

Digital Innovation Success in Public Financial Management in Malaysia

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Abstract: The purposes of this study is to examine the factors that determine the success of the implementation of digital innovation in financial management in Malayasian public sector. The findings of the study are expected to contribute some knowledge in public sector accounting mechanism as very little study focused on the digital innovation and its success factors in this sector. particularly in developing country context, the empirical literature is very rare in this issue.

Keywords: Digital innovation, E- government, E- comarce, modernization.

1. INTRODUCTION

1.1 Background of the study

In modern world, innovation is closely related to development processes. The history of our civilization witnesses relentless series of innovation imparting comfort and ease in many aspects of human life. The drive to innovate characterizes realities that require solutions or the up gradation of the existing paradigms to impart enhanced objective benefits. Innovation has, perhaps, never seemed more instrumental than to the present age in the history of mankind. The process of innovation has been described to require a combination of knowledge and technology, and considered as an essential component of modern economy (Ghaffari et al., 2017). A plethora of definitions exist on innovation. Roger (2010) defined innovation as any new idea or other forms of adoption such as practice, object, etc. Dosi (1982) opined that innovation is a process that follows a historical path, while Schumpeter (1939) viewed innovation with a sharp contrast from invention and requiring the following three

characteristics: building a new plant or material, launching a new institution, and new leadership of men. While these definitions arise from economic perspectives, the anthropologist Barnett (1953) referred to innovation as any new idea, behaviour and thing that is significantly distinct from the existing ones.

In the realm of innovation, „digital innovation“ could be referred to as a continuous process of solving human problems through utilizing technological support. Yoo et al. (2010) defined digital innovation as a system where a new or novel product is the outcome through a compilation of digital and physical elements. In addition, in being digitalized, physical products are converted to make more sense in terms of programming, addressing, communicating and tracing (Yoo 2010).

In today's economy innovation is seemed as crucial in every level from international to individual, and as much vital for government sector as in private sector. According to United Nations Educational, Scientific and Cultural Organization (UNESCO) the top five leading performers in terms of research and development (R&D) expenditure are United States, China, Japan, Germany and Republic of Korea, which are all large economies and developed countries. In USA, the total allocation of budget in R&D sector in FY 2016 was US\$ 145.2 billion, representing 3.5 percent of

federal budget as well as characterizing 6.4 percent increase from FY 2015 (Budget of USA FY 2016). Japan's allocation in financing innovation marks 4.4 trillion Yen (US\$ equivalent 36.1 billion) (Budget of Japan 2017). In 2017-18 national budget, the Australia government has allocated \$10.3 billion for research and experimental development (R&D), representing 2.3 percent increase from previous year (Budget of Australasia for 2017-18).

As one of the emerging developing economies of the world, Malaysia has adopted „Transformasi Nasional 2050“ or TN50 in 2017, which main objective is to be included in top 20 developed nation by 2050 through ensuring economic development, social advancement and innovation. Prior to this, they have „Vision 2020“ with the aim of becoming a developed country, according to which the Malaysian Government has incorporated innovation as one of its top priorities (Budget 2016, Ministry of finance Malaysia). In 2016, Malaysian Government allocated RM (Ringgit Malaysian) 1.5 billion under the Ministry of Science, Technology and Innovation (MOSTI). Apart from this, the government also launched

a range of initiatives to promote innovation, such as a double tax benefit to Small and Medium Enterprises who have an R&D investment in excess of RM 50000, promising the allocation of RM 50 million to the Public-Private Research Network, as well as RM 100 million to the Malaysian Innovation Agency (MIA).

One of the initiatives by the government to modernize their operating system is e-government. The concept of e-government is introduced to achieve this goal not only in any particular country but also all over the world. Digitalization of public financial management is one of the commitments of e-government. In financial management, digital innovation plays the most significant role in accelerating its application as well as acceptance among the users. Within the financial sector there are many innovative approaches with utilizing technology, such as e-banking, e-payment, e-procurement, e-commerce, etc. Apart from these, many software and applications are being utilized within Accounting Information System (AIS), which also forms part of the digital innovation. The regulatory entities are now placing an enormous focus on utilizing technology in financial management in attempting to promote innovation in this sector.

As a leading developing country, Malaysia has adopted e-government in early 2000s in expecting to become a developed country by 2020. Therefore, success in implementing e-government system, especially in the public sector, could be regarded as closely related to the country's journey towards the vision of emerging as a developed economy. The government has promoted all e-facilities including in public financial management in both local and national levels (ICT strategic plan 2016-2020). However, all these efforts, in reality, lead to the plausible question on the extent that the outcomes match the expectations, or more simply put, if these digital innovation in financial management has really been fulfilling their envisaged purposes?

1.2. Problem statement

The world is experiencing an incredible advancement in innovation particularly with regard to information technologies, making e-government a topic of wide discussion. Every government, regardless of developed or developing countries, are trying to excel to the concept of e-government by imparting high priority in achieving competence with the implementation of the latest technologies.

Malaysia is one of the emerging economies with significant commitment and support towards e-government. Starting with the mission of providing better services to the citizens, business community, and government itself, Malaysia adopted e-government concept in 1997 (Jahangir et al.,

2011). Since then research and innovation has become a prime focus aiming to transform the country to digitalization. Malaysia has recently adopted public sector ICT (Information and Communication Technologies) strategic plan for 5 years (2016-2020) in line with the government's aim of transforming the nation into the status of a developed country by 2020 (Malaysian administrative Modernization and Management Planning Unit, MAMPU website). „My-government“, adopted by the Malaysian Government, is an integrated approach aiming to provide all relevant information and services to the citizens from a single platform (Abdullah et. al., 2017). These initiatives have several services with application in financial management sector such as e-tax (for holdings, land, etc.), e-development, e-compound, e-rent, e-license (for businesses, holdings, etc.), and e-banking.

In public sector, accounting applications have changed due to this national policy of transformation. All public transactions can now be conducted online. To accomplish the ultimate Vision 2020 goal of becoming a developed nation, there is a necessity to consider the outcomes of the various digital innovations that are under implementation within the public financial sector, as the success or failure of these components can definitely influence the overall success of e-government.

The success rate in the implementation of e-government in the developing country context is not satisfactory as an overall 60-80% of the convened projects on e-government end in failure (UNDP-APDIP, 2013). Heeks (2008) demonstrates in greater details that 35% projects end in complete failure, with 50% becoming partially successful. Therefore, as a developing country and planning to succeed in becoming a developed one within a few years, it is highly relevant to understand the real scenario and the interplay of the relevant factors that can render success or failure to the implementation of digitalization in public financial management in Malaysia.

In research, the success factors for Malaysian public financial management have not been adequately addressed yet. Most of the prior studies on Malaysia and other developing countries focused only on factors and challenges related to e-government

(Altameem et. al.; Jehangir, 2011; Mohamed, Hussin and Hussein, 2009; Rosnah, Abdullah, Mansor and Hamzah, 2013). Therefore, this study attempts to understand the success factors in the implementation of digital innovations within Malaysian public financial management.

1.3. Research objectives and Research questions

The aim of this study is to identify the factors that determine the success of the implementation of digital innovation in financial management in Malaysian public sector. Under this overall aim, there are five objectives out of this research.

RO 1: To determine the effect of employee dimension on innovation success in public financial management in Malaysia.

RO 2: To examine the consequence of organizational dimension on innovation success in public financial management in Malaysia.

RO 3: To evaluate the effect of technology dimension on innovation success in public financial management in Malaysia.

RO 4: To assess the effect of knowledge dimension on innovation success in public financial management in Malaysia.

RO 5: To determine the effect of external dimension on innovation success in public financial management in Malaysia.

In relation to these research objectives the study formulates the following research questions.

RQ 1: Does employee dimension have any significant relationship with innovation success?

RQ 2: Does organizational dimension have any significant relation with innovation success?

RQ 3: Does technology dimension have any significant relation with innovation success?

RQ 4: Does knowledge dimension have any significant relation with innovation success?

RQ 5: Does external dimension have any significant relation with innovation success?

1.4. Significance of study:

The findings of the study are expected to contribute some knowledge in public sector accounting mechanism as very little study focused on the digital innovation and its success factors in this sector. Particularly in developing country context, the empirical literature is very rare in this issue. This study will provide some insight in this regards. Furthermore, the study is aimed to provide a framework to assess the success factors of digital innovation in public sector financial management and it will help to the future researches to get a basis to explore more regarding the issue.

Moreover, the study will give some recommendations to the policymakers to do robust action towards digitalization of public sectors. And also it is expected that the study will explore the real situation of digitalization of public service in micro level and explore the barriers towards success. The findings of the study could be used as a guideline to increase the involvement of the citizens.

In addition, the study will try to enhance the participation of different entities by addressing the positive outcome of it. A part from this, the findings can be used in other similar country perspective and could be used as a mean of knowledge sharing form cross countries.

2. LITERATURE REVIEW

2.1 Innovation in general

For long innovation has been considered an important issue in research. J. Schumpeter (1883-1950), considered as the father of innovation studies (Freeman, 2003), has introduced innovation for economic studies. He characterized innovation as a window of economic change, where technological innovation represents business cycles (Schumpeter J., 1912; 1928; 1939; 1942). Many subsequent scholars on innovation studies have followed the knowledge tradition that was pioneered by him (Freeman 1982; Rothwell and Zegveld, 1985).

While defining the two terms „invention“ and „innovation“ seem to have some degree of ambiguity, Schumpeter distinguished „invention“ as a contribution of intellectual creativity that does not necessary cover a corresponding economic analysis, whereas „innovation“ is basically an economic decision that can be applied or adopted from invention (Schumpeter, 1939). Subsequent works by Solo (1951) and Ruttan (1959) differed with him in terms of there being no dependency of innovation on invention as innovation can be done without a corresponding invention.

While Schumpeter's model did not cover the analytical process of technological innovation, the renowned historian Maclaurin (1905-1959) came to fill the gap through proposing a theory of technological innovation called „linear model of innovation“. This model could be analyzed in terms of five stages for an innovation process to proceed through systematically, these being: pure science, invention, innovation, finance, and acceptance or diffusion (Rostow 1952). From 1970s onwards the debate on innovation has become the result between the demand pull or producer push processes (Rothwell and Robertson, 1973; Mowery and Rosenberg, 1979). At any given time when the existing processes fall short of resolving the ensuing challenges, innovation process is utilized as a solution to these problems, characterizing a demand pull (Dosi, 1982). On the other hand, in order to keep continue with the growth when innovation is exercised as a management process by the research and development (R&D) team of a business organization, then it is considered as being characterized by producer push (Von Hippel et al., 1999). Lately innovation research has moved to cover the factors that determine its success or failure (Jones and Saad, 2003). As the process of innovation includes individual, organizational as well as external entities, research on innovation has spread among all these different dimensions, where researchers are trying to discover the relationships between innovation and the factors that have influence on it. In the literature most of the studies on innovation arise from the perspective of developed countries as most of these activities have been taking place in these countries (Peansupap et al. 2006; Tatiana and Anatoli, 2013; Brusca and Montesinos, 2013). However, a growing number of studies are also reflecting on the emerging economies (Bashu 2004, Smith et al., 2008).

2.2 Government modernization process

E-government is the most important steps towards the modernization of governments (Jeager and Thompson, 2003). E-government is considered as a significant contribution of digital innovation in recent times, which has also become a global phenomenon attracting high attention from the academia in studying the manners it facilitates citizens' convenience and governments' activities. With a recent incredible rise in information and technology, citizens now deserve much better service from their government. Technological advancement has significantly changed peoples' day-to-day life and their work and business activities. Simultaneously it raises a demand and puts pressure on the government for better governance. There is a variety of definitions on e-government. Norris (2001) argues that it is a process where information technology is utilized to get rid from physical involvement to convey the service or information to the potential users. In identifying these users Borins (2002) opined that they are the citizens, business partners, or employees. General accountant office (2001) compares it with a new system where Information Technology (IT) is utilized to form new leadership, ways to make strategic decision, operating business, as well as receiving feedback from the citizens and other concerned communities. Reddick and Frank (2007) define it as a continuous process where the governmental services are provided through the internet 24 hours a day, seven days per week. With peoples' own interpretation and views on e-government, the meaning of the concept is still arguable (Halchin 2004; Hu et al., 2009; Godse and Garg, 2007; Fang 2002; Lim et al., 2007). In spite of this variety of interpretations, the common issue on e-government that has been focused on all literature is the use of technology to enhance the quality of public service delivery (Abdullah et. al., 2017).

While there is a good agreement on the desired outcomes of e-government in terms of facilitating better services for citizens and businesses, reducing corruption and system loss, and increasing accountability and transparency of government actions (Zhang and Hsieh, 2010; Homburg 2008), the process of executing e-government is not above challenges. Every government has to handle many issues that could be considered as key factors for determining the success or failure of e-government. For developing countries, the common challenges include technical infrastructure, economical and long-term action plan, cyber threat, smooth coordination, leadership, and capacity of management (Abdullah et. al., 2017, Pudjianto and Hangjung, 2009; Abdallah and

Fans, 2012). Apart from these, legal framework, skilled manpower, political commitment, and social factors are also associated with the development of efficient e-government system (Almarabeh and AbuAli, 2010; Wang and Hou, 2010; Pudjianto and Hangjung, 2009; Abdelsalam et al., 2012; Abdelsalam et al., 2010). Chen et al. (2006) distinguished the challenges and issues related with e-government between the perspectives of the developed and the developing countries, and concluded that the developed nations have made significant advancement in adopting, implementing as well as successfully moving with it compared to the emerging economies. In the developing nation context, there exists a lack of strong empirical research on the issues of e-government (Napitupulu, 2017; Almarabeh and AbuAli, 2010; Wang and Hou, 2010; Chen et al., 2006). Therefore, research continues to address the different dimensions and components of e-government in the context of the emerging economies. Furthermore, cross-comparison of the strengths and weaknesses between developed and developing countries also form a potential avenue of sharing knowledge and discerning recommendations for the developing nations (Chen et al., 2006).

2.3 Digital innovation in the public financial management

E-government aims to provide prompt facilities to the citizens and business communities (Borins 2002). For achieving success in implementing e-government, every government has to render online and hassle free services to citizens and business entities in a transparent way. Similar to other developing countries, Malaysia is not yet a champion in the implementation of e-government or e-commerce (Jahangir et al., 2011). However, the country has adopted its policy towards e-government in the 2000s and has since been making significant strives to achieve its success (Razlini, 2017). Malaysia also offers many online services to its citizens and business communities to achieve the benchmarks of e-government (Abdullah et al., 2013), although its implementation of e-government is still in its infancy and the overall impact has remained largely limited, resulting in the country still lagging far behind other Asian countries like Singapore and Japan (Jahangir et al., 2011).

In public sector, the government of Malaysia puts more focus in transforming all citizen-centric transactions and services into online services such as e-procurement, e-license, e-tax, e-billing, e-payment etc., which is in line with the purpose of e-

government (Abdullah et. at., 2017). All of these transformations are considered as the implementation of digital innovations in financial management in public sector, while in 2016 national budget the Malaysian Government has incorporated innovation within its top six priorities (National budget, 2016)

2.4: Research gap:

Prior studies focused on innovation in general and specifically implementation of innovation, e-government, and e-commerce in terms of the determinants of their success or failure (Freeman 2003, Jones and Saad 2003, Pudjianto & Hangjung, 2009, Abdallah and Fans, 2012, Razlini, 2017). However, digital innovations in public financial management lack in adequate understanding of their success or failure, while the success of e-government is directly related to it. Therefore, this study aims to focus on the factors that influence the success of digital innovation implementation in public financial management in Malaysia.

3. RESEARCH METHODOLOGY

3.1 Determinants/ factors influencing innovation success in public financial management

3.1.1 Dependent Variable: Innovation Success

The research will be focused on the factors influencing innovation success in public financial sector. Heiligenberg et al. (2007) described success in two dimensions: the short-term and the long-term success, where these are also interrelated as the short-term is a part of the long-term plan. In this study, innovation success is taken as the dependent variable. Success in innovation in public financial management will be determined by the “financial management innovation award” given by the ministry of finance of Malaysia and five star performances ranking of concerned service providers.

3.1.2 Independent variables

Prior research elaborately highlighted on e-government and its multiple dimensions including success factors, challenges, adoption policy, implementation in both developed and developing country contexts, etc. Digitalization of public financial management is an important component of e-government as well as a potential bridge for the maintenance of a close relation between government and citizens (G2C) (Bashu, 2004). In this way, success of e-government can be tremendously influenced through the success or failure of the implementation of digital innovations in financial management sector. There are a number of factors that could potentially be related to successful e-government implementation as evident from prior research. This study takes these factors into consideration in formulating its hypothesis for the sector in question.

Employee dimension

Trained and skilled manpower is one of the important factors for achieving organizational success (Dada, 2006). To operate digital financial management, respective staffs must have Accounting Information System (AIS) skill (Ghasemi et. al., 2011). Without their spontaneous support successful implementation of digitalization of public financial management could become impossible. Norris (1999) posits that lack of competency from the part of the manpower may lead to resistance to changes. In this light, this study formulates the following hypothesis.

H1: (a): Having AIS skill has a positive and significant relation with innovation success in public financial management.

However, technology is subject to the constant process of rapid change. Management needs to cope with the technological updates followed by engaging with the upgradation of existing processes (Ahmed and Othman, 2007). Similarly, in AIS, rapid and continues change is happening and staffs need to adjust them with the development process (Ghasemi et. al., 2011). This leads to the following hypothesis.

H1 (b): Acceptance of AIS updates have significant positive relation with innovation success in public financial sector.

In addition, learning is considered as one of the vital elements of implementing e-government, which is impossible without organizing proper training of the relevant staff (Altameem et al., 2006). Amid

a lack of proper training, staff may not be able to serve IT-oriented new services (Norris, 1999). This shapes the following hypothesis.

H1 (c): Proper training of relevant staff has significant positive relation with innovation success in public financial sector.

Organizational dimension

Vision and strategy are considered as some of the focal elements of digital innovation in financial management (Altameem et al., 2006). Vision and strategy facilitate an organization to achieve its goals (Burn, J. and Robins, G., 2003). Accountant General Department (AGD) of Malaysia issued policy and standards towards digitalization and all financial entities including public financial management adopt this in their vision and strategy. Considering the transformation to e-government as the vision necessitating a realistic strategy, this study adopts the following hypothesis.

H2 (a): Having clear direction and policy from AGD have significant positive relation with innovation success in public financial sector.

Although vision and strategy are important, however these also require top management support (TMS) (Wee, 2000). It would become the responsibility of the top management (TM) to uphold innovation implementation projects as a priority both in implicit and explicit means. A strong TMS can also assist in overcoming the various obstacles facing implementation success (Altameem et al. 2006; Kim and Bretschneider, 2004). This recognition follows in the following hypothesis.

H2 (b) Favorable TMS is highly required to attain innovation success in public financial sector.

In addition, saving cost is also another vital aspect that the TM needs to consider to implement new changes. In public sector, minimizing cost is more critically evaluated as it has a direct impact on mass expectations. Sufficient fund is needed to develop.....This leads to the following hypothesis.

H2 (c): Financial support has significant positive relation with innovation success in public financial sector.

The technology dimension

Implementing digital innovation in financial management sector is all about technological dimension as it is carried out through the adoption of new technologies. Therefore, technological infrastructure comes first under its implementation. Technological environment from where innovation process is adopted and implemented is considered as IT infrastructure. Building the required IT infrastructure is among the top priorities of any government in implementing e-government (Dada, 2006). Malaysia has also incorporated it within their top six priorities (National budget, 2016). The following hypothesis is constructed in this light.

H3 (a): Strong technological infrastructure has significant positive relation with innovation success in public financial sector.

Apart from the technological infrastructure, IT standard is also a focal component for innovation success (Altameem et al., 2006). Digitalization in public sector is a complex process and many entities are involved with it, where an adequate IT standard could act as guidelines to impart harmony among the different parties. This leads to the following hypothesis.

H3 (b): Having an adequate IT standard has significant positive relation with innovation success in public financial sector.

The subsequent major consideration would be in terms of internet support and accessibility. In the context of the developing countries, access of internet in rural area may not be the same as in cities. Governments also need to provide opportunities for disabled and handicapped people to access the internet in order for the benefits of digitalization to become generalized. This follows in the following hypothesis.

H3 (c): Accessibility of internet has significant positive relation with innovation success in public financial sector.

Knowledge dimension

IT literacy in the developing country context is an important dimension for innovation success as illiteracy is a big challenge in these places (Yoon and Chae, 2009). Although latest report of United Nations Educational, Scientific and Cultural Organisation (Unesco) revealed that, in Malaysia national literacy rate is 94.6% which

is much high compared to many other developing countries, however, IT literacy is somehow different than the usual literacy as literacy on IT depends on age, sex and culture among many other factors. In Malaysia, the count of personal internet users is 67% (The Global Information Technology Report, 2015), which is much lower than the country's national literacy rate. The following hypothesis is drawn in this connection.

H4: IT literacy has significant positive relation with innovation success in public financial sector.

External dimension

Legislation and policy are some of the external factors to have strong influence on innovation success in public sectors (Kamal, 2006). Digitalization of public sectors requires appropriate legal frameworks by means of which all concerned parties can protect their rights. Besides, policymakers need to ensure the necessary measures in order to protect the processes connected to implementing innovations (Landsbergen and Wolken, 2001). This follows in the following hypothesis.

H5 (a): Favourable legal framework has significant positive relation with innovation success in public financial sector.

Security concern is one of the by-default outcomes of IT-centric innovations. The governments are the responsible authorities in this regard as they possess enormous quantities of personal information of the citizens. If the governments fail to protect the security of peoples' personal information, the implementation of e-government system may collapse. This dictates the following hypothesis.

H5 (b): Strong security system framework has significant positive relation with innovation success in public financial sector.

The last but not the least consideration would be in terms of the transparency in the implementation of innovation systems. Lack of transparency and mutual trust may deter the citizens from willingly engaging in the government efforts toward digitalization (Dawes, 1996; Landsbergen and wolken, 2001). This shapes the following hypothesis.

H5 (c) Transparency in government actions has significant positive relation with innovation success in public financial management.

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