User characteristics as antecedents of techno stress towards EHRM: From experts’ views

Hadziroh Ibrahim a,*, Yusliza Mohd Yusoff b

aPhD, Student, Graduate School of Business, Universiti Sains Malaysia, Penang, 11800 Malaysia
bPhD, Senior Lecturer, Graduate School of Business, Universiti Sains Malaysia, Penang, 11800, Malaysia

Abstract

The aim of this paper is to investigate the antecedent factors of techno stress towards EHRM in government agencies of Malaysia. The data for this study were collected from seven HRMIS experts in three state governments of Malaysia. Based on the semi-structured interviews among HRMIS experts, three main characteristics of the user, namely, attitude, technology readiness and readiness for change were identified. The HRMIS experts were identified that all these three characteristics were related to the components of techno stress, which are techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity. Implications of the study and recommendations for future research are also discussed.

Keywords: attitude; EHRM; HRMIS; interview; Malaysia; readiness for change; technology readiness; techno stress.

1. Introduction

The use of information technology (IT) in the workplace may have changed the ways of conducting business so that they are now totally different from the past. In human resource management (HRM), technology has led to improvements in overall organizational efficiency and in the quality and timeliness of human resource services to

* Corresponding author. Tel.: +604-9283799; fax: +604-9287422.
E-mail address: hadziroh@uum.edu.my
employees (Bell, Lee, & Yeung, 2006). The application and implementation of technology in HRM is called electronic human resource management (EHRM).

However, the use of these technologies has also brought with them new problems. Due to the rapid technological changes in computer operating systems and software, a pressure has grown on individuals to make use of these technologies, which can cause technological stress. Frequent changes in technology can make individuals feel insecure and fearful of being unable to keep up with the technology. People also can suffer from technology fatigue in the process of updating their new skills and knowledge. Besides, some people feel stressed because of too much information in a wider variety of formats (Sami & Pangannyaiah, 2006). In these cases, techno stress has impacted their work life.

In Malaysia, the application of EHRM in government agencies is known as human resource management information system (HRMIS). The implementation processes of HRMIS began 1999 and have continued to the present. The application of HRMIS has been implemented in government agencies with the value-added enhancement incorporated gradually. Several studies have been conducted to investigate the effectiveness of HRMIS by focusing on user satisfaction towards certain HRMIS features. A few reported that some users were still not satisfied with the system (www.eghrmis.gov.my). However, McPherson and Ramli’s (2004) study showed that symptoms of techno stress among HRMIS users had developed. Do HRMIS users in government agencies of Malaysia suffer from techno stress? And, what are the factors that can cause techno stress? This study is undertaken to answer these questions and to determine the causes/antecedents of techno stress towards HRMIS in Malaysia.

2. Literature review

2.1. Electronic Human Resource Management (EHRM)

A review of literature shows various definitions of EHRM. For example, EHRM has been defined as the administrative support of the human resource function in organizations by using Internet technology (Voermans & Veldhoven, 2007). EHRM is also referred as a way of implementing HRM strategies, policies, and practices in organizations through the conscious and directed support of (and with the full use of) web technology-based channels (Rue, Bondarouk & Looise, 2004). Strohmeier (2007) defined EHRM as an application of IT for both networking and support by at least two individual or collective actors in their shared performing of HRM activities. Bondarouk and Ruel (2009) put forward a new EHRM definition that represents the consensus-based understanding of EHRM and defined EHRM as “an umbrella term covering all possible integration mechanisms and contents between HRM and technologies aiming at creating value within and across organizations for targeted employees and management” (p. 507).

Past work has provided much empirical evidence in various areas, for example, E-HRM towards HRM effectiveness, attitude towards using E-HRM and employee satisfaction towards EHRM (Bondarouk & Ruel, 2009; Gupta & Saxena, 2011; Ruel, Bondarouk, & Velde, 2007; Voermans & Veldhoven, 2007; Yusliza & Ramayah, 2011; Yusliza, Ramayah, & Haslindar, 2011).

2.2. The Human Resource Management Information Systems (HRMIS)

HRMIS is an integrated technology-enabled human resource management information system incorporating global best practices in human resource management (PSD, 2010). The main objective of HRMIS implementation is to centralize human resource data capture, enabling better access of strategic and consolidated HR information for government agencies, and contributing towards better planning and management of human capital.

According to MAMPU (2003, as cited by McPherson & Ramli, 2004, p. 709), HRMIS specifically aims for the effective staffing and rightsizing of the civil service through better availability of HRM information, automating the HRM operational processes which are currently done manually, providing up-to-date consolidated HRM information for effective HRM planning among agencies, better communication, horizontal integration and more streamlined processes through establishing a richer collaborative system environment among the agencies so as to provide a single window access to HRM transactions that cut across agencies, improving paper-less HRM capabilities among agencies such as electronic distribution of human resource policy manuals and circulars electronically, and providing an open
and flexible system to fulfill and improve the information needs of operational and managerial processes at different levels of agencies.

By means of HRMIS, functions such as leave application and yearly appraisals can be submitted and processed electronically by means of a personnel service book that has been converted into an electronic form. In this way, the HRMIS provides a systematic and integrated consolidation of information for all HR activities including pension benefits (Abdul Karim, 1997). To date, very few studies have examined HRMIS in Malaysia on issues such as technical and systems factors (MAMPU, 2011; McPherson & Ramli, 2004; Mohd Azman, 2011; Noraswati, 2011; Norshita, Halimah, & Tengku Mohammad, 2010).

2.3. Techno stress

Craig Brod (1984) defined techno stress as a modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner. Since then, several researchers have tried to define techno stress from their own perspectives. For instance, Tu, Wang, & Shu (2005) defined techno stress as any negative effect on human attitudes, thoughts, behaviour, and psychology that directly or indirectly results from the use of computer-based ICTs. Then, Wang, Shu, & Tu (2008) redefined techno stress as a “reflection of one’s discomposure, fear, tenseness and anxiety when one is learning and using computer technology directly or indirectly, that ultimately ends in psychological and emotional repulsion and prevents one from further learning or using computer technology” (p. 3004).

Tarafdar, Tu, Ragu-Nathan, and Ragu-Nathan (2007) proposed five conditions for techno stress. These conditions were techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. Techno-overload occurs when users are unable to identify what is actually useful information. They spend more time and effort in information processing because they communicate more information than is necessary and receive more information than they can effectively process. Users also receive more information than they can process and use effectively. Techno-invasion refers to situation where users feel that they are never free of technology. They think that technology has invaded their lives. Moreover, due to complexity of the technology, users must spend more time in learning how to use technology. Stress occurs when they feel that the variety of applications and functioning is intimidating and they do not understand how and why they need to use it. Furthermore, constant changes of technology make users feel stressed and unsatisfied with the systems. Techno-insecurity occurs when a user feels worried about losing his or her job to other colleagues who have better knowledge of and skills with the technology compared to him or her.

A review of the literature found that a great number of research has been conducted to investigate the phenomenon of techno stress in various contexts (Ayyagari, Grover, & Purvis, 2011; Bradshaw & Zelano, 2013; Salanova et al., 2012; Sami & Pangannaiah, 2006; Tarafdar et al., 2011; Tu et al., 2005; Wang et al., 2008).

3. Research methodology

This study employed a semi-structured interview for collecting data from respondents. A total of seven HRMIS experts from northern state governments were selected and interviewed. They were selected based on their experience and the scope of work that focused on the implementation of HRMIS. Interview questions that were developed were scrutinized by a supervisor with assistance from experienced and qualified individuals in this field in order to ensure that the data collection could be performed optimally. The interviews were taped, transcribed, and then evaluated. The data were collected relating to certain aspects: 1) background information of the interviewee, 2) current stage of HRMIS implementation, and 3) the antecedents of techno stress. The interview guide was developed based on the dimensions of techno stress (techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty) that Tarafdar et al. (2007) introduced. Questions for each dimension of techno stress began with related scenarios to facilitate the understanding of the HRMIS experts regarding these dimensions of techno stress, as shown in Table 1.
Table 1. Interview questions.

| Dimension 1 |
|-------------|
| The use of HRMIS enables information input from multiple sources. What is your opinion in each of these situations? Do you agree? |
| a. Due to more information, users will not efficiently handle and effectively use the information? |
| b. Due to more information, users are forced to work faster to cope with the increased processing requirements? |
| c. Due to more information, users will tend to process the information simply because of very tight time schedules? |
| d. System features make users feel overload. |

4. Results and discussion

Many of the HRMIS experts emphasized the role of the user characteristics with respect to techno stress. They believe that the stress level differs according to the characteristics of the users. Many answers given by the HRMIS experts revolved around the three main characteristics of the user, namely, attitude, technology readiness, and readiness for change. The HRMIS experts were also of the opinion that all these three characteristics were related to all components of techno stress, which are techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity, as shown in Figure 1.

![Fig. 1. Antecedents of techno stress](image)

4.1. Attitude

In the context of techno stress, user attitude is among the main factors that cause the user to experience stress in relationship to the technology being utilized. In general, an irresponsible attitude among the workers causes a negative effect not only on the organization, but also on themselves. More specifically, this attitude can cause the worker to suffer techno stress.

One HRMIS expert gave a clear example how attitude can cause techno-insecurity. Attitude can also cause techno-overload, techno-invasion, techno-complexity, and techno-uncertainty. One HRMIS expert explained that:

*Anytime there is a KPI, only then they will work hard in order to achieve the KPI. During the first year, leniency can be given, but for the following year they need to put more effort in achieving the KPI. We need to motivate them. If it is still not achieved, this means that there might be a problem within us. So, we will not feel secure in that sense.*

Another HRMIS expert said that:

*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 cause stress to them.*

Another HRMIS expert also mentioned that procrastination or delaying-work attitude among the users would produce an adverse effect on themselves later on in their lives:

*An example is the annual work targets, we have informed them on how to perform the task, but we still need...*
to monitor and constantly need to push them to do it. In actual fact, all they need to do is to follow the set dates or schedule to complete this task. This would cause them stress when using the HRMIS at the very last minute.

Another HRMIS expert highlighted the importance of attitude towards HRMIS:

*I am of the opinion that all users should support the implementation of HRMIS and have a positive attitude toward the HRMIS. This positive attitude would indirectly instill the feelings of pleasure and contentment in using the HRMIS. Other than this, they would also feel less burdened with the training provided by the employers.*

Previous studies have mentioned that attitude is considered a determinant of e-learning satisfaction (Sun, Tsai, Finger, Chen, & Yeh, 2007). A positive attitude towards computer or technology usage could enhance the chances of computer learning satisfaction. Meanwhile, a negative attitude would reduce interest (Sun et al., 2007). Continuous involvement in the implementation of electronic learning makes users feel confident and not afraid of the complexity of using computers. Moreover, attitude plays an important role in people’s judgement, evaluation, and behaviour (Zhang et al., 2008). As would be expected, users with positive attitudes will participate in any training or workshops and feel enjoyment, confidence, and less stress in using the technology. Therefore, confidence in technology usage can enhance user’s technology self-efficacy and indirectly also reduce techno stress (Shu et al., 2011; Tarafdar et al., 2011).

### 4.2. Technology readiness

Technology readiness is vital whether in matters related to preparing the individual with the required skills enabling him or her to fully utilise the HRMIS or to improve knowledge about HRMIS in order that the implementation and use of this system can be done well without problems arising. For example, high levels of technology readiness among users will cause them to be motivated when using the HRMIS and thus lead them to put in more effort in learning all the needed skills for using the HRMIS efficiently and effectively. Without technology readiness, such as acquiring new skills, a user would easily feel worried and stressed because he would be unable to use the HRMIS well in completing daily work tasks.

A HRMIS expert said that his organization was preparing a platform for equipping users with the ability and skills in using HRMIS, as evidenced in the following excerpt:

*In order to facilitate the user’s utilisation of HRMIS effectively, we have provided workshops, courses, and training. This is for enhancing their motivation in using HRMIS and alleviating the feelings of panic when faced with the HRMIS.*

Other HRMIS experts gave examples of situations that occur if the user does not have proper preparation or readiness in using and implementing HRMIS. One HRMIS expert stated:

*For example, the user is under the assumption that even though they do not have any skills in using HRMIS... (T)hey still get paid their wages. Problems will arise when the user needs to retrieve data from the HRMIS. They will feel worried and experience panic, which leads to feelings of stress quickly.*

Another HRMIS expert noted the importance of technology readiness toward HRMIS, as illustrated in the following statement:

*The readiness for preparing oneself with the required skills needs to come from within oneself. The effort to come and see us and ask for guidance is there, but the number is small. If everyone has their own awareness, this system would have been a guaranteed success and user stress would decrease.*

Another HRMIS expert concluded:

*I am of the opinion that each individual needs to increase his knowledge for supporting the HRMIS implementation to become a success. Indirectly, this would also help to facilitate the process of learning and using the HRMIS, thus help in the users’ daily tasks. Limited ability will contribute toward stress.*

Previous findings revealed that some individuals exhibit anxiety and technophobia toward technologies in the self-service industry (Meuter, Ostrom, Bitner, & Roundtree, 2003; Parasuraman, 2000). They feel uncomfortable and frustrated in using the technology. Individuals without traits such as technology readiness will face uncomfortable feelings such as anxiety and technophobia when facing ICT (Meuter et al., 2003; Parasuraman, 2000). In fact,
organisations are hopeful that a user would engage in the necessary self-preparation mentally and physically in assisting the successful implementation of the technology or the IS. When some users are limited in their abilities, these increased demands enhance the gap between abilities and demands and leads to greater techno stress.

4.3. Readiness for change

Attitude of an individual who is not ready to face change in an organisation is one contributing factor that causes the failure of an IS implementation. In the context of techno stress, individuals who are not ready to face change in using the information system application will constantly feel that the implemented HRMIS will give them problems and cause stress. One HRMIS expert stated that users would feel that learning something new is very difficult, especially when it is related to technology. In turn, this will cause a user to come face-to-face with the techno stress condition. A different outcome would occur if those same individuals were ready to face changes that can occur within the organisation, especially from the aspect of using technology. They will be thinking positively and be conscientiously involved in efforts made by the organisation to make the implementation of HRMIS a great success.

One HRMIS expert described:
There will always be a new feature that has not been implemented, but they have already rejected it because it is difficult. They [the users] have already rejected it early. For example, we have implemented performance assessment, as a system, which they said, is complicated, even though they have not tried it yet. For me, it is a simple matter because at the state level, this also occurs. Other than this, they also constantly feel unsure and difficulties in using the HRMIS because they have refused to attend the training sessions that have been provided.

Another HRMIS expert mentioned:
This HRMIS system is new to those who have been working for a long time. They are the ones who experience problems in transitioning from using the old system to the new system because of them having the not ready attitude. Many of these users do not want to the change to system even though the circulars regarding the existence of the system have been released ... still there are those who do not want. User attitude also is a problem.

Another HRMIS expert highlighted that:
When the previous operations were done manually and then changed to a [computerised] system implementation, this matter becomes quite complex. They feel that it is difficult, so they are not ready to change. However, the effects would come into play later...

Meanwhile, three more HRMIS experts were of the opinion that users who are not ready to face the implementation and usage of HRMIS will become a problem not only to themselves, but also to others. However, these four HRMIS experts only agreed with the examples given by the researcher without giving any further comments.

Readiness for change plays a role as a critical success factor for HRMIS. Readiness for change refers to the extent to which organisational members hold positive views about the need for organisational change, as well as their belief that changes are likely to have positive implications for them and the organisation (Kwahk & Lee, 2008). It is one of the positive attitudes toward behaviour. This can mitigate resistance to change and reduce the failure rate of IS implementation (Eby, Adams, Russell, & Gaby, 2000). Furthermore, users found the technology or information systems more useful and easy to use because they were ready for any changes, and thus indirectly affect their intention to use the technology or IS (Kwahk & Lee, 2008). The link between readiness for change, ease of use, and usefulness is expected to be able to reduce techno stress as these technology features have also been used as strategies for coping with strain, such as computer phobia (Sami & Panganniah, 2006).

5. Conclusions and recommendations

Most of the HRMIS experts stated that three characteristics of users are the causes of techno stress. There are attitude, technology readiness, and readiness for change. The results of the interviews are summarised below (please refer Table 2). Several experts did not cooperate fully and gave textbook or “safe answers” during these interviews. Some HRMIS experts only agreed with the antecedent factor examples the researcher provided without any elaboration on the situations that would cause each dimension of techno stress. Therefore, the research results that are
elaborated originate from the summary of answers the interviewed HRMIS experts gave.

Theoretically, this study focuses on the antecedents of techno stress, a subject that has been given less attention. Furthermore, the study contributes to the literature by providing a Malaysian perspective on techno stress towards EHRM, especially within the context government sectors. Besides, the study also extends Tarafdar et al.’s model on techno stress by integrating user characteristics as antecedents of techno stress. Practically, the findings could be used to assist in implementing HRMIS in Malaysian government agencies. A series of training and development programs should be conducted in handling the issues.

In order to have a more comprehensive and balanced views of the possible antecedents of techno stress, further study should be conducted involving HRMIS users, not only the HRMIS experts. Furthermore, the issue should be further investigated quantitatively in order to have a clearer picture of this issue.

Table 2. Antecedent factors by keywords

| Keywords                   | HRMIS experts’ results (n = 7)                                                                 | Total results                                                                 |
|----------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Attitude                   | • For HRMIS experts were of the opinion that positive user attitude among users would result in feelings of delight and satisfaction when using the HRMIS. Indirectly, this would reduce problems later on for the users. | Four HRMIS experts agreed that a positive attitude could reduce ill effects on the users. |
| Technology readiness       | • Four HRMIS experts stated that technology readiness is very important in assisting the implementation of HRMIS. Good technology readiness combined with volunteering in attending training and always asking the experts about HRMIS, would reduce their stress. | Four HRMIS experts mentioned that user technology readiness is pertinent in the successful implementation of HRMIS. |
| Readiness for Change       | • Three HRMIS experts explained that there are workers who are not ready to change from manual to HRMIS, especially among the senior workers. | Six HRMIS experts stated users who are not ready to change and support the implementation of HRMIS would give negative effects to themselves and others and especially in increasing the experience of techno stress. |
|                            | • Only three HRMIS experts agreed with the opinions put forward by the researcher without having to elaborate upon them further. |                                                                                |

Acknowledgement

This research was supported in part by a Short Term Research Grant (304/PPAMC/6313027) from Universiti Sains Malaysia.

References

Abdul Karim, M. R. (1997). Reengineering the Malaysian public service and the use of information technology in promoting efficiency and quality. *Asian Review of Public Administration, VIX*(1), 57-69.

Ayyagari, R., Grover, V., & Purvis, R. (2011). Techno stress: Technological antecedents and implications. *MIS Quarterly: Management Information Systems, 35*(4), 831-858.

Bell, B. S., Lee, S. W., & Yeung, S. K. (2006). The impact of eHR on professional competence in HRM: Implications for the development of HR professionals. *CAHRS Working Paper Series*. Retrieved from http://digitalcommons.ilr.cornell.edu/cahrswp/403.

Bondarouk, T., & Ruel, H. (2005). Does E-HRM contribute to HRM effectiveness? Results from a quantitative study in a Dutch Ministry. Paper presented at the 4th International Conference of the Dutch HRM Network, Enschede, The Netherlands.

Bondarouk, T., & Ruel, H. (2009). Electronic Human Resource Management: Challenges in the digital era. *The International Journal of Human Resource Management, 20*(3), 505-514.

Bradhshaw, R., & Zelano, J. A. (2013). Exploring themes of techno stress for end users working with hardware and software technology. Retrieved from http://www.g-casa.com/conference/Singapore12/papers?Zelano-1.pdf.

Brod, C. (1984). Technostress: The human cost of the computer revolution. Reading, Mass: Addison-Wesley.

Eby, L. T., Adams, D. M., Russell, J. E. A., & Gaby, S. H. (2000). Perceptions of organizational readiness for change: Factors related to employees’ reactions to the implementation of team-based selling. *Human Relations, 53*(3), 419-442.

Gupta, A., & Saxena, S. (2011). Employees' satisfaction towards E-HRM in service organizations. *Gurukul Business Review, 7*, 41-52.

Kwahk, K-Y., Lee, J-N. (2008). The role of readiness for change in ERP implementation: Theoretical bases and empirical validation. *Information & Management, 45* (2008), 474-481.
MAMPU. (2011). Kajian keberkesanan pelaksanan SMPC dan SMPT dalam pengurusan sumber manusia sektor awam. 1-33. Retrieved from http://www.eghrmis.gov.my/docs/pdf/buletin/2011/laporan-brc.pdf.

McPherson, M., & Ramli, R. (2004). Lessons learned from the implementation of a Malaysia egovernment project. In M. Khosrow-Pour (Ed.), Innovations through information technology (pp. 709-712). USA: Idea Group Inc.

Meuter, M. L., Ostrom, A. L., Bitner, M. J., & Roundtree, R. (2003). The influence of technology anxiety on consumer use and experiences with self-service technologies. Journal of Business Research, 56(11), 899-906.

Mohd Azman, M. A. (2011). The effects of task-technology fit on use and user performance impacts: The case of the human resource management information system in the Malaysia public sector. Retrieved from http://www.pacis-net.org/file/2011/PACIS2011-010.

Noraswati, A. W. (2011). The effectiveness of Human Resource Management Information System (HRMIS) application in managing human resource at the Perlis State Secretary Office. Master of Science (Information Technology), Universiti Utara Malaysia, Sintok, Kedah.

Norshita, M. N., Halimah, B. Z., & Tengku Mohammad, T. S. (2010). Public user assessment of Malaysia's e-government applications. World Academy of Science, Engineering & Technology, 43, 813-817.

Parasuraman, A. (2000). Technology readiness index (TRI): A multiple-item scale to measure readiness to embrace new technologies. Journal of Service Research, 2, 307-320.

Public Service Department (2010). Buku ‘Pengenalan dan mekanisme pelaksanaan HRMIS’ versi terkini. Retrieved from http://www.eghrmis.gov.my/docs/pdf/sc/sp_buku_pengenalan.pdf.

Rae, H. J. M., Bondarouk, T. V., & Loosie, J. K. (2004). E-HRM: Innovation or irritation. An explorative empirical study in five large companies on web-based HRM. Management Revue, 15(3), 364-380.

Ruel, H., Bondarouk, T., & Velde, M. V. d. (2007). The contribution of e-HRM to HRM effectiveness: Results from a quantitative study in a Dutch Ministry. Employee Relations, 29(3), 280-291.

Salanova, M., Llorens, S., & Cifre, E. (2012). The dark side of technologies: Techno stress among users of information and communication technologies. International Journal of Psychology, 2012, 1-15.

Sami, L. K. & Pangamniah, N. B. (2006). “Techno stress” A literature survey on the effect of information technology on library users. Library Review, 55(7), 429-439.

Strohmeier, S. (2007). Research in e-HRM: Review and implications. Human Resource Management Review, 17, 19-37.

Sun, P-C., Tsai, R. J., Finger, G., & Chen, Y-Y., & Yeh, D. (2007). What drives a successful e-learning? An empirical investigation of the critical factors influencing learner satisfaction. Computers & Education, 2007, 1-20.

Tarfiaq, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. S. (2007). The impact of techno stress on role stress and productivity. Journal of Management Information Systems, 24(1), 301-328.

Tu, Q., Wang, K. L., & Shu, Q. (2005). Computer-related techno stress in China. Communications of the ACM, 48(4), 77-81.

Voermans, M., & Veldhoven, M. v. (2007). Attitude towards E-HRM: An empirical study at Philips. Personnel Review, 36(6), 887-902.

Wang, K., Shu, Q., & Tu, Q. (2008). Techno stress under different organizational environments: An empirical investigation. Computers in Human Behavior, 24, 3002-3013.

Yusliza, M. Y., Ramayah, T., & Haslindar, I. (2010). E-HRM: A proposed model based on technology acceptance model. African Journal of Business Management, 4(13), 3039-3045.

Yusliza, M. Y., Ramayah, T., & Haslindar, I. (2011). HR roles and E-HRM: Some initial evidence from Malaysia. International Journal of Current Research, 3(2), 131-138.