

EVALUATION OF ORGANIZATIONAL READINESS IN INFORMATION SYSTEMS ADOPTION: A CASE STUDY

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ABSTRACT

Most ICT projects failed due to various factors including organizational issues and leaders who did not sufficiently assess organizational readiness for change. Although various perspectives and criteria have been used by researchers to measure organizational readiness, reported evidence on its measurement in information systems (IS) adoption is still limited and unclear, which calls for clarification and further studies. The purpose of the paper is to discuss the evaluation of IS adoption in organizational readiness using an extended organizational readiness framework and to identify the factors that influence organizational readiness in IS adoption. A case study was conducted on the Human Resource Management Information System (HRMIS) based on the Framework of Organizational Readiness at the Public Service Department (PSD) of Malaysia. This qualitative study involved interviews, observations and document analysis. The study found that the PSD is set to implement the HRMIS but the issues and problems identified as pertaining to the HRMIS must be addressed and dealt with immediately in order to achieve the system objectives. A number of factors influencing organizational readiness were identified in the adoption of the HRMIS: Attributes of the Change (vision clarity, change appropriateness and change efficacy), Leadership Support (top management support, presence of an effective champion, and IT support), Internal Context (organizational history of change, organizational conflicts and policies, and organizational flexibility) and Attributes of the Change Targets (collective self-efficacy and user training). Although our case study focused on a specific setting, the identified factors and proposed framework extension is potentially useful for assessing other information systems in different settings; the findings could act as a guide for assessing organizational readiness prior to the adoption of information systems.

Keywords: Organizational Readiness, Change Management, Information Systems Adoption, Information Systems Evaluation

INTRODUCTION

Organizational readiness is the capacity and willingness of an organization to change from its current state to a desired future state to improve organizational effectiveness (Weiner et al., 2008). According to (Chong, 2005) organizational readiness is the degree to which the organization has the awareness, resources, commitment and administration (governance) in the adoption of information technology. Organizations are constantly faced with the need to implement changes in strategy, structure and culture (Armenakis et al., 1993; Ziembra & Oblak, 2015).

How to identify whether an organization is ready to face the challenges and take advantage of the adoption of a good information system? What are the factors that contribute to the effective implementation of organizational changes, including organizational readiness? Organizational readiness cannot be taken lightly as it involves many factors that contribute to the effective implementation of change. Change experts and health care practitioners argue that organizational readiness is a key determinant to the successful implementation of change (Shahrasbi & Pare, 2014; Weiner et al., 2008; Alfonsus, 2008; Kotter, 1995; Ziembra & Oblak, 2015; Detwiller & Petillion, 2014). Organizational readiness is one of the factors that contributes to the enhancement of a system (Yusof et al., 2008) and it could also reflect the

level of commitment of employees to their organization (Ingersoll et al., 2000). Several previous studies have also proven that organizational readiness is a factor that influences the adoption of information technology (IT) / information systems (IS) (Grandon & Pearson, 2004; Hameed et al., 2012; Scupola, 2012; Shahrabi & Pare, 2014). It is evident that initial support in organizational readiness is a key factor to the successful implementation of the initiatives of Clinical Information Systems (Evans et al., 2014; Detwiler & Petillion, 2014; Pare et al., 2011).

The most important factor in reviewing the assessment of IS is an understanding of what needs to be measured. IS could have a social, economic, organizational and management impact (Hirschheim & Smithson, 1988), thus indicating that there is a need to have measurements for these criteria. Shahrabi and Pare (2014) identified a misfit between the concepts of organizational readiness in IS research and those of change management field. An assessment of IS is aimed at answering the question of what (aspect of the assessment), why (objective of the assessment), who (the stakeholders to be assessed), when (the phase in the development life cycle of the system), and how (method of assessment) (Yusof et al., 2008). The choice of what is to be assessed is a complex process that needs to be done in advance and it is significant in influencing the selection of stakeholders and the organizational context.

THEORETICAL BACKGROUND

ORGANIZATIONAL READINESS

Many studies have been done in organizational readiness for change including evaluation (Lehman, 2002; Zheng, 2009; Pare et al., 2011; Ziamba & Oblak, 2015; Detwiler & Petillion, 2014), innovation (Lokuge & Sedera, 2014); Snyder-Halpern, 2001; Snyder-Halpern 2002) individual's attitude (Holt et al., 2007) and review (Shahrabi & Pare, 2014). Lewin (1951) proposed the well-known three-stage model of planned organizational change: (a) unfreezing, (b) change and (c) re freezing. Change management experts contend that change advocates must first "unfreeze" organization by changing the existing mind-set and creating the motivation to change. The actions to create the readiness for change (unfreezing) include providing mechanism for changing circumstances, stimulating dissatisfaction against the status quo and creating an appealing vision of the future state (Kotter, 1995; Armenakis et al., 1993). (Kotter, 1995) expanded Lewin's model to create a detailed approach in applying the changes. The first four (4) steps of Kotter's comprise of detail actions of the unfreezing phase. Therefore, organizational members must constantly involve in the change implementation by forming a powerful change team (that would organize and manage the change process), establishing a sense of urgency, creating a vision and communicating the vision.

Change experts assert that greater readiness leads to more successful change implementation. Social cognitive and motivation theory supports these hypotheses. Drawing on social cognitive theory, the organizational members are willing to change, expand greater effort in supporting change and exhibit greater persistence in facing obstacles or setbacks (Kotter, 1995). From the motivational theory, organizational members would exhibit more pro-social, change-related behaviors which support the change effort that exceed job requirements or role expectations (Weiner, 2009).

MEASURING ORGANIZATIONAL READINESS

In Table 1, the key measures of organizational readiness in IS adoption were summarized. Previous research on organizational readiness measurement in IS adoption is still limited. Ten previous researches related to these measures focused on different themes (see Table 1). Some research has focused on individual readiness like that of Holt et al. (2007) which focuses entirely on individual's attitudes. It is argued that individual readiness are not sufficient to

measure organizational readiness as organizational change requires collective and coordinated behavioural change by organizational members.

TABLE 1. Measure of Organizational Readiness in IS Adoption

References	Theme	Measures	Level of analysis
(Holt <i>et al.</i> , 2007)	Individual's attitudes	<ul style="list-style-type: none"> • Perceived appropriateness • Perceived management support • Perceived personal capability • Perceived personal benefits 	Individual
Lehman <i>et al.</i> , (2002)	Organizational readiness for change (ORC)	<ul style="list-style-type: none"> • Motivational readiness • Institutional resources • Personality attributes of staff • Organizational climate • Vision • Skills: vendor market, product selection, training, IT, application support • Incentive • Resources • Action plans • Change attributes • Leadership support • Internal context • Attributes of the change targets 	Organizational
Zheng <i>et al.</i> (2009)		<ul style="list-style-type: none"> • Leadership support (champion & steering committee) • Shared need • Clear vision • Mobilized commitment (working & focus groups) • Making change last • Monitoring progress • Changing system and structures • Top management support • Recognize the change • Shared vision for change • Planning a project as a change • Managerial activity • Effective communication • Organization readiness • Employees training • Employees involvement • Employees satisfaction • Information flow • Performance measurement 	Organizational
Pare <i>et al.</i> (2011)	Critical Success Factors (CSF) of ORC	<ul style="list-style-type: none"> • Financial readiness • Technological readiness • Staff readiness • Processes and operations readiness • Cultural readiness • Business readiness 	Organizational
(Detwiller & Petillion, 2014)		<ul style="list-style-type: none"> • Knowledge • Staffing & skills technology • Technology • Administrative support • Management structures 	Organizational
(Ziemba & Oblak, 2015)	A review of Organizational Readiness dimensions		
(Shahrasbi & Pare, 2014)			
(Snyder-Halpern, 2001; Snyder-Halpern, 2002)	Innovation readiness		Organizational

References	Theme	Measures	Level of analysis
(Lokuge & Sedera, 2014)		<ul style="list-style-type: none"> • Processes • Resources • Values and goals • Ability • Value • Information • Circumstances • Timing • Obligation • Resistance • Yield 	
(Oliveira & Martins, 2011)	IT adoption models at firm level	<ul style="list-style-type: none"> • Top management support • Feasibility • Project champion characteristics • Firm size • Globalization level • Technology readiness • Technology resources • Technology integration 	Organizational

Research by Lehman et al. (2002); Zheng et al. (2009); and Pare et al. (2011) focused on the organizational readiness for change. Lehman et al. (2002) describes the rationale and structure of ORC and shows that it has acceptable psychometric properties such as measurement of knowledge, abilities, attitudes, personality traits and educational measurement. The measures of ORC are not supposedly limited to technology transfer only; it should be able to cover a variety of organizational changes including IS adoption and change attributes. Zheng et al. (2009) presents the study on EHRS implementation in ambulatory settings, particularly the organizational readiness and main technology considerations. Five criteria of EHRS readiness were assessed namely vision, skills, incentive, resources, and action plans. Furthermore, Pare et al. (2011) focused entirely on the perception of the ability of user to succeed at technological change as it is perceived by the users in the pre-implementation phase. Four classes of antecedents have a direct effect on organizational readiness: the organizational context, the attributes of desired change, the attributes of the change targets, and leadership support.

Highly overlapping CSF for ORC were identified in two studies to discuss positive and negative IS adoption projects and lesson learned (Detwiler & Petillion, 2014; Ziemia & Oblak, 2015). Detwiler and Petillion (2014) applied General Electric's (GE) Change Acceleration Process in introducing a Clinical Information Systems in multiple sites. Critical, detailed measures were identified, reported and monitored to warrant readiness for every implementation. Ziemia and Oblak, 2015 identified twelve CSF for ORC and validated them in two case studies with contradicting project outcomes. Shahrabi & Pare (2014) reviewed IS research to assess organizational readiness concepts in IS research and proposed six dimensions of ORC that are categorised under structural and psychological aspects.

Snyder-Halpern (2001); Snyder-Halpern (2002); and Lokuge and Sedera (2014) focus on the innovation phenomenon which applies to all phases of a Clinical Information Systems project life cycle and Enterprise Systems, respectively. Organizational readiness is broadly described as the level of fit between IT innovation and organization. Oliveira and Martins (2011) identified technology readiness in multiple IS adoption models that includes theory of diffusion and technology, organization, and environment framework. Various measures related to organizational and technological readiness were identified. In comparison with the other organizational readiness measures, those organizational measures proposed by Pare et al. (2011) are probably the most relevant to the organizational readiness concept where change

commitment and change efficacy in the collective self-efficacy perspective were highlighted. However, this framework is lack of IS adoption measures.

EXTENDING THE FRAMEWORK OF ORGANIZATIONAL READINESS IN IS ADOPTION

Antecedents that directly affect organisational readiness in IS adoption included change attributes, upper management support and champions, organisational culture, training, and technical support (Pare et al., 2011). As shown in Table 1, Olivera and Martins (2011) specified technology readiness in multiple IS adoption models whilst Zheng et al. (2009) assessed IT skills that include vendor market, product selection, training, and IT and application support. On the other hand, Service Quality (the measures of technical support or service) and training are featured in the IS Success Model (DeLone & McLean, 2004). Service Quality is concerned with the overall support delivered by the service provider of IS or technology, regardless of whether the service is delivered by the internal organisational department or outsourced to external providers. Service quality can be measured through access to technical support, quick responsiveness, assurance, empathy and follow up service.

Further, many facilitators and barriers to system adoptions were attributed to well planned, monitored, adequate, extensive, continuous, real-time, and personalised user training and technical support (Alshare et al., 2011; Cresswell, 2011; Hsiao et al., 2013; Lau et al., 2013; Simon et al., 2013; (NC), 2012; Zheng, 2009; Nfuka & Rusu, 2014; Evans et al., 2014). A framework for critical success factor of effective IT governance assigned training for optimal IT use as part of its first step. A national survey on HIT adoption and readiness for meaningful use (Anon., 2012) found that users who were not ready to meet system competency and organizations and were not able to meet meaningful use of system criteria might require additional and significant training and technical assistance, respectively. Training and support have often been used in tandem as identified success factors in various studies of organizational readiness and IS adoption. Therefore, the framework developed by Pare et al. (2011) can be complemented by adding user training and IT support to measure organizational readiness in IS adoption.

This study proposed an organizational readiness model in IS adoption by extending the research model of Pare et al. (2011), as indicated by the measures marked by asterisk, namely IT support and user training, which was discussed in the previous work of this study (Figure 1) (Aziz & Yusof, 2012). These variables are discussed in the following subsections. Attributes of change refer to the 'what' aspect (Holt et al., 2007). Change management theorists posit that one of the key sentiments to creating change readiness is the sense that change is needed (Armenakis et al., 2007). The change is not only associated with the new system, but also with local processes, organizational structure, roles and responsibilities, and compensation schemes (Lapointe & Rivard, 2005). Pare et al. (2011) identified the following three attributes of change: vision clarity, change appropriateness and change efficacy.

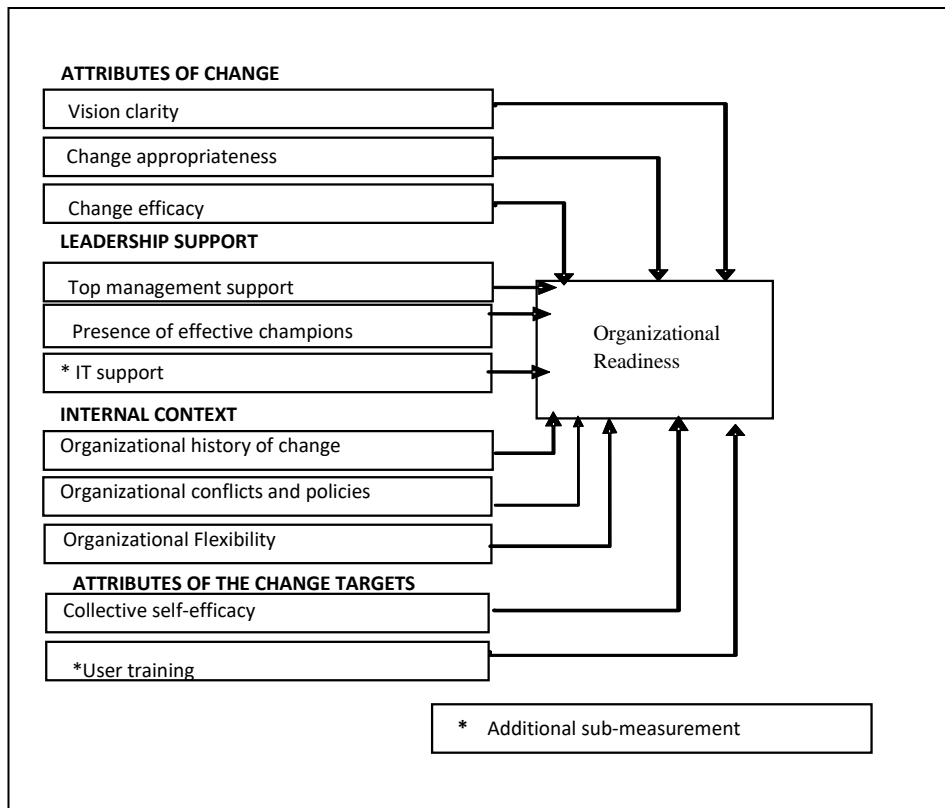


FIGURE 1. Framework of Organizational Readiness in the IS Adoption (Aziz & Yusof, 2012)

Leadership support describes the support from the top management as well as local agents of change (Armenakis et al., 2007). Pare et al. (2011) identified the following as leadership support: presence of an effective champion and top management support. Recent studies identified change readiness working group that were established to ensure effective readiness through planning, guiding, assessing and monitoring mechanisms (Evans et al., 2014; Detwiller & Petillion, 2014). A new following technical support sub-measure was proposed as the provision of adequate IT officer can help solving technical problems and providing other IT support thus creating mechanism for changing environment, as mentioned earlier (Armenakis et al., 1993; Kotter, 1995). Technical support is an important adoption factor to many studies. In a successful multi sites of a HIS implementation, a large amount of efforts were spent on the technical support before and during implementation. Most sites have had 24/7 technical supports for several weeks (Ash et al., 2003c). Supports were provided continuously by telephone and in person. Smooth system transition was attributed to the availability of live, in-person support from ‘super users’– following the period of system operation (Simon et al., 2013). Support staff were available round the clock for two weeks to assist users to be accustomed to a HIS (Kuperman, 2001) and to assist users in installing hardware/software of a CIS and solving problems (Lau, 1998).

Lack of technical support resulted in problematic system’s implementation and development including increased delays and frustrations (Dent, 1990). In an EHR implementation, a system analyst “noted that lack of on-site computer support also predicts failure to fully use the system” (Gosbee & Clay, 1993). Change management experts and scholars have discussed internal contextual conditions that affect organizational readiness for change (Weiner, 2009). Organizations, as dynamically evolving systems, have a history of commitment, successes and failures while implementing computer-based systems (Kling & Iacono, 1989). Pare et al. (2011) identified the following three internal contexts: organizational history of change; organizational conflicts, and organizational flexibility.

Attributes of the change targets refer to the organizational members that require a change (Holt et al. 2007). The variables are the attributes representing the internal conditions in individuals that influence their beliefs, attitudes and intentions when confronted with change. Pare et al. (2011) identified collective self-efficacy as a measure while (Igbaria, 1997) identified another measure, namely user training, as it can also determine the organizational members' readiness to accept and use ICT application. User training has played a major role in the uptake of HIS. According to a user, "I think that training was one. They had to be trained and we spent a lot of time training them, sometimes one on one..." (Doolan, 2003). In another practice, the staff learned "a little at a time", and the introduction of new functions were given only when everyone reached the same level (Wager, 2000). Many staff implied the importance of intensive training just before the system is up and running in order to keep the concepts fresh in their minds. There was a need for a trainer who can "talk to the level of the novice user".

METHOD

A qualitative approach was employed to understand issues related to organizational readiness measures in IS adoption by examining related system and organizational perspective, behaviour, event, and process. Qualitative study is more flexible in capturing changes during evaluation process (Rubin & Babbie, 2014). This single-case study was conducted on the Human Resource Management Information System (HRMIS) in the Public Services Department (PSD) of Malaysia as it represents a typical case of the study problem (Yin, 2009). Formative system evaluation was conducted to identify ongoing problems and improve further development. The case study approach consists of four phases namely problem identification, selection of research strategy and method, system evaluation, and framework validation. Evaluation problems were identified from the literature review and observation during immersion. The immersion session was conducted to determine study scope and build rapport with the Information Development Unit (IDU) staff. The second phase, the selection of strategies and effective assessment methods for the collection of data, was conducted through interviews, observations and document analysis.

The case study was conducted over 3 months from January until May 2012. Pare et al. (2011) framework was used as a guideline for the HRMIS evaluation. A pilot study was conducted on the HRMIS' officer exchange sub-module as it was still in progress. This pilot study tested and verified all the factors from Pare's (2011) organizational readiness framework namely Attributes of Change, Leadership Support, Internal Context (organization) and Attributes of the Change Targets. Data from pilot study were analysed to identify issues that need to be emphasised during interview. The analysis improved researcher KA skills in conducting and recording interview and analysing data.

Furthermore, a case study was carried out on three main HRMIS modules namely the personal records management module, the performance management module, and the remuneration, benefits and rewards module, which are also among the modules for the measurement of key performance indicators (KPI). Only two factors were validated from Pare's (2011) framework, i.e. Attributes of Change and Leadership Support since the findings of the pilot study for the Internal Context and Attributes of the Change Targets factors were sufficient. Researcher KA research placement in the informant office provided advantages to build rapport and gain high cooperation among the informants, both formal and informal manner. The opportunity was used to obtain relevant documents and additional information as well as close observation, particularly on HRMIS use. Good rapport enabled gathering and understanding of multiple perspectives and reduced further feedback (Krefting, 1991).

Interview protocol was constructed based on the literature review. The interviews were audio recorded. Information regarding organizational readiness were gathered to gain a deeper insight in relation to the organization and the perspective of its members on the use of the HRMIS. Phone calls were made prior to conducting the interview. The questions were modified after transcribing the previous interview and discovering new factors to be validated on the subsequent informant. Qualitative enquiry was done in deductive-inductive and iterative manner.

Data were collected through primary and secondary sources from various individuals and settings. Secondary data were obtained from written sources comprising various types of documents including reports, minutes of meetings, log books and other related documents. In order to obtain deeper understanding in HRMIS implementation, researcher KA attended the HRMIS implementation committee meeting in May 2012 that discussed about ongoing system implementation issues and performance management.

SAMPLING METHOD

A purposeful sampling method was chosen to select 16 and 18 informants for the pilot and case study, respectively (See Table 2 and 3) who ranged from management and professional groups to support groups, based on their role, knowledge and experience in using the HRMIS modules listed in Table 4. Each informant was subjected to an in-depth face-to-face interview lasting approximately 45 minutes.

TABLE 2. List of Informants Interviewed for the Pilot Study

Abbreviation	Position	Role in HRMIS
PPO1	Deputy Director	Process Owner (PO)
ITS1	Principal Assistant Director	IT Support (Course)
PS1	Principal Assistant Director	Exchange Secretariat
BMO1	Principal Assistant Director	Exchange Module Owner (MO)
PS2	Assistant Director	Exchange Secretariat
PMO1	Assistant Director	Exchange Module Owner (MO)
PS3	Assistant Director	Exchange Secretariat
PS4	Assistant Director	Exchange Secretariat
PPO2	Assistant Director	Exchange Process Owner (PO)
PS5	Assistant Director	Exchange Secretariat
PS6	Assistant Administrative Officer	Exchange Secretariat
PS7	Assistant Administrative Officer	Exchange Secretariat
PS8	Administrative Assistant	Exchange Secretariat
PS9	Administrative Assistant	Exchange Secretariat
PS10	Administrative Assistant	Exchange Secretariat
PS11	Administrative Assistant	Exchange Secretariat

N=16

TABLE 3. List of Informants Interviewed for the Case Study

Abbreviation	Position	Role in HRMIS
LKS10	Deputy Director	Implementer of Human Resource Management
PO3	Deputy Director	Process Owner (PO) of AWT, APAR
PLK1	Principal Assistant Director	Implementation Monitoring
PO2	Principal Assistant Director	PO of Assets Declaration
LKS5	Principal Assistant Director	Implementer of Personal Records, Service Records, Leave
LKS6	Principal Assistant Director	Implementer of Assets Declaration, AWT, APAR
PO1	Principal Assistant Director	PO of Personal Records, Service Records
MO1	Assistant Director	Module Owner (MO) of AWT, APAR
LKS1	Assistant Director	Implementer, Systems Administrator of Assets Declaration, AWT, APAR
MO2	Assistant Director	MO of Assets Declaration, Personal & Service Records
LKS11	Assistant Director	Implementer of Personal & Service Records, Leave
ITS1	Assistant IT Officer	Systems Administrator/IT Support Services
LKS2	Assistant Administrative Officer	Implementer of AWT, APAR, Systems Administrator
LKS3	Administrative Assistant	Implementer of AWT, APAR, Systems Administrator
LKS4	Administrative Assistant	Implementer of Assets Declaration
LKS7	Administrative Assistant	Implementer of Leave Management
LKS9	Administrative Assistant	Implementer of Leave Management
LKS8	Administrative Assistant	Implementer of Personal & Service Records
LKS8	Administrative Assistant	Implementer of Personal & Service Records

N=18

TABLE 4. List of HRMIS Modules/ Sub-modules Studied

Module	Sub-module
Personal Records Management Module	a. Personal records and service profile b. Assets declaration
Performance Management Module	a. Annual work targets (AWT) b. Annual performance assessment report (APAR)
Remuneration, Benefits and Rewards Module	a. Leave management

DATA ANALYSIS

The qualitative data were analysed manually using content analysis techniques. Initial understanding was developed in the level of HRMIS readiness from different informant perspectives. The understanding was reflected and reassessed until a coherent meaning was achieved through iteration of data collection and analysis. Each transcript was systematically analysed before data encoding to specifically reflect the characteristics of the text. The guide by Miles and Huberman (1994) was used to analyse the qualitative data obtained through three streams of activities: data reduction; data display; and drawing conclusions and providing evidence.

Data were reduced by selecting, focusing, refining, and transforming field notes to structured data. Data were reduced based on Pare's (2011) framework, research question, and data collection approach. The second step, data display, involved visualizing and compressing information to ease understanding and conclusion of results. Coding was developed to illustrate specific text characteristics according to organizational readiness factor. Structured, indexed data based on the identified factors enabled us to understand ongoing findings for the further analysis and actions. The display of structured data has unfolded data complexity and subsequently increase understanding, establish conclusion from evidence, and recommend appropriate enhancement.

CASE STUDY QUALITY

Two tests were performed to produce quality empirical studies (Yin, 2009), namely construct validity and reliability. The correct measurement operation for the concepts being used must be identified. In this study, the assessment measurement of the interviews was identified based on the proposed framework and the objectives of the study. The use of multiple sources of evidence with data triangulation could solve the construct validation problem because many sources of evidence provide various measurements of the same concept. For example, a particular fact obtained from an informant was reconfirmed by different informant. In addition, all research records and notes during the interviews were logged and transcribed to achieve reliability. Different observation aspects including event, conversation, body language, mood, general surrounding, staff interaction, and other relevant subject were gathered. Validation of the case study from the PSD staff was also carried out. The study findings were presented to 17 IDU staff members in April 2012. The presentation indicated the significance of all influencing factors on the system that need urgent solution to attain systematic and effective process goal. The unit acknowledged the usefulness of these findings and would use them as a guideline in future HRMIS II development.

FINDINGS AND DISCUSSION OF THE HRMIS CASE STUDY

Based on Pare et al. (2011) research model, four dimensions of measurement were identified as possibly related to a staff's interpretation of organizational readiness during an initial state of staff exchange online system implementation: attributes of change that is being introduced, the extent of leadership support for the proposed change, the organizational context where the change took place, and the characteristics of the change targets (see Figure 1).

ATTRIBUTES OF CHANGE

VISION CLARITY

The majority of the informants agreed that the implementation of the HRMIS is in line with the vision of the PSD. Most of the informants stated that HRMIS has been able to manage various human resource processes including the declaration of assets, performance evaluation, leave, personal records and service profiles. Compared to the manual method, the HRMIS has been helpful to the implementer, especially PSD staff in the Management Services Division (MSD), in managing various human resource processes online. The HRMIS played a significant role in recording various human resource information including personal records, service profiles, AWT, APAR, leave and so on. Among the positive perceptions of the informants were that the HRMIS helps in AWT matters, facilitates the entry of marks as well as reduces human error when calculating and keying in the marks. However, several informants felt that the HRMIS is still unable to help in managing the process of officer exchange as almost 80% of the process is still being done using the old, manual system. The slow access to the HRMIS makes it difficult to process exchanges, thereby causing the informants to feel disappointed and less interested in using the HRMIS.

The HRMIS could manage the entire human resources process of the civil service. The vision that is focused on human resource management, including the vision of the organization, the vision of human resource management and the HRMIS vision, has been proven and is understood by all levels of HRMIS users in the PSD. When all the PSD employees understand and are clear about the implementation of the HRMIS, which is in line with this vision, it indirectly facilitates their acceptance of the HRMIS and employees would willingly use the HRMIS to implement human resource processes. Clear vision has been proven to be useful in

providing direction and developing strategies for the desired changes (Detwiller & Petillion, 2014; Kotter, 1995).

CHANGE APPROPRIATENESS

The majority of the informants agreed that the HRMIS has been of great *benefit* to them, especially in terms of the systematic and complete recording of information, the faster and more accurate search for information, easier and faster generation of reports as well as effective monitoring of work. The HRMIS could improve the *performance* of the PSD because the processing period could be shortened with the standard and systematic loading of exchange information besides facilitating the access to information in other public sector agencies. This is evidenced by an increase in the APAR annual loading percentage in the PSD from 91.81% in 2009, 92.36% in 2010 and 93.87% in 2011. The success of the HRMIS proves that the cooperation and teamwork of all parties, especially among the staff in the IMD, help greatly in resolving various issues/problems associated with the HRMIS. Through the implementation of the HRMIS KPIs, a significant shift towards the HRMIS, especially the loading of data into 5 system main modules has been successfully executed. The emphasis from the top management to all civil servants is that the HRMIS be implemented accordingly in their respective agencies. The change appropriateness sub-measurement influence organizational readiness by establishing the necessity to change and subsequently working towards it. It is clear that the HRMIS has greatly benefitted human resource management.

CHANGE EFFICACY

Several informants reacted negatively to the use of the HRMIS because access to it is frequently disrupted and is slow, especially during office hours, the workflow is unclear, and the implementation of the exchange sub-module has yet to be completed in other public sector agencies. On the other hand, some of the informants really liked and praised the officer exchange sub-module because it is easy to use, user friendly, saves time and paper, could manage the exchange more effectively, could monitor exchange requests and generate the required reports. According to informant LKS2, the entry of data into the APAR, which is easier and simpler when compared with the manual and *copy* and *paste* facilities from previous years, is helping them in preparing the APAR for the following year.

Users fully support the HRMIS because the officer exchange process could be implemented properly, transparently and accurately. The majority of the informants also fully support the use of the HRMIS for the implementation of human resource processes. In addition, the MSD is also constantly being informed about the usage and the advantages of using the HRMIS in their daily tasks. Change efficacy influences organizational readiness through the strong support of the majority of the informants for the HRMIS, who use it even though access to the system has its constraints. The problem of slow access has delayed and affected the use and acceptance of the HRMIS. Most of the informants complained that the access problems have affected their processing of various human resource matters.

LEADERSHIP SUPPORT

TOP MANAGEMENT SUPPORT

The majority of the informants confirmed that the top management is highly committed to the officer exchange sub-module. Planning to improve the common on-line officer exchange process is detailed, and starting from there, many meetings, demonstrations of the exchange process, training, implementation simulations and workshops are being implemented in stages. The MSD clarifies and directs the implementation of the officer exchange sub-module, new

modules or changes to the HRMIS through meetings, management meetings with all staff on a regular basis and monthly gatherings.

The case study shows the support and commitment of the top management. Most of the informants confirmed that the commitment shown by the top management to the implementation of the HRMIS has had a great impact and has played a significant role in the success of the HRMIS. According to PLK1, as a result of the implementation of the HRMIS KPIs, most of the agencies that had the highest percentage in the KPI implementation were highly dependent on the support and enforcement by their respective senior managers. Indirectly, all the users in these agencies would also use the HRMIS together to ensure the HRMIS KPIs of their agency is achieved.

Top management support is one of the critical factors affecting the adoption of IT and it is also positively related to the adoption of new technology within the organization (Hameed et al., 2012). The implementation of the Key Performance Indicator (KPI) for the executives since 2009 has shown an increase in the use of the HRMIS, and this indicates that the commitment and support of the senior management play a significant role in the success of a system. These findings are in line with previous findings where the continuous support from management is highly important in the success of IS (Pare et al., 2011; Yusof et al., 2008; Alfonsus, 2008).

PRESENCE OF EFFECTIVE CHAMPIONS

Most of the informants are not familiar with the term “champion” and no champion was created to help manage the implementation of shared officer exchange services. A team of champions, comprising representatives from each division, was first established in the PSD in 2008. Their role is vital in ensuring the implementation of the HRMIS by assisting staff who are facing problems in using the HRMIS. In the PSD, two Core Task Force/Champions teams are the push factors that would help their fellow members in the Division to monitor the implementation of the HRMIS. Informant PLK1 stated that the role and presence of the Core Task Force/Champions teams at the meeting contributed to the development of systems to improve the existing HRMIS system. The presence of champions is critical to the introduction of new technology into an organization that could affect all levels with regard to the adoption of innovations (Hameed et al., 2012). At the implementation stage, champions could convince the top management in the PSD to improve the HRMIS implementation and facilitate user acceptance of the HRMIS by providing various types of training.

The monitoring of HRMIS implementation remains loose in most human resource management processes. There are no formal discussions concerning issues/problems in the implementation of systems between those in the Services Division with the Information Management Division (IMD). Although internal discussions are held between the parties on a weekly basis, there is no systematic recording of the discussions. All issues/problems that are related to the system would be channelled to the responsible officers in the Services Division, who would streamline the problems and then forward them to the IMD for action.

ADDITIONAL SUB-MEASUREMENT (IT SUPPORT)

IT support is highly much needed in systems development, maintenance, enhancement of business processes, advisory services and so on, and it is an additional sub-measurement for Leadership Support for the successful implementation of HRMIS. Several informants had these comments to make regarding IT support:

It is crucial to have 100% supports from the IMD, especially in resolving any issue/problem related to the exchange sub-module. (Informant ITS1)

We constantly provide support services and troubleshoot issues/problems with the system that are encountered by the exchange secretariat.” (Informant PMO1)

It has been identified that the IT Support sub-measurement is significantly related to the readiness of an organization to implement IS. Cooperation and good relations between the users and IT officers in providing technical support and advice could ensure the success and full use of the system. Studies have found that there is no proper control over the role of each secretariat. There was a case where a member of the secretariat assumed the role of a supporting officer to alter the status of a support action.

INTERNAL CONTEXT

ORGANIZATIONAL HISTORY OF CHANGE

On the question of historical changes in the information system at the PSD, the majority of the informants confirmed their experience in various changes in the system implementation. Previously, the functions of the system were limited to the entry of information on public servants alone. The officer exchange process was performed manually. At that time, the existing Officer Exchange System had been successfully implemented. Therefore, based on their experience of the successful implementation of the existing system, they found that it would be much easier to implement changes to the officers exchange sub-module by making full use of the system. In the opinion of one of the informants: "From my experience in the PSD, I think the implementation of the on-line exchange is sure to be successful. I am confident of that." (Informant PPO2)

ORGANIZATIONAL CONFLICTS AND POLICIES

Trust and cooperation among all the staff of the Services Division are excellent. Skilled user PS11 helped a colleague to operate the system properly. In addition, most of the staff at the Services Division followed closely the instructions given by the senior management of their division. So far, there are no critical relationship problems and conflicts among the staff were successfully and effectively resolved. The policy regarding the adoption and implementation of a system for the exchange of officers is still unclear and the directives by the management are also not firm. The exchange process is implemented differently according to the directives of the respective managers. There are some units that allow exchange applications to be directly processed manually, while there are other units that return the exchange application letters and direct the applicant to re-apply using the system. The old system is still being used by several other units.

ORGANIZATIONAL FLEXIBILITY

The organizational structure that has been built into the Services Division is more focused on the functions of managing and monitoring the placement and exchange of officers. The internal context (organization) plays a significant role in the measurement of organizational readiness. The PSD is a flexible organization that could easily accept and implement changes while adopting the slogan "PSD, a leader in changes to public services". This organizational structure facilitates the implementation of changes. All the informants found it easy to accept changes in the PSD. To explain the implementation of the HRMIS module/sub-module, a services circular was issued to clarify the process for the exchange of common services officers. All the informants complied and were prepared to implement the officer exchange sub-module and aware of the changes that were about to occur in the PSD. Informant PS2 confirmed that there was a significant difference where the PSD, as a central agency, easily received information

(for example, new circulars) in a timely and faster manner compared to departments outside the PSD, which only received the information after it had gone through several stages. Furthermore, the information would be explained to the staff at all levels (for example, if there is a new circular to be implemented).

The experience of the PSD in implementing this system shows that the PSD is not likely to face problems with the implementation and would facilitate changes to the applications system accordingly. According to Yen et al. (2012), the previous experience/history of organizational change could promote organizational learning that would enhance the ability of the organization to exploit the newly-acquired information, which in turn could foster organizational readiness to implement new changes. In addition, the trust and cooperation among all the staff are good, harmonious and positive. Historical factors of organizational change, tolerable organizations conflicts, and organizational flexibility to embrace change, would also contribute to the effective implementation of change (Pare et al., 2011); (Alfonso, 2008); (Smith, 2005).

However, the culture of using the system among users in the PSD has not been fully implemented. Enforcement from the top management and the adoption of items as part of the HRMIS KPIs has had a great impact on the action. Only a handful of staff in the exchange secretariat are determined to use a manual system; do not switch on the system throughout the working day, are unclear and less competent with regard to the action that should be taken and lack confidence in using the system .

ATTRIBUTES OF THE CHANGE TARGETS

Collective self-efficacy is based on the computer literacy level of the HRMIS users. All the staff in the Services Division has a good computer literacy level, are quick to learn, have their own initiative and could easily implement application systems. A computer unit and individual HRMIS access accounts were provided to manage the officer exchange sub-module. The period of involvement in the HRMIS also contributes to the computer skills needed to achieve the HRMIS.

ADDITIONAL SUB-MEASUREMENT (USER TRAINING)

User training plays a significant role in ensuring that users understand, use the system and help to manage exchange process effectively. As many as 4 training sessions were conducted with the assistance and cooperation of the IMD, involving the entire secretariat that manages exchanges.

A course for users is one factor of organizational readiness. The purpose is so that they would understand better and would be able to implement the HRMIS more comprehensively, perhaps in terms of the system, exchange application procedures and how to deal with problems. By attending such courses, they would be able to provide better delivery of services to customers.” (Informant PS2)

Most of the informants preferred on-the-job training strategies, i.e. training that is provided in a work environment using real data. This is because it is more understandable, is conducted by officers in their own Division, is performed on a module which staff are responsible for, could be carried out directly, and it is easy for them to enquire should any difficulty occurs in performing a task using the HRMIS. All the procedures on the use of the HRMIS are in place and are accessible on-line including circulars, manual procedures, work, notes and kits that could help them perform the related tasks.

Various efforts have been made to ensure that the HRMIS is used optimally such as continuous training and recognition. The high acceptance of the HRMIS by the users would promote its use and help to manage the exchange of officers in addition to providing other overall benefits including improving work processes, increasing productivity and the quality of decision-making. Yusof (2007) also found that user skills play a vital role in the efficient and effective functioning of a system. Users must be made aware of the changes that could be made to the work processes by using the system. Effective training would allow users to fully employ the HRMIS to process a variety of human resource functions (Beadles et al., 2005).

The HRMIS case study shows that the Framework of Organizational Readiness in the adoption of IS could be used to assess the readiness of an organization to implement IS by taking into account the relevant measurements, namely: attributes of change, leadership support, internal context, and attributes of the change targets. In addition, this study also suggested the addition of an assessment sub-measurement under the attributes of the change targets dimension, i.e. user training, and an IT Support sub-measurement under the Leadership Support dimension. The addition of these two sub-measurements also affects organizational readiness with regard to the adoption of IS. According to the findings of the HRMIS case study, the factors that influence organizational readiness are: 1) Attributes of change – vision clarity, change appropriateness and change efficacy; 2) Leadership support – top management support, the presence of effective champions and IT support; 3) Internal context – organizational history of change, organizational conflicts and policies, and organizational flexibility; and 4) Attributes of the change targets – collective self-efficacy and user training.

The findings of this study are supported by the findings of a case study by Yu et al. (2010), (Ziamba & Oblak, 2015) (Detwiller & Petillion, 2014) (Nfuka & Rusu, 2014; Hsiao et al., 2013); (Detwiller & Petillion, 2014) which proved that the critical factor for the success of application systems is to have a clear vision, strong leadership, a committed project management and the involvement of all staff who have been given appropriate training. However, according to Helfrich et al. (2011), successful efforts at change are characterized by organizational factors, including the attitude of employees and managers towards change (up to a level that is achievable and appropriate), leadership support (change as a priority), resources, adequate planning (clear vision and roles), and a mechanism for tracking and reporting progress. A study conducted by Young and Jordan (2008) showed that top management support is a major critical factor for the success of an IT project as it is closely related to effective decision-making to reduce risk and authority over changes to business processes.

CONCLUSION

A framework of organizational readiness in IS adoption (Pare et al., 2011) was extended by adding two additional measures, namely technical support and user training. The application of the extended framework is demonstrated in a real-life, practical context and insights shed from the case study could be used to assess organizational readiness and inform decision making. The HRMIS case study has shown that the four measurement dimensions (and their respective measures) have a direct impact on organizational readiness in the adoption of IS: attributes of change, leadership support, internal context and attributes of the change targets. Such an assessment should be conducted continuously and should be adopted as a practice in every implementation of an information system so that problems with the implementation could be resolved quickly, and errors and failures in the implementation of IS could be avoided. The selection of an organization for the implementation of new IS could be determined based on the readiness of the organization. Thus, organizations with a high level of readiness would facilitate the successful implementation of IS in them.

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