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GRADUATE STUDIES

INFLUENCE OF LAND TRANSPORTATION MANAGEMENT SYSTEM IN THE DIGITALIZATION OF TRANSACTIONS IN THE LAND TRANSPORTATION OFFICE

Chester Paul R. De Villa
Land Transportation Office
Tanay, Rizal

ABSTRACT

Digitalization ends up one of the key components for the advancement of a nation. Previous studies on digitalization indicate that most governments are performing well in its implementation. However, digitalization makes the services from the government agencies more effective and efficient through better ICT capabilities. The use of ICT makes the public access faster and the public can get better information via the internet. Currently, there is a necessity to focus on Organization Transformation, Public e-service, Public value, Challenges, and Obstacles that face government to transform. The findings showed that each organizational element, which consists of process, people, culture, and structure can be identified well through the technology that induced organizational transformation in the public sector. The changes of the attribute can be identified by a comprehensive review from the general literature review of organizational point of view, the literature in the field of organization and information systems, and digitalization literature.

Index Terms: Digitalization, Land Transportation System, LTO Management System

I. INTRODUCTION

Digitalization can be defined as the transformation of government transactions from the traditional way to the digital way in terms of business improvement processes and service delivery to the public. Globalization and environmental factors have been affecting public perspectives about government services the support of information and communication technology (ICT) has been creating a new standard of bureaucracy (Priyambodo, T.K., and Prayudi, Y., 2015). Public service has been faster, cheaper, and process-oriented through ICT strategies. Digitalizing services in the public sector has steadily increased in recent years, causing information technology (IT) expenditures to rise and IT infrastructures to become more complex (Haki, M. K., Legner, C., and Ahlemann, F., 2012). This review will discuss articles related to the transformation of government transactions in general, to digitalization. The discussion is aimed to make better service delivery to the public facilitated by the use of information technology in creating public value (Stoker, G., 2006), also to increase governments' responsiveness and transparency (Bannister, F. and Connolly, R., 2014) (Millard, J., 2015). Government agencies and their IT departments cannot succeed without fundamentally changing their operations.

The role of IT should be given a more holistic approach in the analysis of new infrastructure i.e. applications and systems, introduced to the public (Zhang, H., Liu, L., and Li, T., 2011). Changing an organization's way of thinking is difficult, especially when the environment is becoming more unpredictable and the changes more rapid (Hauder, M., Roth, S., Matthes, F., München, T. U. and Schulz, C., 2012). This makes it easier to put the focus on responding and reacting rather than planning, which can lead to costly investments and poor understanding of the overall situation of IT and IT infrastructure (Hall, C., Clifton, K.J., and Martin Hall, G.L., 2005). Different management approaches have consequently been suggested, one of which is EA (Kaisler, S.H., and Frank Armour, Ds., 2017). The focus of this study is knowing the influence or impact of IT implements (e.g. Land Transportation Management System or Land Transportation Office (LTO) Portal) in government transactions (e.g. the LTO).

Four organizational elements are considered in this study [6]. (1) People: where the partnership between management and employees is involved. (2) Processes: where the tendency of having a one-stop-shop concept is discussed. (3) Organizational culture: where inter-organizational cooperation and interdependence is likely to increase within the agency. (4) Organizational structure: where the structure of an organization, including networking, complexity, and flexibility is expected to transform (Daft, R.L. and Armstrong, A., 2014).

Although numerous opportunities and applications of digital technology have been proposed, recent discussion has also recognized the multitude of organizational and business challenges associated with digitalization. Porter and Heppelmann (Porter, M.E.and Heppelmann, J.E., 2015) list five common mistakes to be avoided when developing advanced offers based on digital technologies. First, functionalities are sometimes included that customers do not want to pay for.

The feasibility of a technological feature does not automatically qualify it for development. Questions about added value for the customer are left unanswered or even unasked, leading to a costly and complex technology that ultimately dissipates the total value of the product and service offering. Second, security and privacy risks should not be underestimated given that smart, connected products open new gateways to internal corporate systems that contain critical data in need of protection. Third, companies often fail to anticipate competitive threats where new competitors with superior digitally enabled products and services, such as performance-based business models, emerge quickly and reshape the competitive boundaries of the industry. Fourth, a common mistake is to delay the start, enabling competitors and new entrants to move ahead in capturing and analyzing data. The final mistake is the overestimation of internal capabilities to undertake the digital transformation. Digitalization creates a high demand for new technologies, skills, and processes throughout; a realistic assessment of the capabilities to be developed in-house and those to be developed by new partners is very important. For example, Hasselblatt et al. (2018) identify five distinct capabilities that can leverage an IoT strategy. Similarly, Lenka et al. (2017) highlight the importance of digitalization capabilities for value co-creation with customers when pursuing a servitization strategy. Furthermore, they identify three underlying sub-components of digitalization capabilities: intelligence capability, connect capability, and analytic capability. All of these challenges are closely related to the inability of companies to transform their business models based on digitalization (Parida, V, et. al, 2015) (Teece, D.J., 2010). For example, advanced service business model literature recognizes the need to revise value creation, delivery, and capture activities (Reim, W.; Parida, V.; Örtqvist, D., 2015).

In practice, companies need to develop a sound understanding of what to offer, how to achieve it, and why it has profit potential, whilst remaining in touch with the wider ecosystem beyond company boundaries.

II. DISCUSSION

New, evolving IT solutions create opportunities to offer services and increase transparency, organizations have become accustomed to frequent changes in IT and operational environments (Priyambodo, T.K., and Prayudi, Y., 2015). Both citizens and service providers are continually creating new needs and requests, and expectations for IT solutions are increasing. This puts constant pressure on IT departments to renew their systems and services (Torres, R. M., and Momsen, J.D., 2005). The broadness of the operational context is expanded further by the different digitalization initiatives. This means increasing collaboration and enabling interoperability of systems and services (Weerakkody, V., Janssen, M. and Dwivedi, Y.K., 2011). A prerequisite for the initiatives to be successful is good comprehension and the ability to manage the organization‘s information systems and processes (Weerakkody, V, and Dhillon, G., 2008). Advanced government is frequently worried about the digitalization of administrations and the improvement of public e-services (A. Jansen, A., and Olnes, S., 2016), although the participation and open data have gained the trust of the public. Public e-services can be electronically mediated through the users (citizens and organizations) that create the value through the e-service (Lindgren, I and Jansson, G., 2013). Public e-service has good development with a multitude of challenges, such as understanding the users’ needs and expectations (Millard, J., 2015) (Lindgren, I and Jansson, G., 2013). The notion refers to a change of public administrations to a networked and open form of government. The use of digital technologies in public services is very important to contribute to the best solutions to overcome

societal challenges (Millard, J., 2015). Through the good implementation of e-public services, the government can improve the performance of public administration (Haki, M. K., Legner, C., and Ahlemann, F., 2012). Public organizations are expected to achieve better value in and coordinate their actions in an inter-organizational way (Christensen, T. and Lægreid, P., 2007). Information technologies are crucial in the transformation of government performance and the functions in the relation to the citizens, businesses, and other government agencies (Bertot, J.C., Jaeger, P.T., and Hansen, D., 2012) (Luna-Reyes, L.F., and Gil-Garcia, J.R., 2014). The development of personal computers in the 80s has significantly reduced the size and cost of processing data in government agencies. After that, in the year 90s, internet and computer networks brought new opportunities to improve public service (Luna-Reyes, L.F., Gil-Garcia, J.R., and Romero, G., 2012). Nowadays, the evolution of social media implementations and new tools can make better organizational and institutional transformations in government transactions (Bertot, J.C., Jaeger, P.T., and Hansen, D., 2012) (Cordella, A. and Tempini, N., 2015). Organizational transformation involves information technologies and has been an interesting phenomenon in the literature reviews in the last decades. Three main views dominate the research in the area (Gil-Garcia, J.R., and Pardo, T.A., 2006) (Luna-Reyes, L.F., Gil-Garcia, J.R., and Romero, G., 2012): First, technological determinism (that considers technology as a powerful tool to transform and change social structures); Second, social determinism (the social actors such as the citizens and IT consultant impacts the progress of the digital implement) and; Third, a unified view (the combination between two approaches). The institutional approaches stated that the comprehensive framework can make government transformation through the digital implements, considering not only technology, but also the context, forms of organization, and the institutional arrangements (Lampathaki, F., et. al, 2011). Government agencies have the power to regulate and apply rules in realizing the application of an ICT implementation (Luna-Reyes, L.F., and Gil-Garcia, J.R., 2014).

The socio-technical theory relates government agencies as a sociotechnical system that is built from two correlated systems, the social and the technical systems. The technical system is the processes, tasks, and technologies needed to transform input into output while the social system is the people, relationships, reward systems, and authority. These classic socio-technical principles provide an environment for successful organizational change following the implementation of new technologies (Lorenzi, D. et. al, 2014).

In the relationship with the socio-technical theory, ICT (technology) is only one of the components of the socio-technical system, and as long as processes, people, cultures, and structures remain unchanged, the potential of modern technologies cannot be fully realized (Nograšek, J. and Vintar, M., 2014). Through the comparison from the public and private sectors, (Hof, S. and Reichstädter, P., 2012) the determination of the bureaucratic nature of government agencies has greater obstacles and challenges rather than the successful implementation of new technologies than in the private sector. The influence of political and economic factors was considered in the implementation of e-procurement in the UK (Nograšek, J. and Vintar, M., 2011).

III. RESULTS

The digitalization of government transactions improves public service. This result considered the following:

1. The decision-making process that involves the different stakeholders, especially the prospective users (co-creation) from the public, private and civil sector (Voorberg, W.H., Bekkers, V.J.J., and Summers, L.G., 2015).
2. The adoption of accommodating shifting public values/opinions and develop it into a positive factor in the improvement of IT implements (Mergel, I., 2016).
3. Transparency of government processes (McDermott, P., 2010).

The Transparency and Access to Public Information Law are relevant to the IT implement's development in Puebla, Mexico. The existence of such a law ensures that the IT implement contains some core information for the public. Therefore, the legal framework has helped shape and increase the IT implement's content. In Puebla, this law has been revised several times since 2004, but there is no evidence to suggest that the development of the IT implement's functionality during these revisions influenced its evolution. On the other hand, some people recognized certain organizational practices as institutionalized routines or practices that lend legitimacy to IT implementation. An example of this institutionalization process is the adoption of a development method which became a routine part of the development process. Also, treating content holders with respect, not just by the personnel in charge of the portal's design, but also by the government agencies that collaborate with them, has given legitimacy to these development processes. The office of the Governor held no special interest in using the IT implement as a tool to increase citizen participation, access to information, transparency, or improving services. The portal did not form part of the government's strategy in any of these areas. The portal's development team exploited this fact, as it gave them the freedom to adopt work routines that are uncommon in Mexican government agencies but are inherent to the internet, such as publishing unpolished or unfinished content to get ahead and returning repeatedly to improve it. However, the results attracted the interest of the Governor who began to include more and more information from the IT implement in his Annual Report. As one interviewee commented: The number of lines that each agency or topic was allocated in the government report depended directly on its importance. In the beginning, the IT Implement earned a brief mention. Now, in the fifth report, this mention has been widened significantly, which clearly shows the current importance of the IT implementation.

According to Levy's ideal model, second-order change is multidimensional and multi-level and in our case includes the organizational and inter-organizational levels, and first-order change refers to one or a few dimensions and organizational levels, therefore the first-order change in our case includes the workplace level. This assumption represents the depth of Organizational Transformation (OT). The nature of OT can be examined through the organizational elements i.e. processes, people, culture, and structure. For each of these elements, the variables can be identified that best describe each element according to the depth of change. ICTs in the government agencies have in the past largely induced first-order changes, which means that the ICT induced changes in the early stages of digitalization development affected primarily the workplace level. However, later on, the intensity of organizational change is getting momentum and is increasing of a second-order change nature. Changes affect and spread vertically up the organizational pyramid and horizontally across all elements of it. In addition to influencing processes and employees at the operational level, their influence spreads to employees of all profiles (including senior officials), requires changes in organizational culture, and adaptation of

organizational structures at the organizational as well as inter-organizational level. This explanation is very much in line with Becker, J., (2005) who in this context provides some meaningful remarks, i.e. Second-order transformation through digitalization can result from a long sequence of first-order changes; First-order transformation through digitalization can be observed more frequently in the earlier stages of its development rather than in the later stages and; Second-order transformation through digitalization can be observed more frequently in the later stages of its development rather than in the earlier stages.

Several challenges and obstacles can delay the progress of digitalization. The variety and complexity of digitalization activities suggest the presence of a wide scope of challenges and obstacles to its implementation and management.

The first is technical obstacles. The implementation or performance of digital transaction faces some technological troubles, for example, an absence of shared guidelines and perfect infrastructure among departments and agencies. Also, privacy and security are critical barriers to the implementation of digitalization. The guarantee made by the government agency will not suffice unless technical solutions, transparency of procedures, and probably freelance auditing is introduced. The lack of weakness of ICT infrastructure is one of the major challenges for the implementation of digitalization. The internet is required to enable the appropriate sharing of information and open up new channels for communication and delivery of new services. For a transition to digitalization, an architecture, that is, a guiding set of principles, models, and standards, is needed. Many developing countries suffer from the digital divide (digital divide refers to the gap in opportunity between those who have access to the Internet and those who do not), and they are not able to deploy the appropriate ICT infrastructure for digitalization. Privacy is a critical issue in the implementation of digitalization in both developed and developing countries. Ebrahim, Z., and Irani, Z. (2011) identified privacy and confidentiality as critical barriers on the way to implementing digitalization. Privacy refers to the guarantee of an appropriate level of protection regarding information attributed to an individual. Bonham, G. and Seifert, J. (2003) emphasized that digitalization should be approached with an eye toward the protection of individual privacy. Both technical and policy responses may be required when addressing the privacy issue in digitalization. The difficulty of protecting individual privacy is a very important barrier to the implementation of digitalization. Also, there is a need to deal effectively with privacy issues in networks to increase citizen confidence in the use of IT implements (portals). Security is one of the most significant challenges for implementing digital initiatives. Security means protection of all information and systems against any disclosure to unauthorized access.

The second is organizational obstacles. The implementation of digitalization is, not a purely technical issue only, but rather an organizational issue. Organizational challenges embrace high management support, resistance to change to electronic ways in which, collaboration, and lack of qualified personnel and training.

The third is a social obstacle. Social issues are mainly concerned with the usability of a large variety of people. This implies that the interface must be usable by all kinds of people within the state. Social obstacles include many factors such as the digital divide, culture, education, and income.

The last one is the financial obstacles. M. M. J. (2002) declared that the lack of financial support is considered a significant obstacle to the implementation of digitalization in many countries. It is necessary to ensure the availability of the existing and expected budgetary resources to achieve

the goals. The most serious and significant barrier to the implementation of digitalization is a lack of funding; the implementation of digital transactions is expensive. Since every government budget is already overburdened with every possible expense budget makers can fit into it, the suggestion to expend the considerable sums that an excellent IT implement will cost is a non-starter, in budgetary terms, and budgetary politics.

Many research gaps remain in analyzing how industrial companies can leverage digitalization to transform their business models to achieve sustainability benefits. Specifically, challenges related to value creation, value delivery, and value capture components of business model innovation need further understanding as well as how the alignment of these components drives sustainable industry initiatives.

CONCLUSION

Literature in digitalization is still very weak. Organizational element, element-specific attributes (process, people, culture, and structure) were identified, utilizing which technologically induced organizational transformation in public sector organizations can be more clearly observed. The attributes of changes were identified based on a comprehensive review of the general organizational literature. However, one of the main conclusions of the discussion above is that digitalization can indeed influence public service and that ongoing transformations in societal values can drive digitalization. We should be aware of the importance of some other factors inside and outside of government agencies that have to be taken into account. These factors, we can call the institutional, organizational, and inter-organizational factors which can enable or inhibit OT. Among them, we should underline at least one, i.e. leadership, which is first and foremost the ability of government senior officials to recognize the importance of OT in the successful implementation of new technologies, understand its dimensions, and support the necessary changes. Between one country and another country, the process of digitalization will have different transformation but the most important things to do consider are the adoption technology and also the process through the Levitt model. Four challenges and obstacles affecting the digital transformation performance that are technical obstacles, organizational obstacles, social obstacles, and financial obstacles.

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