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MANAGING KNOWLEDGE PRACTICE IN MALAYSIA'S E-GOVERNMENT IMPLEMENTATION

ABSTRACT

The final stage of e-government implementation is transformation. This is marked by a re-defined structure in public organisations' delivery of services to citizens and constituents through a single point of contact. The Internet has been viewed as one particular mechanism to break down bureaucratic barriers between agencies. A common misconception, however, is that technology alone could do all the wonders in transformation. Technology should be viewed as a tool that supports effective delivery of services. Using appropriate technology and managing knowledge effectively is a capability for public organisations to make substantial progress towards reaching transformation. This paper reports the results of a study on public officers' perceptions of managing explicit and tacit knowledge practices in Malaysia's e-government systems implementation as a first step in the knowledge management journey. A comparison on the perceptions amongst each e-government system implemented is provided. Implications that arise from this study are also discussed.

Keywords : Knowledge Management, Transformation, E-government, Explicit Knowledge, Tacit Knowledge

1.0 INTRODUCTION

The general public's demand for quality government services has been significantly shaped by globalisation, which, described simply, has resulted in the decline of costs of doing business internationally [19]. A sociologist suggested that globalisation is the worldwide interconnection at the cultural, political and economic level resulting from the elimination of communication and trade barriers [9]. One of the objectives of the World Trade Organisation (WTO) is to reduce barriers in international trade and communication between markets. The public sectors of developed nations worldwide recognise that information and communication technology (ICT) and the Internet are drivers of globalisation [18]. After New Public Management and Government Reinvention, e-government is the way forward in the Malaysian government's agenda for reform [17].

Electronic government or e-government refers to the

systematic use of information and communication technologies (such as wide area networks, the Internet, mobile computing, etc.) by government agencies to transform relations with citizens, businesses and government [12, 21]. According to Baum and Di Maio [1], e-government is marked by four phases. Phase one is Presence. This is marked by posting of information such as agency mission, addresses, opening hours and possibly some official documents of relevance to the public. Phase two is Interaction. This is characterised by Web sites that provide basic search capabilities, forms for downloading, linkages with other relevant sites and e-mail addresses of offices and officials. Phase three is Transaction. Constituents at this stage may conduct and complete entire tasks online. The final stage is Transformation. This is characterised by re-defining the delivery of government services through a single point of contact to constituents that makes government organisation totally transparent to citizens [1].

Reaching the transformation stage in e-government requires organisational capability in managing technology, human aspect and human side of information technology (IT). Szewczak and Khosrowpour [20] suggested that many organisations are still struggling to deal with problems related to the human aspects of technology; problems at least partially created by management's lack of commitment to the human side of IT. Managing the human aspect of the human capital is about how an organisation manages explicit and tacit knowledge and providing the necessary infrastructure and processes. In long-term e-government implementation, managing knowledge cannot be perceived as a single process or activity that is detached from the entire e-government activity. Neither can technology implementation be seen in isolation from other e-government efforts. Reaching transformation for e-government is a journey. For e-government implementation to be successful, managing knowledge must underlie within the entire organisational's spectrum of activities including in technology implementation. Thus, managing knowledge is no trivial task [3].

2.0 LITERATURE REVIEW

Daft [5] defined knowledge management as the effort to systematically find, organise and make available a company's intellectual capital and to foster a culture of continuous learning and knowledge sharing so that organisational activities build on what is already known. The literature refers to two types of knowledge: explicit knowledge and tacit knowledge. Explicit knowledge is formal systematic knowledge that can be codified, written down and passed on to others in documents or general instruction. It is stored in the "organisational memory" and is available to employees throughout the structure [15]. Tacit knowledge, on the other hand, is based on personal experience, rule of thumb, intuition and judgement. Tacit knowledge is usually very difficult to put into words, to express or to communicate to others and is often individualised and highly specific in scope. It is this knowledge that is often difficult to disseminate to others in the context of the workplace, but it is also invaluable to propagate because it is a unique asset that is very hard to be copied [15]. Knowledge sharing is often cited as a form of tacit knowledge. Many studies have reported that members in organisations fear knowledge sharing because that would make them less valuable to organisations [7]. The history of knowledge management reveals that explicit systems were the first to evolve. The next

phase of knowledge management was to focus on the interactivity between people where the emphasis would be capturing, sharing and enhancing of context [13]. Davenport and Prusak [6] aptly coined organisations' management of knowledge as:

"... a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations, it often becomes embedded not only in documents or repositories but also in organisational routines, processes, practices and norms."

A search of e-government and knowledge management revealed some cases reported in New Jersey, Australia and Texas. Melitski [16] conducted a survey administered to executives in public agencies in New Jersey and concluded that the management of knowledge was not associated with e-government performance. The probable reasons for this inverse relationship were that knowledge management was not a priority or if it were a priority it was not called knowledge management. Two, knowledge management activities were in competition with e-government activities. In a case study, Burn and Robins [2] looked at an online strategy project at Legal Aid in Western Australia. Using embedded case study analysis, they concluded that IT facilitated knowledge sharing resulted in consistency of service across functions and employee satisfaction. In another case study for the City of Denton in Texas, Koh, Ryan and Prybutok [14] concluded that knowledge sharing and partnership between citizens and the government were needed to facilitate transformational process.

3.0 CONTEXT OF THE STUDY

In 1996, the Malaysian government introduced the Malaysian National IT Agenda (NITA) and the Multimedia Super Corridor (MSC). The NITA is a strategic framework to provide a clear direction in transforming the nation into a knowledge-based society. It looks at the macro level of IT direction and guidelines for implementation. The MSC is both a physical area and a paradigm shift for creating value in the Information Age. Under phase one of the MSC, seven e-government pilot projects were introduced namely E-services, E-procurement, Generic Office Environment (GOE), Human Resource Management Information System (HRMIS), Project Monitoring System (PMS), Electronic Labour Exchange (ELX) and E-syariah. The government entrusted a particular lead agency to drive the implementation of each

of these application systems. At the point of collecting the data for the study, all e-government systems except for E-syariah were already rolled out at the respective lead agency. With e-government at an infant stage, this study attempts to review public officers' perceptions of managing explicit and tacit knowledge practices in Malaysia's e-government systems implementation as a first step in the e-government journey. The study also makes a comparison amongst each e-government systems implementation. In making the comparison, it is hypothesised that:

Hypothesis 1: There is a difference in the practice of managing knowledge amongst each e-government systems implementation.

4.0 MEASURES

In this study, managing knowledge refers to the practice of managing explicit and tacit knowledge. Measures were adapted accordingly from Choi and Lee [3]. Two items each were used to measure explicit and tacit knowledge (See Table 1). These measures were quantified using a seven-point Likert scale with 1 representing 'strongly disagree' and 7 'strongly agree'. Public officers were asked to read the statements in a questionnaire and to indicate their agreement or disagreement about the practice of managing knowledge with regard to e-government systems implementation in their respective lead agencies. They were also asked to provide responses about their personal profile like gender, age, highest academic qualification and job level in the agencies.

5.0 DATA COLLECTION

A cross-sectional self-administered survey research approach was adopted. A total of 437 questionnaires were distributed between December 2004 and March 2005 to public officers who were users of E-services, E-procurement, Generic Office Environment (GOE), Human Resource Management Information System (HRMIS), Project Monitoring System (PMS), Electronic Labour Exchange (ELX) at seven lead implementation agencies. E-syariah was omitted on account that it had not been rolled out during data collection. Seven agencies were involved in the study: Road Transport Department (RTD), Treasury, Malaysian Administrative Modernisation and Management Planning Unit (MAMPU), Public Services Department (PSD), Ministry of Human Resource (MOHR), Implementation Coordination Unit (ICU) and Ministry of Health (MOH). MOH was included as a lead implementation agency as listed in PSD's news bulletin. The number of usable response was 130, yielding a usable response rate of 29.7%.

6.0 PROFILE OF RESPONDENTS

The proportion of male and female respondents was equal. The majority of the respondents were at least 30 years old (60.4%) with the remainder between the ages of 20 and 29. The majority of respondents (76.9%) possessed at least a Bachelor's degree and hence could be classified as knowledge workers. This is also supported in that a high proportion of them (89.2%) occupied management and technical positions. Table 2 shows the distribution of responses by e-government systems implemented.

The majority of the users evaluated HRMIS. There is almost a similar proportion that responded on PMS and

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| <ol style="list-style-type: none"> 1. Knowledge (know-how, technical skill or problem solving methods) is well codified in this agency. (measures explicit knowledge) 2. Knowledge can be acquired easily through formal documents and manuals in this agency. (measures explicit knowledge) 3. It is easy to get face-to-face advises from experts in this agency. (measures tacit knowledge) 4. Informal dialogues and meetings are used for knowledge sharing in this agency. (measures tacit knowledge) |
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Table 1: Measures for Managing Knowledge Practice

Application	Frequency	Percentage of Response
E-services	11	8.5%
PMS	24	18.5%
GOE	22	16.9%
HRMIS	42	32.3%
ELX	17	13.1%
E-procurement	14	10.8%
Total		100.0%

Table 2: Breakdown of Responses by E-government Systems Implemented

GOE. The fewest number of respondents responded on E-services.

7.0 ANALYSIS

Reliability analysis was conducted for managing knowledge practice measures. Reliability is an assessment of the degree of consistency between multiple measurements of a variable. One type of diagnostic measure that is widely used and employed is the Cronbach's alpha. The generally agreed upon lower limit for Cronbach's alpha is .70 although it may decrease to .60 in exploratory research [10]. The Cronbach's alpha for managing knowledge practice measures was .833. Hence, there is evidence that the measures used for managing knowledge practice in this study are reliable. Table 3 shows the profile of the measures.

The results indicate that public officers evaluated were in agreement consistently for each of the measures. It is also observed that public officers rated the highest for informal dialogues and meetings in their agencies (mean=5.10). The frequency of each item of the measures was analysed (Table 4). The majority of respondents agreed that their agencies were managing both explicit and tacit knowledge in e-government systems implementation. There was a greater proportion of respondents rating in-agreement for management of tacit knowledge than that for explicit knowledge. The largest proportion of respondents evaluated informal dialogues and meetings in their agencies.

The normality of the distribution of data was checked using the Kolmogorov-Smirnov statistic. All the values for managing knowledge measures were 0.000. All

Item code	Measures	Mean
KM1	Knowledge (know-how, technical skill or problem solving methods) is well codified in this agency.	4.76
KM2	Knowledge can be acquired easily through formal documents and manuals in this agency.	4.83
KM3	It is easy to get face-to-face advises from experts in this agency.	4.80
KM4	Informal dialogues and meetings are used for knowledge sharing in this agency.	5.10
Average Score		4.87

Table 3: Profile of Mean

Item code	KM1	KM2	KM3	KM4
Disagree	13.1%	13.1%	18.5%	7.7%
Agree	58.5%	59.2%	63.8%	70.0%
Neutral	28.5%	27.7%	17.7%	22.3%

Responses grouped as *disagree* (1 to 3), *agree* (5 to 7) and *neutral* (4)

Table 4: Frequencies of Measures

	E-government Systems Implemented	n	Mean Rank	Median
Managing Knowledge	E-services	11	59.73	4.25
	PMS	24	86.58	5.50
	GOE	22	76.89	5.13
	HRMIS	42	55.27	4.50
	ELX	17	55.76	4.50
	E-procurement	14	58.50	4.75
	Total	130		5.00

1: Strongly disagree 7: Strongly agree

Table 5: Results of Kruskal-Wallis Test

the measures were summated into a scale and the Kolmogorov-Smirnov statistic was 0.031, suggesting violation of the assumption of normality. Hence, to test the hypothesis, the study adopted the Kruskal-Wallis test (Table 5). The test revealed a statistically significant difference in managing knowledge practices across the six Malaysia's e-government systems implementation $\chi^2(5, n=130)=14.59, p=0.012$. Project Monitoring System (PMS) recorded the highest median score (Md=5.50).

Mann-Whitney U tests were carried out to find out which of the groups that were statistically significantly different from one another. Mann-Whitney U test revealed significant differences in managing knowledge practice for:

- PMS (Md=5.50, n=24) and HRMIS (Md=4.50, n=42), U=266, z=-3.183, p=.001, r=0.279. This would be considered medium effect size statistic based on Cohen [4]
- GOE (Md=5.13, n=22) and HRMIS (Md=4.50,

n=42), U=297.5, z=-2.335, p=0.02, r=0.2. This would be considered small effect size statistic based on Cohen [4]

- PMS (Md=5.50, n=24) and ELX (Md=4.50, n=17), U=106, z=-2.603, p=0.09, r=0.22. This would be considered small effect size statistic based on Cohen [4]
- PMS (Md=5.50, n=24) and E-Procurement (Md=4.75, n=14), U=87, z=-2.464, p=0.014, r=0.22. This would be considered small effect size statistic based on Cohen [4].

8.0 DISCUSSION AND CONCLUSION

This paper began by arguing that using appropriate technology and managing knowledge, in particular, explicit and tacit knowledge is a key capability for transformation of public organisations. The study found that the responding public officers evaluated were in agreement consistently for each measure of managing knowledge in all agencies involved suggesting that they accepted managing explicit and tacit knowledge

in public organisations as being critical in Malaysia's e-government systems implementation. There was a larger proportion of respondents who were in agreement for management of tacit knowledge than that for explicit knowledge. Further, respondents provided the highest evaluation for informal dialogues and meetings. In a journey like e-government, there is much to be derived from the interactivity between people where the emphasis is on capturing, sharing and enhancing of context.

This supports previous studies that knowledge sharing is imperative in ensuring not only systems implementation success but also transformation. The emphasis made by Koh, Ryan and Prybutok [14] is relevant in the context of Malaysia: "in order to facilitate the transformational process, the recommendations include that the government institute a constituent-centric, knowledge-sharing culture and focus on key enablers: strategic alignment and focus, data and system integration, and security and privacy policies". The study also makes a comparison on managing knowledge practice amongst each e-government system implemented. There is evidence to suggest that there is variability in the practice of managing knowledge amongst each system, in particular, between PMS and ELX, E-procurement and HRMIS; and between GOE and HRMIS.

The results of the study, therefore, lend implications that public managers ought to seriously ensure, and be committed to, a continuous and consistent support for managing knowledge in technology and e-government implementation. The study has contributed to theoretical knowledge via enriching the existing empirical knowledge in knowledge management, technology implementation and e-government in the context of Malaysia's e-government systems implementation. Eccles [8] pointed out, "what gets measured gets attention". In establishing a road map for transformation, public officers may consider formulating specific policies, guidelines, framework, standards and key performance indicators in ensuring consistent knowledge practice for all agencies. This can serve as a reference, index and benchmark in technology and e-government implementation across all Malaysia's e-government projects in public organisations.

Future studies could take on case studies and interview approaches to understand reasons or specific issues that account for variability in managing knowledge practices for each e-government system implementation.

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