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Understanding User Characteristics as Antecedents of Technostress towards HRMIS: A Mixed-Method Study

(Memahami Ciri-Ciri Pengguna sebagai Anteseden Teknostres terhadap HRMIS: Kajian Kaedah Pelbagai)

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ABSTRACT

This study aims to explore the effects of user characteristics as antecedents of technostress towards human resource management information system (HRMIS) in government agencies of Malaysia. To address the research objective, we conducted an exploratory mixed-method study which involved both the semi-structured interviews with HRMIS experts from three state governments of Malaysia and the survey questionnaire of HRMIS end-users. Findings from the content analysis of the interview data have identified three key characteristics of users, namely, attitude, technology readiness, and readiness for change, and have suggested that these characteristics are relevant antecedents of technostress. The PLS analysis from the quantitative survey results have revealed that the experiences of technostress towards HRMIS can be influenced only by user's attitude. From the theoretical aspects and practical implications, this study provides the researchers insights and understanding of the phenomena for future exploratory studies and valuable guidance for the practitioners to manage strains associated with technostress both in the public and the private sectors. More importantly, this study has not only provided new empirical evidence that extends the generalizability of previous findings particularly on technostress and job outcomes but also different from previous studies in the field of information system by examining the antecedents of technostress in the context of human resource information system (HRIS).

Keywords: HRMIS; technostress; attitude; technology readiness; readiness for change

ABSTRAK

Tujuan kajian ini ialah untuk meneroka kesan ciri-ciri pengguna sebagai penyebab teknostress terhadap sistem maklumat pengurusan sumber manusia (SMPSM) di organisasi kerajaan Malaysia. Untuk mencapai objektif kajian, kami telah menjalankan kajian penerokaan kaedah pelbagai yang melibatkan temu bual separa struktur dengan pakar SMPSM dari tiga kerajaan negeri Malaysia dan juga tinjauan soal selidik pengguna akhir SMPSM. Dapatan daripada analisis kandungan temuduga telah mengenalpasti tiga ciri-ciri pengguna iaitu sikap, kesediaan teknologi, dan kesediaan untuk berubah, dan mencadangkan bahawa ciri-ciri tersebut adalah relevan sebagai penyebab teknostres. Analisis PLS daripada dapatan tinjauan kualitatif mendedahkan bahawa teknostres terhadap SMPSM yang dialami hanya boleh dipengaruhi oleh sikap pengguna. Dari aspek teori dan implikasi praktikal, kajian ini mempersiapkan para penyelidik dengan pengetahuan dan pemahaman tentang fenomena ini untuk kajian penerokaan akan datang, dan juga menyediakan para pengamal garis panduan berharga untuk mengurus tekanan berkaitan teknostres di kedua-dua sector, awam dan juga swasta. Apa yang penting, kajian ini bukan sahaja telah memberikan bukti empirikal baharu yang sekaligus menambah generalisasi dapatan sebelum ini terutama berkaitan teknostres dan hasil kerja tetapi juga berbeza daripada kajian-kajian lain sebelum ini dalam bidang sistem maklumat dengan menilai faktor penyebab teknostres dalam konteks sistem maklumat sumber manusia (SMSM).

Kata kunci: SMPSM; teknostres; sikap; kesediaan teknologi; kesediaan untuk berubah

INTRODUCTION

Human resource information system (HRIS) is one of the most useful applications that supports human resource activities in organisations and benefit the organizations in many ways, thus leading to improve organisational performance (Alwis 2010; Shilpa & Gopal 2011; Stone & Dulebohn 2013). HRIS is often used interchangeably with electronic human resource management (EHRM), human resource management system (HRMS), and virtual human resource. HRIS has been defined as a systematic procedure for collecting, storing, maintaining, retrieving and validating human resources activities data needed by an organisation (Kovach & Cathcart 1999). The system also serves as an effective computerised technology tool, a software

program that stores, records, links, analyses and presents human resources data within the business (Ball 2001).

From the HRM perspective, HRIS enables organisations to integrate all the HR processes to further extend the HRM paradigm, thus maintaining a competitive position through strategic costs reduction and efficiency improvements along with enhancement of service quality (Alwis 2010; Lepak & Snell 1998; Ruel, Bondarouk & Velde 2007; Stone & Dulebohn 2013). Additionally, the adoption of HRIS can benefit the overall organization by offering strategic solutions in various ways, as for instance, in reducing the amount of manual work, thus enabling the process to become more efficient and effective (Virdyananto et al. 2016). In Malaysia, the application of HRIS in government agencies is better known as the human resource management information system (HRMIS). Through the implementation of HRMIS, the multi-sourced data of human resource (HR) processes are centralised, thus allowing government agencies to strategise in order to meet emerging needs, likewise, the consolidated HR information can facilitate effective planning and efficient management of human capital (Public Service Department 2010). For example, by means of better availability of HRM information, HRMIS can therefore be used to actively support staffing activities, execute automated HRM operational processes (although records are currently being done manually), and provide up-to-date consolidated HRM information in order to achieve effective HRM planning among agencies (MAMPU 2003, as cited by McPherson & Ramli 2004: 709). As such, HRMIS supports all HR activities including pension benefits (Abdul Karim 1997). Additionally, employees' transactions such as leave application and annual appraisal can also be submitted and processed electronically.

Despite the significant benefits, organisations should also be aware that there is in fact a dark side to the system. For example, a review of information system (IS) literature has found that technology or system usage may potentially create stressful conditions among users (Ayyagari, Grover & Purvis 2011; Bradshaw & Zelano 2013; Lee, Jin & Choi 2012; Tarafdar, Pullins, & Ragu-Nathan 2011, 2014; Salanova, Llorens & Cifre 2012), especially when users feel pressured to make use of the system. In the context of technological use, such stressful condition is called technostress. Technostress is also likely to occur when users need to update their skills and knowledge about the system continuously. It may also occur because of too much information in a variety of formats (Sami & Pangannaiah 2006).

Past studies have investigated the influence of technostress on job outcomes, such as job satisfaction and end-user satisfaction (Bradshaw & Zelano 2013; Salanova et al. 2012; Tarafdar, Pullins & Ragu-Nathan 2011; Tarafdar, Pullins & Ragu-Nathan 2014; Tarafdar, Tu, & Ragu-Nathan 2011; Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan 2011). However, only few have identified the antecedents of technostress (Ayyagari et al. 2011; Ragu-Nathan et al. 2008; Sami & Pangannaiah 2006; Sharma & Gill 2014; Shu, Tu & Wang 2011; Yan et al. 2013), specifically towards computer system applications. More importantly, studies on the causes of technostress, particularly user characteristics, are scarce (Ayyagari et al. 2011). Therefore, this study contributes by filling this gap, thus expanding the call for more research to explore the antecedents of technostress (Ayyagari 2007; Ragu-Nathan et al. 2008).

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

TECHNOSTRESS AND THE ANTECEDENTS

Technostress is a modern disease of adaptation caused by an inability to cope with new computer technologies in a healthy manner (Brod 1984). It is also referred to as any negative effect on human attitudes, thoughts, behaviour, and psychology that directly or indirectly results from the use of computer-based ICTs (Tu, Wang & Shu 2005). Further, it has also been defined as a reflection of one's discomposure, fear, tenseness and anxiety when one is learning and using a computer technology directly or indirectly that ultimately ends in psychological and emotional repulsion and prevents one from further learning or using computer technology (Wang, Shu & Tu 2008).

Tarafdar et al. (2007) and Tarafdar, Tu, Ragu-Nathan and Ragu-Nathan (2011) have put forward five technostress conditions that end users have to deal with as a result of such technology usage; they are identified as techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. Techno-overload happens when users spend more time and effort in processing information because they are unable to identify which information is useful, making them to feel dissatisfied with the content and outputs of the systems they are using. Techno-invasion occurs when users think that technology has invaded their lives. In certain situations, due to the complexity of technology, users feel stressful because they have to continuously learn how to use the ICT because of the wide variety of applications that could invoke greater intimidation. Techno-uncertainty occurs when users perceived that the systems they are using are unstable due to constant upgrading and maintenance, requiring users to learn how to work with the new applications regularly. Techno-insecurity happens when users fear of losing their jobs to other colleagues who have better knowledge and skills with the technology.

Studies have investigated the phenomenon of technostress in many contexts (Ayyagari et al. 2011; Bradshaw & Zelano 2013; Jena 2015; Lee, Jin et al. 2012; Salanova et al. 2012; Sharma & Gill 2014; Shepherd 2004; Tarafdar, Pullins & Ragu-Nathan 2011; Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan 2011; Tarafdar et al.

2014). In the context of user characteristics, studies have reported cognitive reactions and attitudes among ICT users (Ragu-Nathan et al. 2008). However, studies that have looked into the extent of user characteristics beyond the usual demographic factors contributing to technostress are limited. Since the literature on the antecedents of technostress, particularly the user characteristics in using HRMIS, is very limited, the HRMIS experts in various state government agencies in Malaysia were consulted to identify the user characteristics. They have highlighted three characteristics: (a) attitude relating to HRMIS, (b) technology readiness, and (c) readiness for change. In IS literature, however, these characteristics have been reported to have a significant influence on technology implementation, adoption, usage, and system success (Elliott, Meng & Hall 2012; Ferreira, Da Rocha & Da Silva 2014; Gombachika & Khangamwa 2013; Rampersad, Plewa & Troshani 2012). Therefore, studies addressing such issues were referred to explain the role of user characteristics as the antecedents of technostress in this study.

Attitude refers to the degree of a person's favourable and unfavourable evaluation or appraisal of the behaviour in question (Ajzen 1991). An individual who holds a favourable attitude towards some objects would perform favourable behaviours; likewise, he or she will not perform unfavourable behaviours with unfavourable attitude on the object (Ajzen & Fishbein 1977). In technology acceptance research, attitude refers to a summary of a user's evaluative judgment, either favourably or unfavourably, in response to a computer system and software, staff, or any procedures related to it (MeLone, 1990). The assumption here is that users with a good attitude will favourably support the implementation of IS.

Past studies have looked into the role of attitude towards ICT in electronic learning and electronic services (Lin & Chang 2011; Sun et al. 2007). It was found that the attitude of the learner towards a computer or IT is an important factor in achieving electronic learning satisfaction (Sun et al. 2007) and enhancing computer usage in the classroom (Sang et al. 2009). Users with a positive attitude will participate in activities such as hands-on training, workshops, and short courses to help them use the computer or ICT with confidence. Computer-related confidence was found to have a strong influence on technostress (Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan 2011), self-efficacy, and individual's reaction to computing technology (Compeau & Higgins 1995). Users with higher computer self-efficacy will have a lower computer-related strain, such as computer anxiety, computer phobia (Compeau & Higgins 1995) and technostress (Shu et al. 2011). Parayitam et al. (2010) have reported that attitude towards computer or ICT has a significant impact on stress reduction.

The role of attitude in affecting behaviour is also theoretically mentioned in the person-environment theory or P-E fit theory. This theory is widely used in IS and psychological research to delineate the antecedents of technostress (French, Rodgers & Cobb 1974, in Caplan 1987). The P-E fit theory specifically explains the degree to which the individual and environmental characteristics match (Kristof-Brown, Zimmerman & Johnson 2005). Notably, positive outcomes occur when a specific match is generated through the interactions between the individual and environmental dimensions. When there is a misfit, a negative attitude and dysfunctional behaviours are likely to occur (Kristof-Brown et al. 2005). In this study, technology usage demands users' favourable attitude or readiness to use the technology. If users have unfavourable attitude towards the technology or if they are not ready to use the technology, therefore, they are likely to experience technostress. Hence, we propose the following hypothesis:

H_1 Positive attitude is negatively related to technostress.

Parasuraman (2000) has defined technology readiness as an individual's tendency to accept and use new technologies to accomplish goals in home life and at work. It represents a gestalt of mental motivators and inhibitors that collectively determine a person's propensity to using new technologies. Researchers have noted that most of the technology readiness dimensions are consistent with those in technology acceptance model (TAM) (Elliott et al. 2012; Ferreira et al. 2013; Gombachika & Khangamwa 2013; Walczuch, Lemmink & Streukens 2007), attitude (Lee, Castellanos & Choi 2012), and post-adoption behaviour (Son & Han 2011). Ferreira et al. (2013) have extended TAM and demonstrated that technology readiness has a strong influence on the cognitive and emotional evaluation of new technology, such as pleasure, arousal, and dominance among consumers in Brazil. Technology readiness dimensions, such as optimism and innovativeness have also been found to influence TAM dimensions in the EHRM context (Erdogmus & Esen 2011). Individuals who are ready and familiar with new technology perceived that the system is more fun to use (Elliot et al. 2012). Concisely, most studies have highlighted the significant influence of technology readiness towards technology acceptance and usage. Individuals who are not technologically ready will face uncomfortable situations, such as anxiety and technophobic of ICT and other technologies (Meuter et al. 2003; Parasuraman 2000). On the other hand, confidence in computer usage can also significantly reduce technostress (Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan 2011). Therefore, the following hypothesis is formulated:

H_2 Technology readiness is negatively related to technostress

Another user characteristic identified by the HRMIS experts is readiness for change. Previous scholars have given numerous definitions of readiness for change and instruments to measure it (Holt et al. 2007). Based

on a comprehensive review, Holt et al. (2007) have described that someone who is ready is one who is cognitively and emotionally inclined to accept, embrace, and adopt a particular plan to sacrifice the status quo purposefully. Therefore, readiness for change can be referred to employee's feelings, beliefs, and intentions about the change as well as the organizational capability and capacity of its successful implementation, in which such circumstances will develop a rational precursor whether to support or resist change (Bouckenooghe, Devos & Van den Broeck 2009). Furthermore, if someone believes in the benefits of change for his job and role in the organization, he or she will have a positive overall assessment of his or her readiness for change (Rafferty, Jimmieson & Armenakis 2013).

According to Kwahl and Lee (2008: 475), readiness for change is "the extent to which organisational members hold positive views about the need for organisational change and believe that changes are likely to have positive implications for them and the organisation". As such, a person who is ready for change is a person who has positive attitude towards specific behaviour. For instance, users who are ready for change would give full support for any kind of change efforts provided by the organisation. They would also show high commitment and dedication to it. Such positive attitude is likely to mitigate resistance to change and reduce the failure rate of IS implementation (Eby et al. 2000). Kwahk and Lee (2008) have found that users who were ready for any changes in ICT implementation perceived that ICT to be more useful and easier to use, thus enhancing their intention to use the ICT. Based on the literature, it is reasonable to expect that readiness for change will reduce technostress as perceived usefulness and perceived ease of use in TAM have been used as strategies to cope with the strain, such as computer phobia (Sami & Panganniah 2006). Hence, we propose the following hypothesis:

H_3 Readiness for change is negatively related to technostress.

RESEARCH METHODOLOGY

PARTICIPANTS

This study used qualitative and quantitative approaches to meet the objectives. First, a qualitative method was used to identify the antecedents of technostress, which were later validated through a survey.

For the qualitative part of the study, seven HRMIS experts were interviewed using semi-structured questions. The HRMIS experts were identified and selected with the assistance of the human resource manager in each state government. This group consisted of two experts from Kedah, three from Perlis, and two from Penang. They were labeled as PP1 and PP2 (Penang), P1, P2, and P3 (Perlis), and K1 and K2 (Kedah). They were selected based on their vast experience and their related scope of work that focuses on the implementation of HRMIS. They are also the person in charge of HRMIS in their organisations and are responsible for handling problems faced by HRMIS users. The HRMIS experts also have attended a series of intensive training in HRMIS provided by the Public Service Department. According to Romney, Weller and Batchelder (1986), a small sample (as small as four individuals) is somewhat adequate to provide the necessary information as long as the participants are knowledgeable in the area of study.

For the quantitative part of the study, data were collected from HRMIS end-users in the government agencies of Malaysia, except those in the PSD of Malaysia and the employees in the HR department of government agencies since some of them were the developers of the HRMIS. Altogether, 490 participants were employed in nine state government offices and five ministries of Malaysia. The majority of the participants are female (62.4%), Malays (91.2%), and are below 33 years old (31.6%). Close to half of them have SPM as the highest level of education (45.1%). As for their current position, the highest percentage is clerical staff (59.6%), followed by middle-level management (20.8%), and non-management (13.1%). The average age, working experience, and tenure with the current organisation are 37, 12.88, and 6.38 respectively.

INSTRUMENTS

Interview A semi-structured interview was used to obtain data on the antecedents of technostress. The interview questions were developed and validated by relevant academics. Five HRMIS experts (Kedah and Perlis) were separately interviewed while the remaining two in Penang were interviewed together at the same tie upon request. All the interviews were conducted in a single session held in a meeting room provided by each organisation. The participants were given the interview questions a few days before the interview. The following were collected from the interviewees: background information of the interviewee (e.g., personal background, work experience, and job responsibilities), current stage of HRMIS implementation in the organisation, and antecedents of technostress. To identify the antecedents of technostress, related scenarios of the dimensions of technostress were provided. Each interview lasted for about one hour and was recorded by a micro-audio recorder (MP3) with the permission of the participants. The interviews were transcribed and evaluated afterwards.

Questionnaire Survey The questionnaire was divided into three sections. The first section collected the demographic information of the participants. The second and third sections contained items on technostress and the antecedents (attitude, technology readiness, and readiness to change). Participants were asked according to their level of agreement or disagreement on items on a five-point Likert scale ranging from '1' "strongly

disagree" to '5' "strongly agree". Technostress was measured using 23 items, which were adapted from Tarafdar et al. (2007). The items asked include "I have a higher workload because of increased technology" and "I am threatened by co-workers with newer technology skills". The items for attitude was adapted from the work of Taylor and Todd (1955). The items asked include, "Using HRMIS would be a good idea" and "Using HRMIS is a pleasant experience." Twenty-three items taken from the work of Parasuraman and Colby (2014) and Kwahk and Lee (2008) were used to measure technology readiness[1] and readiness to change. "New technologies contribute to a better quality of life" and "Other people come to me for advice on new technologies" measured technology readiness while "I look forward to changes at work" and "I usually support new ideas" are items for readiness for change.

ANALYSES

The qualitative data consisted of seven interviews. To capture the body language and other cues of the participants and to ensure that memories were not lost, data were transcribed immediately, that is, a day after the interview session was over. Transcription is the process of converting audiotape recordings or field notes into text data (Creswell 2012). The process of data analysis followed the guidelines of Creswell (2012). Data were "hand analysed". First, the researcher explored the data to make sense of them. Next, the coding process was done to segment and label the texts to form the descriptions and broad themes in the data. This process also involved examining any overlaps and redundancies before collapsing the codes into broad themes. Then, these themes were layered into several main themes to portray the complexity of the phenomenon. This procedure was then repeated for all participants.

The SPSS software analysed the quantitative data. In particular, the software was used to check for data error, missing values, outliers, and normality. The frequencies, means, and standard deviations of the data were also computed by using this software.

In the second phase, Partial Least Squared (PLS) (Ringle, Wende & Will 2005) was used to test the hypotheses. However, we first tested the common method bias by applying Harman's single factor test (Podsakoff et al. 2003). The test involves loading all the indicators into exploratory factor analysis and subsequently examining the un-rotated component matrix to determine the number of factors necessary to account for the variance in the variables. CMV can be said to be present if the result indicates that a single factor obtains the majority of the variance or if most of the covariance between measures are accounted for by a single factor (Podsakoff et al. 2003). The results demonstrated that the first factor captured only 18.03% of the variance. Therefore, CMV is not a severe problem in this study.

RESULTS

INTERVIEW

Many HRMIS experts have emphasised on the role of user characteristics in technostress and have reported that the stress levels are differed by the characteristics of the users. Many answers given by the HRMIS experts revolved around three key characteristics of the user, namely, attitude, technology readiness, and readiness for change, based on the frequency of the keywords identified in the text. Table 1 presents the results of the qualitative analysis and some sample responses. The HRMIS experts have identified that these characteristics are related to all components of technostress, i.e., techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity. Notably, user characteristics such as attitude (Sun et al. 2007), technology readiness (Meuter et al. 2003; Parasuraman 2000), and readiness for change (Kwahk & Lee 2008) may influence the way users react towards the system. For example, users with positive attitudes will participate in any training and feel enjoyment, confidence, and less stress in using the IS. However, individuals that are not technologically ready will have uncomfortable feelings such as anxiety and technophobia when dealing with the ICT (Meuter et al. 2003; Parasuraman 2000). Readiness for change would lead to system usage, and users will feel that the IS is more useful and easy to use (Kwahk & Lee 2008).

SURVEY

Descriptive analysis was used to identify the range of responses of each variable. The means and standard deviations of the four factors involved in this study are reported in Table 2. In using the PLS technique, the quality of the measurement model was assessed first before the structural model was examined. The examination of the measurement model involves ascertaining the convergent validity and discriminant validity of the constructs in the model. Convergent validity refers to the degree to which scores on one scale correlates with scores on another scales designed to access the same construct (Cooper & Schindler 2011). Convergent validity can be assessed through factor loadings, composite reliability (CR), and average variance extracted (AVE) (Hair et al. 2010). As recommended by Hair et al. (2010), loadings for items must be above .5, composite reliability must exceed .7, and the average variance extracted should be greater than .5. All criteria of convergent validity met the recommended thresholds (see Table 3). This study treated technostress as a second order construct following Ragu-Nathan et al. (2008) and Tarafdar et al. (2007). Therefore, we used the repeated indicator approach to modelling the second order factors in the PLS analysis as suggested by Hair et al. (2014) and in the literature. Essentially, calculating the fit measure for our model produced a goodness-of-fit =

TABLE 1. Antecedent factors by keywords

Keywords	HRM experts (n=7)
Attitude	• PP2, P2, K2, P1 viewed that a positive attitude will make users satisfied when using the HRMIS. Such an attitude will reduce problems later on for them. • One HRMIS expert remarked: In implementing the HRMIS, many of the discussed issues related to change in attitude. This means that we have given them sufficient training, but the same problems still occur, even though they should have not. After an investigation, we found that this problem occurs because of the attitude of the users themselves. From the infrastructure aspect, it is already sufficient, and other aspects do not give rise to problems; but after looking into it, the problems are related to the user attitude. Indirectly, the user attitude will give a negative effect, for example, it causes stress to them.
Technology readiness	• P1, PP1, PP2, K1 stated that technology readiness is very important in assisting the implementation of HRMIS. Also, voluntarily training and frequent questions about HRMIS will reduce stress. • One HRMIS expert responded: I am of the opinion that each individual needs to increase his or her knowledge to support the HRMIS implementation to become a success. In other words, their readiness to obtain knowledge in HRMIS would help them in the system usage. Indirectly, this would also facilitate the process of learning and using the HRMIS, thus helping in the users' daily tasks. Limited ability will contribute toward stress.
Readiness for change	• K1, PP1, K2, PP2 explained that some workers are not ready to change from using the manual system to HRMIS, especially the seniors. • One HRMIS expert responded: This HRMIS system is new to those who have been working for a long time. They are the ones who experience problems in changing from using the old system to the new system because they do not have the readiness attitude.

0.37 suggesting that our model performs well compared to base-line values by Wetzels, Odekerken-Schröder and van Oppen (2009).

TABLE 2. Descriptive statistics of variables

Variables	Mean	SD
Technostress	2.31	.43
Attitude	3.76	.35
Technology readiness	3.08	.52
Readiness for change	3.73	.38

Then, discriminant validity was assessed to show the extent to which a construct is truly distinct from other constructs (Hair et al. 2010). In other words, discriminant validity is the degree to which scores on a scale do not correlate with scores on scales designed to measure different constructs (Cooper & Schindler 2011). According to Fornell and Larcker (1981), the square root of AVE for each latent construct should be higher than the correlations of any other latent construct. That is, the square root of the AVE in the diagonals must be greater than the values in the row and columns of that particular construct (Hair et al. 2014). The results showed the calculated values of AVE of the entire construct presented in the diagonal values were higher than the correlational values presented in off-diagonal ones, indicating that the measurement model has adequate discriminant validity (see Table 4).

The structural model was examined by using a bootstrapping analysis in the PLS. The structural model describes the interrelationships of variables between constructs. Initially, the path estimates were obtained for the structural model relationships which represent the hypothesised relationships among the constructs (Hair et al. 2011). Then, a bootstrap analysis was employed to examine the statistical significance of the path coefficient. The path coefficient is significant when the t-value is larger than the critical value. Critical values for one-tailed test are 1.23 (significance level = 10%), 1.645 (significance level = 5%), and 2.33 (significance level = 1%). Based on the findings, three hypotheses were tested, but only one hypothesis was supported (H_1) (see Table 5). H_2 was not supported because opposite result was found between technology readiness and technostress.

DISCUSSION AND CONCLUSION

The present study was conducted to explore the antecedent factors of technostress towards HRMIS. Qualitative and quantitative methods were used to investigate the technostress phenomenon and the antecedents. The qualitative method was used to identify the key concepts subsequently measured in a survey. HRMIS experts were interviewed to obtain data about the antecedent factors. Most of the HRMIS experts indicated that attitude, technology readiness, and readiness for change were among the main problems encountered in the implementation of HRMIS.

TABLE 3. Result of measurement model

First order constructs	Second order constructs	Items	Loadings	AVE	CR
Attitude		att1	0.582	0.549	0.827
		att2	0.812		
		att3	0.781		
		att4	0.766		
Technology readiness		readi10	0.774	0.501	0.916
		readi12	0.728		
		readi14	0.690		
		readi15	0.745		
		readi16	0.704		
		readi17	0.652		
		readi18	0.774		
		readi19	0.662		
		readi20	0.755		
		readi6	0.650		
		readi8	0.629		
Readiness for change		rfc22	0.771	0.511	0.839
		rfc23	0.708		
		rfc24	0.652		
		rfc26	0.764		
		rfc27	0.671		
	Technostress	Techno-complexity	0.647	0.618	0.889
		Techno-invasion	0.811		
		Techno-insecurity	0.810		
		Techno-overload	0.759		
		Techno-uncertainty	0.883		

Note: **AVE** = Average Variance Extracted, **CR** = Composite Reliability
rfc21, rfc25, readi11, readi7, readi9, readi13, and readi5 were deleted due to low loading.

TABLE 4. Discriminant validity of construct

	ATTI	READI CHANGE	TECH READI	TSTRESS
ATTI	**0.741**			
READICHANGE	0.307	**0.707**		
TECHREADI	-0.277	-0.157	**0.715**	
TSTRESS	-0.216	-0.113	0.251	**0.786**

Note: Diagonals (in bold) represent the square root of average variance extracted (AVE) while the other entries represent the correlations.
ATTI = Attitude, READICHANGE = Readiness for change, TECHREADI = Technology readiness

TABLE 5. Hypotheses testing

Hypothesis	Relationship	Beta	Std. error	t-value	Decision
H_1	Attitude → Technostress	-0.107	0.050	-2.144**	Supported
H_2	Technology readiness → Technostress	0.145	0.044	3.293	Not Supported
H_3	Readiness for change → Technostress	0.001	0.041	0.031	Not Supported

Indeed, the survey conducted revealed that attitude was found to be a significant factor in increasing technostress. The finding is consistent with that of previous studies (Compeau & Higgins 1995; Parayitam et al. 2010; Sun et al. 2007; Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan 2011). In other IS research, attitude has been widely used in determining technology usage (Rampersad et al. 2012; Sang 2009). The result of this study signifies that when an end-user has a favourable attitude towards HRMIS, he or she is more likely to feel less stressed when using the system. A positive attitude towards HRMIS shown in this study could be that the end-users perceived the system as being useful, saves times, and gives them pleasant experience, indirectly increasing their interest in using it. As their level of confidence in HRMIS use increases, their stress level reduces. According to Shu et al. (2011), a positive attitude of an end-user towards the HRMIS will enhance his or her confidence in the technology usage and subsequently improve his or her technology self-efficacy. Additionally, participation in training or workshops will improve his or her understanding of the HRMIS. As claimed in the P-E fit theory, the fit or misfit between the person and environment that could lead to the accomplishment or unmet job demands, will result in less or more in strain (Edwards 1996).

While attitude was found to have a significant link with technostress, technology readiness did not. The result is inconsistent with that of Meuter et al. (2003), who demonstrated that without technology readiness users would face uncomfortable situations, such as anxiety and technophobia when using the technology. Even though the HRMIS experts indicated that technology readiness could be a problem, such a factor might not be as prevalent as initially thought because the users had been informed earlier about the implementation of HRMIS, which ran in various stages. In this regard, it is reasonable to expect the absence of such a link.

Finally, the results also revealed that there is no statistical evidence for the relationship between readiness for change and technostress. A possible explanation could be that although readiness for change is essential in all phases of the life cycle of HRMIS, its impact on the psychological and behavioural outcomes is crucial at the beginning of the implementation phase. Since the implementation of HRMIS began more than ten years ago and is still ongoing, readiness for change may no longer be a significant issue in technostress. The conversion to HRMIS from the previous information system is needed to enhance organisational effectiveness and address any performance gaps. However, the implementation will not succeed without user support. Therefore, end-users who support organisational changes tend to be more ready to use the system. Subsequently, this will enhance their skills in using HRMIS and lessen the uncertainty towards the system. However, the finding of this study is inconsistent with that of Ayyagari et al. (2011) and Kwahk and Lee (2008), who found a significant association between readiness for change and stressors, such as work overload (techno-overload) and job insecurity (techno-insecurity).

The qualitative data suggested various antecedent factors, namely, attitude, technology readiness, and readiness for change which lead to technostress towards HRMIS. However, when the survey was conducted, only attitude was empirically found to be a significant contributor to technostress. Technology readiness and readiness for change did not show any significant association with technostress. At the onset, the qualitative and quantitative findings might appear somewhat conflicting. However, considering the fact that the HRMIS is implemented in stages and is still ongoing, technology readiness and readiness for change could no longer be the major issues anymore as users are already attuned to the new system. In this regard, the conflicting finding can be understood by considering the appropriate contextualisation of the phenomenon under study. What is more significant, however, is the role of attitude regardless of the implementation stage of HRMIS. Both findings suggest that changing the attitude of the users is still a challenge for the management to ensure successful implementation of HRMIS.

Generally, the implementation of HRMIS throughout the government agencies of Malaysia is a significant initiative made to provide the public sector employees with an efficient system that integrates IT with human resource management. Notably, this application ensures a more systematic human resource management as the system encompasses both the operation and the management functions. Undeniably, HRMIS plays a pivotal part in supporting the role and functions of the government agencies in the national development. Thus, it is important to investigate the occurrence of any obstacles that can avert successful implementation of HRMIS in such agencies.

IMPLICATIONS

From the theoretical perspective, the findings provide valuable inputs for researchers on the relationship between user characteristics and technostress towards HRMIS. Notably, the contribution of the study stems from the application of the mixed-method approach. Phase 1 featured a semi-structured interview to explore the antecedents of technostress. The qualitative findings were later confirmed by using a survey to test the relationships between the constructs identified and technostress. The survey found that attitude plays a significant role in technostress. The results suggest that researchers should pay particular attention to this factor, in particular, as it is likely to manifest stressor.

In exploring the relationships in this study, the P-E fit theory and Tarafdar et al.'s (2012) framework were extended. The research model of the study incorporated additional user characteristics (attitude, technology

readiness, and readiness for change) as antecedents of technostress. However, the present study differs from Tarafdar et al.'s work in the methodological aspect and in the consideration of the antecedents of technostress. In this regard, the study contributes to the existing literature on technostress and end-user satisfaction. Moreover, this study is different from the previous studies in IS by examining the antecedents of technostress in the HRIS context.

Apart from the theoretical implications, the findings of the study also provide some important insights for managers. By knowing what contributes to technostress, managers could develop necessary technostress management programs to intervene and ensure successful implementation and use of HRMIS. This recommendation is relevant because the qualitative and quantitative study results indicated that unfavourable attitude towards HRMIS can affect technostress. Employees who have unfavourable attitude towards a system are likely to experience technostress when using the system. Providing the relevant education and training may be useful for the end users, as such, the programs need to address and improve users' awareness of the benefits of HRMIS implementation. As technostress could be experienced due to the continuous technical changes in HRMIS, providing continuous technical support and assistance is also necessary to develop a favourable attitude. Therefore, end-users can better understand the reasons for changing the system features and will be more willing to enhance their skills and knowledge in using the updated system, hence, experience less technostress.

LIMITATIONS OF STUDY AND FUTURE RESEARCH DIRECTIONS

Although efforts had been made to ensure that the validity of the research findings is not threatened, the results should be cautiously interpreted by considering the limitations. As such, the study considered the antecedents and technostress relationship at one point in time and did not examine the relationship over time. Thus, the assumption of perceptions may change over time. Future research is highly recommended to conduct a longitudinal study on this topic. Moreover, due to the fact that the data of the present study are restricted to government agencies in Malaysia, future research should be conducted in other industries or other parts of the world to improve the generalisation of the study. The last limitation relates to the sample feature, in which more than half of the participants (59.6%) are clerical staff. Their perceptions might be different from other higher level employees. Therefore, the findings could not be generalised to all levels of personnel in the government agencies of Malaysia. Future research should consider multi-level employees that were not included in this study.

ENDNOTE

[1] The questions comprised the Technology Readiness Index 2.0 which is copyrighted by A. Parasuraman and Rockbridge Associates, Inc., 2014. This scale may be duplicated only with written permission from the authors.

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