Factors Influencing Interdepartmental Information Sharing Practice In Electronic Government Agencies

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ABSTRACT

Electronic information sharing is a key to effective government. This study is conducted to investigate the factors influencing interdepartmental information sharing (IS) practice in electronic government (EG) agencies. Based on previous study and observation, the issues on electronic government and information sharing are highlighted and the influencing factors are identified. Three domains of factors that are considered in this study are individual, organizational and technological factors. This paper proposes the conceptual framework of interdepartmental information sharing for electronic government agencies in Malaysia.

Keywords: information sharing, influencing factors, electronic government.

I INTRODUCTION

Today, informationis one of themost importantandvaluableresourcesin an organization. Information can be obtained from various sources and are available in different forms either electronic or non-electronic. In public sector, information is required by government agencies and used by officer in performing their daily duties and at the same time as an input to government agencies in providing services to citizens and businesses. However, in providing better service delivery, the information available to each government agency is not sufficient and must rely on information from other government agencies as well. It means that a government agencies need to share information with other government agencies.

Bigdeli et al. (2011) asserted that each organization in government cannot deal and solve complex problems related to service delivery alone, but increasingly relies on multiple networks of interdependent organizations. Organizations that encourage information sharing have been found to gain competitive advantages in long term (Barua et al., 2007). In order to facilitate information sharing, investigate and identifying factors that influence information sharing is critical (Yang & Maxwell, 2011). This paper summarizes the previous research and identifies influences factors in information sharing among departmental in Malaysian electronic government agencies. This becomes the objective of the paper. This study will focus into three domains: individual, organizational and technological.Research methods to be used are a combination of quantitative and qualitative methods. The observations, questionnaires and semi-structured interviewsare selected as data collection technique in this study.

The rest of the paper is structured as follows. Section 2 presents an issue on electronic government and information sharing. Section 3 introduces literature review of information sharing researchin government. Section 4 suggests a conceptual framework for interdepartmental information sharing practice for electronic government agencies in Malaysia. Section 5 draws some conclusion and future research.

II ISSUES ON EG AND IS

Governments around the world are working continuously in order to improve government services for citizens and businesses. However, most governments face problems with their current systems such as lack of coordination and information sharing between the public sectors, bureaucratic tendencies in governance system and lack of effective information and communication technology (ICT) infrastructure (Altameem et al, 2006). Government introduces the electronic government initiative in order to overcome the facing problems.

Electronic government is defined as the delivery of services and information, electronically, to business and residents, twenty-four hours a day, seven days a week (Norris et al, 1999).In Malaysia, electronic government was introducedin 1996 as an effort to enhance the efficiency and effectiveness of service delivery to citizens and businesses. The electronic government application and other ICT systems were developed by Government agencies in order to improve information flow and processes within the government, improve the speed and quality of policy development coordination and enforcement. In Malaysia, e-Government is experienced at three levels: government to government (G2G), government-to-businesses (G2B), and government-to-citizens (G2C). The G2C interactions involve Electronic Services (e-Services), JobsMalaysia, e-Tanah, e-Syariah and MyGov portal. Project

Monitoring System (SPPII), Human Resource Management Information System (HRMIS), and Generic Office Environment (GOE) are G2G interactions while Electronic Procurement (e-Procurement) is G2B relation.

Through electronic networks and electronic application, information in organization can be share within or across organization quickly and globally. Otherwise, electronic government development in Malaysia public sector is not emphasizes on information sharing issue between government agencies. Nowadays, the current scenarios are displays that similar information collected by different agencies, the information is kept in multiple agencies and the information not being shared among government agencies (Azizah, 2010). According to Layne andLee (2001), by sharing information across boundaries, the effectiveness and efficiency of government operations in EG development can be strengthen. Therefore, the recent Prime Minister, NajibRazak through Government Transformations Programme (GTP) and 10th Malaysian Plan (MAMPU, 2010) has addressed the importance of information sharing. He highlighted the need to transform the delivery of government services towards quality public services according to the needs of its citizens and businesses.

III LITERATURE REVIEW

Information is a data that is specific and organized for a purpose and presented within a context that gives it meaning and relevance(Dewan Dictionary, 2002). Knowledge is a fluid mix of framed experiences, values, contextual information, and expert insights that provide a framework for evaluating and incorporating new experiences and information (Davenport &Prusak, 1998). Knowledge can be categorized into explicit and implicit (tacit) (Polanyi, 1966). Nonaka and Takeuchi (1995) identify three characteristics that distinguish information and knowledge: (1) knowledge is of function of a particular perspective, intention, or stance taken by an individual, and therefore, unlike information, it is about beliefs and commitment; (2) knowledge is always about end, which means that knowledge is about action; (3) knowledge is context specific and relational, and therefore it is about meaning.

Nowadays, sharing information is becoming increasingly important. According to Yang & Maxwell (2011), three factors can be traced why information sharing become new goal for public organization: (1) tragedy 9/11 that underscored the failure of prior governmental information sharing practices; (2) policy changes that emphasized cross-government coordination to improve efficiency and reduce waste; (3) changes in technology that allowed organizations to exchange information based on standard transmission and information exchange protocols.

Dawes (1996) define information sharing as exchanging information within and across government agencies or otherwise giving them access to information. Besides that, electronic information sharing can be referredas information sharing using information communication technologies such as electronic mail, computer databases and information repository (Akbulut et al., 2009).With advances information and communication technology (ICT), sharing information across government agencies has become feasible. The information sharing practice can occur between ministries, departmental, division, section and unit. This paper focuses on information sharing between departmental across different ministry or called interdepartmental. The departmental is a part of boundaries of information sharing (Zheng et. al, 2009a). The departmental boundary is defined as a boundary formed by governmental structure. In the federal government administration, interdepartmental boundary can exist between two government agencies in different ministries such as Public Service Department requires information of death citizen from National Registration Department in updating pension receiver information. However, information shared is depends on thefunctionality of thedepartmentand the type ofinformation shared. The information that generated internally from department and not classifiedas sensitive information or regulated information is conducted in this study.

A review of the literature indicates that research on information sharing among government agencies is very limited (Bigdeli et al., 2011). Sharon Dawes conducted the first study in 1996. In the proposed theoretical model, Dawes highlighted that the shared experience is a basis to identify the actual benefits and risks of information sharing. She also emphasizesthe necessity of a policy and management framework to promote the benefits and mitigate the risks of information sharing. Landsbergen and Wolken conducted the second study in 2001. The model extends the theoretical model developed by Dawes and focus on electronic interagency information sharing. In the context of influence factors of information sharing, several studies have been conducted. Asli Yagmur Akbulut (2003) investigated the factors that influence on local government participation in electronic information sharing with state agencies in United States of America; Jing Fan and Pengzhu Zhang (2007) conduct study in identifying the factors that influence information sharing in e-government

environment in China; Lai Zheng (2009) comprises a comparative analysis between the US and China regarding public sector leadership behaviors in the context of cross-boundary information sharingand integration;Bigdeli et al. (2011) investigates the influence factors for inter-organizational electronic information sharing in local G2G settings and Tung-Mou Yang (2011) explores the critical factors that influence the initiatives of cross-boundary information sharing and integration in Taiwan. Table 1 summarized information sharing factors being derived from various perspectives of the previous researchers.

Table 1: FactorsInfluencing Information Sharing

Researchers	Factors
AsliYagmur Akbulut (2003)	Characteristics of electronic information sharing ●Benefits ●Costs ●Risks ●Compatibility ●Complexity Agency characteristics ●IT capability ●Top management support ●Agency championship ●Size Environmental characteristics ●Policy and legal ●Interagency trust ●Critical mass ●External influence ●System wide championship
Jing Fan & Pengzhu Zhang (2007)	Inter-organizational factors ●Social networks ●Trust across agencies ●Inter-organizational compatibility Intra-organizational factors ●Top management support ●IT capability ●Process security ●Process traceability ●Operation cost Environmentalfactors ●Legal and policy ●Project wide championship
Lai Zheng (2009)	Organizational Perspective ●Over centralization ●Over formalization ●Diversity in values and cultures ●Procedures ●Trust among organizations ●Incentives ●Leadership ●Capabilities, experiences and awareness ● Perceptions of costs and benefits Technological Perspective ● IT Compatibility ●Data Standard Legal and Political Perspective ●Law and Policies ●Top executive support ●Partisan dynamics in government agencies ●Public scrutiny and evaluation
Bigdeli et al. (2011)	Organizational Perspective ●Managerial Capability ●Goals/Objectives ●Networked Collaboration ●Trust ●Financial Matters Technological Perspective ●IT Capability ●Data Quality ●Data Standard ●Data Security Environmental Perspective ●Politics ●Economics ●Legal & Legislation ●Critical Mass Business Process Perspective ●Work Process ●Decision Process
Tung-Mou Yang (2011)	Organizational Perspective ●Organizational Structures of Bureaucracy ●Organizational Cultures and Values ●Extra Labor and Effort under Limited Resource ●Concern of Information Quality to Incur Liability ●Concern of Information Misuse to Incur Liability ●Limited Incentive and Reward ●Over Estimated An Information Provider's Capability ●The Willingness and Trust to utilize Shared Information ●The Long Been Ignored Information Unit ●Leadership Interaction of Government Agencies ●The Fostering of Reciprocal Concept ●The Involvement of the Higher-Level Authority Technological Perspective ●Informatization Asymmetry ●Heterogeneous Information Systems ●Information Security ●Traditional Chinese Characters ●Technology Acceptance Legislation & Policy Perspective ●Obligation to Information Sharing ●Constraint on Information Sharing

	●Constraint on Adopting Shared Information Environmental Perspective ●Media and the Public ●Crisis or Emergency

The previousresearchers are mostly focus on organizational, technological and environmentalperspectives, but lack on the human factors. This paper attempts to fill gap by adding human (individual) factors for the study. The individual factors arerefers to employees of government agencies that involved in information sharing practice. Hatala et al. (2009) assert the movement of information across individual and organizational boundaries into organizational routines and practices is dependent on employees' information sharing behaviors.Based on the structurationalmodel of technology (SMT) by Wanda J. Orlikowski (1992), the three factors (individual, organizational and technological) is selected as influence factors on interdepartmental information sharing within EG agencies in Malaysia.

Based on list of constructs, there are common constructs that are used by previousresearchers. Table 2 summarized the commonconstructsbeing derived from fiveprevious researchersbelow.

Table 2: Common constructsused by researchers

Constructs	Researchers	Constructs (will be used)
IT Capability; Technology Acceptance; IT Compatibility	AsliYagmurAkbulut Jing Fan &Pengzhu Zhang Bigdeli et al. Tung-Mou Yang Lai Zheng	IT Capability
Top management support; The Involvement of the Higher-Level Authority; Managerial Capability	AsliYagmurAkbulut Jing Fan &Pengzhu Zhang Lai Zheng Tung-Mou Yang Bigdeli et al.	Top management support
Legal and Policy	AsliYagmurAkbulut Jing Fan &Pengzhu Zhang Lai Zheng Bigdeli et al. Tung-Mou Yang	Legislation and policy
Cost; Operation Cost; Financial Matters; Extra Labor and Effort under	AsliYagmurAkbulut Jing Fan &Pengzhu Zhang Bigdeli et al. Tung-Mou Yang	Allocation resources
Risks; Process Security; Data Security; Information Security	AsliYagmurAkbulut Jing Fan &Pengzhu Zhang Bigdeli et al. Tung-Mou Yang	Information Security

All common constructsare selected and categorizedinto three factors. The constructssuch legislation and policy, top management support and allocation resources arecategorized under organizationalfactors. The constructs such as IT capability and information security arecategorizedunder technological factors.

Individual (employees) in organization is an important entity. Individual plays a crucial role in order to manage organization with assist by technology and almost dependent on information in making decision. The quality of information willlead to quality decision. Information and knowledge are very close to individual in organization. According to social exchange theory, the outcomes of an organization's behavior will be based on the responsive behavior of the other participants within the relationship (Son et al., 1999).In this study, three constructs related with participant behavior are selected as individual factors: trust, reciprocity and information stewardship.

Trust is the most commonly studied aspects of social exchange theory (Akbulut, 2003) and the personality psychologists have viewed trust as an individual characteristic (Rotter, 1980). Trust can promote efficient sharing of information and knowledge among organizational members because of trustworthiness of each other in their interaction and work (Willem &Buelens, 2007).Based on social exchange theory, reciprocity is an important force to drive information-sharing behaviors among organizational members (Tung-Mou Yang, 2011; Julibert, S., 2008; Constant et al., 1994). Based on information theory, information stewardship means an individual should manage information on behalf of other whereby information is belongs to the whole organizationand not as personal resource (Tung-Mou Yang, 2011; Kolekofski&Heminger,2003; Constant et al, 1994).

IV CONCEPTUAL FRAMEWORK

Based on the reviewsin related field and interviews with Malaysia public sector expert in domain of information sharing, conceptual framework for interdepartmental information sharing within EG agencies in Malaysia is constructed. Figure 1 shows the proposed conceptual framework where three factors been identifiedas influence factors which accordance with interdepartmental information sharing context; individual factors, organizational factors and technological factors.

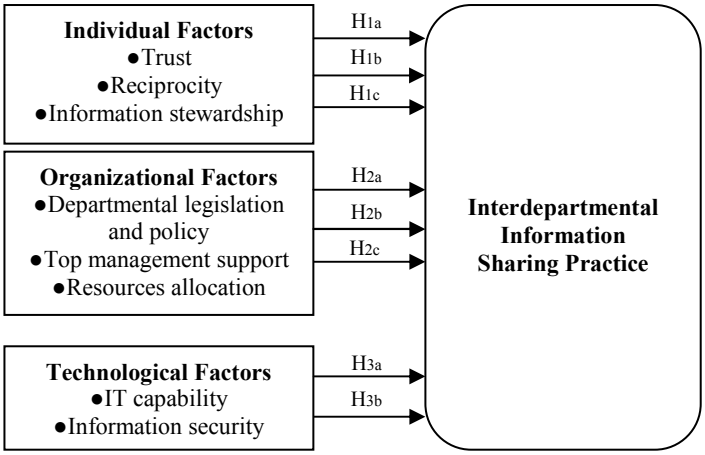

Figure 1. A Conceptual Framework

A. Individual Factors

Individual factors are refers to employees of departmental. Three constructs of individual factors are trust, reciprocity and information stewardship. The trust shown by the employees to share information can indeedimprove the efficiency and accuracy of their operations in department. The lack of trust among organizational members can create barriers to information sharing (Ardichvill et al., 2003). Employees response to other employees' in other department shows the willingness to share information. Bock et al. (2005b) argued that anticipated reciprocity is an important factor influencing organizational members' attitude towards the sharing of information. With information stewardship, information should be freely shared between departmental although some employees regard information as a symbol of power (Kolekofski & Heminger, 2003) and sharing information is viewed as losing power and social influence (Ardichvill et al., 2003).Thus, the hypotheses proposed are:

H_{1a}: The trustamong individual positively influences interdepartmental information sharing practice.

H_{1b}: The reciprocityamong individual positively influences interdepartmental information sharing practice.

H_{1c}: The information stewardshipamong individual positively influences interdepartmental information sharing practice.

B. Organizational Factors

All departmental have their own information. In order to share informationbetween departmental, three constructs of organizational factors are considered: departmental legislation and policy, top management support and resource allocation. Departmental legislation and policy refers to departmental regulatory framework that defines a rule and standard to follow by departmental in sharing information. The established legal and policy regulations regarding information sharing can facilitate departmental participation, reduce risk, increase trust and make necessary financial funding and resources to make the initiatives of information sharing sustainable (Gil-Garcia et al., 2007; Zhang et al., 2005; Dawes, 1996). Top management support refers to commitment from top management to provide a positive environment that facilitates information sharing between departmental. The top management support can help to initiate and sustain cross-boundary information sharing by providing vision, guidance and resources(Akbulut et al., 2009; Li & Lin, 2006). The resources allocation refers to the availability of financial funding and staff between departmental that participate in information sharing. Resources include money, people and time are required to successfully complete the IT project (Wixom& Watson; 2001).Withoutadequate resources, government agencies mayfocus onurgent issues within its own organization when the immediate benefits of sharing information cannot be foreseen (Zhang & Dawes, 2006; Landsbergen & Wolken, 2001).Based on these finding, the hypotheses proposed are:

H_{2a}:The departmental legislation and policy positively influences interdepartmental information sharing practice.

H_{2b}:The top management support positively influences interdepartmental information sharing practice.

H_{2c}:The resources allocation positively influences interdepartmental information sharing practice.

C. Technological Factors

Technology and information sharing are closely linked. Technology mechanism is to create secure environment for departmental to measure shared information is safe. Theconstructs of technological

factors are IT capability and information security. IT capability refers to the availability of technological resources and expertise between departmental that participate in information sharing. The advancement of information technologysuch electronic government applications and networks and also having sufficient and qualified IT professionals increases the ease of information flow and provides more alternatives to share information (Tung-Mou Yang, 2011; Lai Zheng, 2009).Information security refers to design of information systems that can maintain, control, authorize, and trace how information is accessed and shared between departmental. Chau et al. (2001) point out that information security is critical in information sharing. Theaccessto theinformationmust be controlledbecause disclosure to irrelevant users may cause problem for department (Fan, J. & Zhang, P., 2007). Hence, the hypotheses proposed are:

H_{3a}:TheIT capability positively influences interdepartmental information sharing practice.H_{3b}:The information security positively influences interdepartmental information sharing practice.

V CONCLUSION AND FUTURE RESEARCH

Individual, organizational and technological are the factors that contribute to the success or failure of information sharing practice among departmental in Malaysian electronic government agencies. This study will be followed by an empirical study to test the hypothesis and validate the conceptual framework. The contribution of empirical result through the combination these factors will increase the understanding of interdepartmental information sharing practice in Malaysia public sector.

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