the

hypotheses H1, H2, H3, H4, H5, H6 and H7 were supported (Table 3 and Fig. 2).

Table 2
Assessment of discriminant validity

|	Ceg	Usa	Peu	Pus	Usu	Sin	Fco	Aue
Ceg	**0.83**							
Usa	0.46	**0.84**						
Peu	0.61	0.56	**0.78**					
Pus	0.43	0.57	0.52	**0.82**				
Usu	0.53	0.51	0.54	0.43	**0.79**			
Sin	0.60	0.52	0.51	0.51	0.51	**0.80**		
Fco	0.43	0.54	0.52	0.42	0.57	0.51	**0.80**	
Aue	0.52	0.51	0.55	0.46	0.52	0.53	0.57	**0.80**

Square root of the AVE on the diagonal. Ceg = Clarity of e-HRM Goals; Usa = User Satisfaction; Peu = Apparent Ease of Use; Pus = Apparent Usefulness; Usu = User Support; Sin = Social Influence; Fco = Facilitating Conditions; Aue = Attitude to Use e-HRM.

Table 3
Estimation of model (bootstrap results)

Constructs	Hypotheses	Sign	path coefficients	t-value	Remarks
Ceg → Aue	H1	+	0.19*	2.91	S
Usa → Aue	H2	+	0.13$^{(*)}$	1.89	S
Peu → Aue	H3	+	0.15*	2.30	S
Pus → Aue	H4	+	0.17*	2.69	S
Usu → Aue	H5	+	0.27**	3.55	S
Sin → Aue	H6	+	0.25**	3.19	S
Fco → Aue	H7	+	0.31**	4.26	S

Notes: R^2=0.51; Q^2=0.35; $^{(*)}$ $p < 0.10$; *$p < 0.05$; **$p < 0.01$. Ceg = Clarity of e-HRM Goals; Peu = Apparent Ease of Use; Fco = Facilitating Conditions; Usa = User Support; Pus = Apparent Usefulness; Sin = Social Influence; Aue = Attitude to use e-HRM.
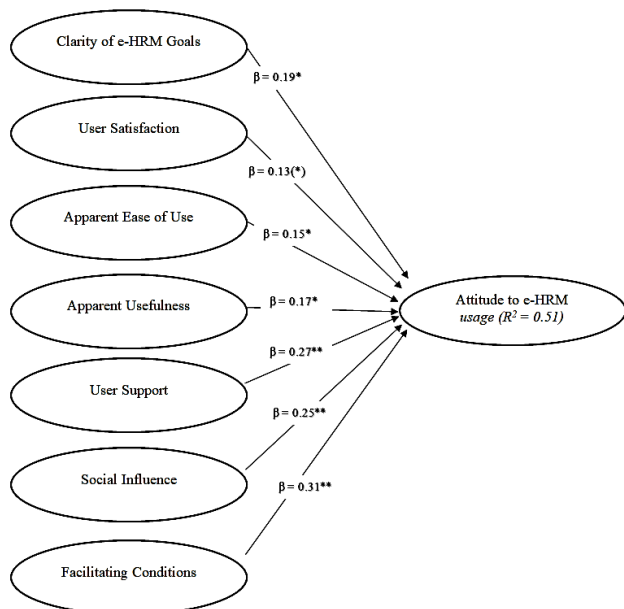
Notes: **P< 0.01; *P<0.05; $^{(*)}$ p < 0.10;
Fig. 2. Structural model

6. Discussion

Recently, e-HRM has garnered the attention of many researchers. The rationale to examine it further in the current study is to provide a more practical approach in evaluating attitude factors towards e-HRM usage.

6.1. Implications theoretically

The relationship outcomes revealed that, there is a significant correlation among all the constructs assessed in this study. In addition, there was a strong correlation between attitudes concerning e-HRM usage and facilitating conditions. Thus, based on a theoretical perspective, this study can be considered as a first step towards authorizing users' attitude about implementing e-HRM, using TAM. However, the current research examined only a few variables to clarify attitude concerning e-HRM implementation. Therefore, further studies are warranted, in order to comprehensively explain the function of other critical variables, like the HR professionals' competencies, trust, and S role to improve or challenge their attitude towards implementing e-HRM.

6.2. Managerial implications

From a managerial perspective, the findings of the current research provide significant suggestions for improving the content of e-HRM platforms more effectively. Thus, managers should take these findings into consideration while all variables are important factors for HR professionals to enhance their attitude regarding e-HRM implementation. Furthermore, apparent ease of use, user satisfaction and apparent usefulness are all essential indicators that reveal the attitude of HR professionals regarding e-HRM usage, thus user education and support are essential processes in e-HRM implementation. These findings are also valuable when developing methodologies and schemes for change management, because involvement should be considered particularly to meet the requirements of the organization, in terms of the e-HRM platform implemented. The current study also has experimental implications, particularly for the HR division's role in administrating change management policies in relationship with other organizational divisions. The results of the current research have contributed to the existing literature, by providing data on the various issues that affect attitudes towards e-HRM application, in different organizations in a cross-national context. It is apparent that, e-HRM is not necessarily a general procedure, it may be suitable for certain types of companies and not for others.

6.3. Limitations and prospective research

There were a few limitations of the current study; firstly, the findings cannot be generalized in other contexts, because the respondents were limited to HRM from private sector companies in Malaysia, so further investigations should be conducted into the e-HRM of other

organizations. The benefits of implementing e-HRM into organizations is that it can potentially decrease the managerial tasks of HR professionals, providing them more time and opportunities for value-added roles. Consequently, HR professionals will have the opportunity to gather and examine data to reveal information regarding the efficacy of several HR procedures and the viability of many strategic paths regarding human resources of the organization. The current study has provided only an initial platform to recognize the full potential of e-HRM implementation in organizations, and further studies are required.

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