INSTITUTIONAL BARRIERS TO DIGITALIZATION OF GOVERNMENT BUDGETING IN DEVELOPING COUNTRIES: A CASE STUDY OF GHANA

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ABSTRACT
This paper aims to understand how and why institutional barriers constrain digitalization of government budgeting in a developing country context. E-Government studies that specifically focus on public sector budgeting as a cross-agency activity remain limited. While the dominant research focus has been on government interactions with citizens and businesses, budgeting as a significant cross-agency process is yet to receive the necessary research attention. To address this gap, this study employed institutional theory as the analytical lens and qualitative, interpretive case study as the methodology to investigate a government budgeting digitalization project and related challenges in the developing country context of Ghana. The findings show that outdated laws and the culture of paper document flows were institutional barriers to the budgeting digitalization. Other barriers included non-use of an integrated system implementation approach as well as inadequate and unreliable online access for all the participating units. The originality of the paper lies in its focus on government budgeting as a significant e-government research phenomenon.

KEYWORDS
E-Government, Government Budgeting, Digitalization, Institutional Theory, Interpretive Case Study, Developing Country, Ghana

1. INTRODUCTION

The purpose of this study is to understand how and why institutional barriers constrain digitalization of government budgeting in developing country contexts and how such barriers can be addressed. Government budgeting involves planning, executing and controlling public sector revenues and expenditures. Government budgeting is a cross-agency activity that transcends the vertical and horizontal hierarchies of government. However, government budgeting is usually characterized as bureaucratic and inefficient, especially in the developing world, where traditional paper-based processes dominate and therefore digitalization of public administration remains nascent (Schuppan, 2009). Digitalization refers to the use of digital technologies to migrate physical activities and documents from offline onto online platforms to enable electronic interactions (Bharadwaj et al., 2013; Fichman et al., 2014). Generally, digital technologies are computer network-enabled platforms powered by the Internet to promote online interactions (Janowski, 2015). Digitalization offers opportunities to governments to address problems with traditional, paper-based processes.

The use of digitalization as an innovation to promote efficiency and effectiveness in private and public sectors is well acknowledged in the information system literature (Yoo et al., 2012). As an advanced form of e-government innovation, digitalization has been identified as an initiative to reform internal public administration activities in order to promote efficiency and integration (Haider & Saman, 2012). However, e-government research on developing countries has focused more on external interactions such as

government-to-citizen and government-to-business interactions (Alomari et al., 2012; Davison et al., 2005).

Moreover, emphasis in the literature has been on resource and capability constraints, such as lack of finance, technical skills and digital literacy (Andoh-Baidoo et al., 2012; Arfeen & Kamal, 2014). Little research exists on challenges arising from legal, normative and cultural institutions as constraints on internal and cross-agency activities such as government budgeting (Siddiquee, 2016). Following this research gap, the research question motivating this study concerns how and why digitalization of government budgeting gets constrained by its institutional contexts. To address the research question, this study employs institutional theory (Scott, 2008; 2005) as the analytical lens and interpretive case study (Walsham, 1995; 2006) as the methodology to investigate a government budgeting digitalization project in the developing country context of Ghana. Government budgeting is considered as a significant e-government phenomenon for investigation because by defining financial resources, it sets the agenda for various activities in the public sector. Moreover, due to the complex nature of government budgeting, digitalization presents opportunities to address problems of bureaucracy and inefficiency, hence the need for information systems research to address inherent challenges.

The rest of the paper is structured as follows. Section 2 reviews relevant literature on digitalization and e-government. Section 3 discusses institutional theory as the theoretical lens for the data analysis. Section 4 presents the case study description while Section 5 analyses the case study findings based on the selected theoretical foundation. Section 6 discusses the findings of the analysis. Finally, Section 7 concludes the paper with its contribution to knowledge and recommendation for further research.

2. DIGITALIZATION AND E-GOVERNMENT

Digitalization involves using a computer-based network infrastructure, especially the Internet (Bharadwaj et al., 2013), to migrate physical activities and content onto digital platforms for online interactions (Fichman et al., 2014). A number of organisational benefits for digitalization have been discussed in the information systems literature (Bharadwaj et al., 2013; Wenzel et al., 2015). It is noted that digitalization can make processes more tailorable and malleable to the context of use, thereby making them more flexible and responsive (Fichman et al., 2014). Also, digitalization promotes intra- and inter-organisational collaboration even where actors are remotely located (Islam et al., 2016). In relation to documents, digitalization offers an opportunity for large storage, multiple copying, and quick transmission of e-documents at lower cost and faster speed (Fichman et al., 2014) compared to the physical counterpart. Moreover, digitalization promotes modernization and participation in online services (Schuppan, 2009). In addition, it enhances human capability to search, analyse, correct and improve e-documents at ease (Fichman et al., 2014). Other benefits include the opportunity for online information sharing and tracking (Fichman et al., 2014; Fountain, 2005; Schuppan, 2009).

In relation to e-government, digitalization involves the conversion of traditional, bureaucratic and paper-based processes onto digital platforms (Janssen & Estevez, 2013). In this context, digitalization is considered as the advanced form of e-government innovation that re-engineers physical processes to promote efficiency and effectiveness (Irani et al., 2008; Weerakkody et al., 2011). Digitalization is noted to help promote democracy, transparency, accountability, and freedom (Falk et al., 2017). It also offers opportunities for governments to modernize public administration and engagement with citizens and businesses (Falk et al., 2017). One form of public sector modernization is process simplification through standardization of activities to increase efficiencies and reduce response time (Calvo & Campos, 2017). At the same time, digitalization leads to cost savings

in public administration (Falk et al., 2017). Given its benefits, digitalization presents opportunities for governments to address problems of bureaucracy and inefficiency in traditional public sector processes (Davison et al., 2005; Grönlund & Horan, 2004; Venkatesh et al., 2010; West, 2004). In general, digitalization helps to streamline costly and inefficient vertical and horizontal processes (Janowski, 2015; Janssen & Estevez, 2013; Sun et al., 2015).

Notwithstanding the benefits of digitalization, its deployment in the public sector can be a challenge (Falk et al., 2017). Generally, the nature of the culture and structures in the public sector can be barriers to digital innovation (Heeks & Stanforth, 2007; Irani et al., 2007; Weerakkody et al., 2011). The traditional public sector is characterized by hierarchical and disparate structures as well as bureaucracy and paper-based processes (Davison et al., 2005; West, 2004) that cause inefficiencies and delays (Beynon-Davies, 2007). Paradoxically, bureaucracy in the public sector was intended to promote efficiency, equality and democracy (Cordella & Iannacci, 2010). Yet, it has increasingly become a source of delays, inefficiencies (Davison et al., 2005) and excessive paperwork (Wiredu, 2012).

Other problems resulting from the public sector structure and culture include operational divisions and politics (Beynon-Davies, 2007; Irani et al., 2007) as well as resistance to innovation (Seng et al., 2010; Zhao & Khan, 2013). Functional insularity as well as lack of integration and information sharing across departments and agencies also pose challenges to digitalization (Davison et al., 2005). Resistance from civil servants due to fear of losing jobs (Falk et al., 2017) also constrains digitalization in the public sector. Despite its usefulness, digitalization of documents and activities in the public sector has been associated with challenges as it sometimes fails to consider differences between agencies in terms of access to technologies and related resources (Calvo & Campos, 2017). In situations where, some agencies are more advanced than others, formalizing and standardizing digital processes across horizontal and vertical hierarchies of governments can be problematic (Falk et al., 2017). This challenge is particularly pronounced in the developing world, where due to digital divides, agencies lack equal access to technologies.

Some developing countries have initiated programmes to digitalize government processes for more effective and efficient public administration and service delivery. However, in most cases, the outcome has been a failure due to institutional, socio-cultural and technological barriers (Siddiquee, 2016). Among the barriers identified are complex and multi-level bureaucratic structures inherited from past colonial administration (Imran, 2013), e-illiteracy and inadequate ICT infrastructure (Bertot et al., 2010; Heeks & Stanforth, 2007; Hendriks, 2013). Other challenges include resistance to change, power struggles and lack of cross-agency collaboration (Schuppan, 2009) as well as failure to update existing laws (Basu, 2004). Nonetheless, research specifically focusing on institutional barriers to e-government reinstitutionalization in developing countries remains limited. This study therefore seeks to extend the existing knowledge on e-government innovation barriers in developing countries.

3. THEORETICAL FOUNDATION: INSTITUTIONAL THEORY

This interpretive case study draws from institutional theory of organisations (Scott, 2001) as the analytical lens to understand the research phenomenon. Institutional theory was developed to explain how established social structures including laws, norms and cultural practices influence individual and group behaviours in organisational environments (DiMaggio & Powell, 1983; Scott, 2001). As the fundamental concept of the theory, institution refers to rules, norms and cultural practices including routines that have attained some level of stability and thus enable or constrain social life (Mekonnen & Wubishet, 2016; Scott, 2004). From this perspective, the theory focuses on how social actions, interactions and choices are shaped and given meaning by legal, normative and cultural arrangements (Scott,

2001). The key principle of the theory is that institutions have performative effects on social life. In this study, institutions are considered as established rules, norms and practices that influence public sector activities, including government budgeting.

Two approaches of institutional theory discussed in the organisational studies literature are: (1) institutional factors and (2) institutionalization process (Mignerat & Rivard, 2009). The two approaches account for the stable and the dynamic perspectives of institutions. The factors approach views regulative, normative and cultural institutions as mechanisms of actions in organisations and their environments (Scott, 2001). Within the information systems literature, the factors approach has been used to study the impact of institutional pressures on information systems adoption and use (Mekonnen & Wubishet, 2016). However, while this approach has been found useful for understanding the effects of social structures on information system activities (e.g. Effah, 2016), it fails to account for the dynamic aspects of institutions in terms of how they emerge, stabilize and eventually get replaced or disappear (Mignerat & Rivard, 2009).

The institutionalization process approach seeks to explain how institutions emerge, become stable, change and finally phase out (Mignerat & Rivard, 2009). Institutionalization is considered as the process through which institutions emerge and become accepted as a social order in a given social system (Avgerou, 2000). Institutionalization therefore involves the process of getting institutions established to enable or constrain actions (Currie & Swanson, 2009; Jepperson, 1991; Kwiek, 2012). This shows that institutions are not only stable but also have changing properties (Edquist, 1997; Jepperson, 1991). The institutionalization process is therefore considered useful for explaining the dynamic nature of information systems and their social environments (Pishdad et al., 2012).

Institutionalization comprises two sub-processes, namely deinstitutionalization and reinstitutionalization (Currie & Swanson, 2009; Kwiek, 2012). First, deinstitutionalization refers to discontinuing previously established institutions due to identified weaknesses, problems or challenges (Currie & Swanson, 2009; Kwiek, 2012; Oliver, 1992). In this study, deinstitutionalization refers to efforts made to remove constraining institutions in the existing budgeting system. Second, reinstitutionalization refers to the process of introducing a new form of institutional order with new arrangements different from the previous order (Currie & Swanson, 2009; Scott, 2008). By its nature, reinstitutionalization can be viewed as an intervention into an existing social order to improve the status quo. This study views and analyses the digitalization of government budgeting as a case of deinstitutionalization of the existing paper-based process and reinstitutionalization to introduce online budgeting.

The institutionalization approach has been found useful for studying change-related information systems phenomena, including systems development, implementation, adoption and use (Mignerat & Rivard, 2009). As this study concerns government budgeting digitalization as a form of institutional change, we consider the institutionalization approach as the appropriate theoretical lens. However, in line with the interpretive tradition, the theory is used purely as a sensitizing device in a flexible manner (Klein & Myers, 1999) rather than as a rigid tool for theory testing.

4. RESEARCH METHODOLOGY

This study's methodology was qualitative, interpretive case study (Klein & Myers, 1999; Walsham, 1995; 2006). Generally, qualitative research seeks in-depth understanding of a research phenomenon (Creswell, 2013; Miles et al., 2014) involving human and social interpretations, experiences and actions (Creswell, 2013). Based on a qualitative research approach, the interpretive case study in information systems seeks to understand interactions between information technologies and their social contexts (Klein & Myers, 1999; Walsham, 1995; 2006). As a result, the underlying research paradigm of this study is based on

subjective ontology and epistemology on the assumption that the research phenomenon under study and the knowledge output are both socially constructed rather than objectively given (Myers, 2013; Orlikowski & Baroudi, 1991). In line with this philosophy, this study considers interpretive case study as suitable for making sense of the co-shaping relationship between the government budgeting digitalization phenomenon and its institutional context.

4.1. Data Gathering

In line with the interpretive case study tradition (Walsham, 2006), we gathered qualitative data from multiple sources, including interviews, documents, observations and websites. Data gathering occurred over a three-year period, from 2014 to 2016. We conducted a number of semi-structured interviews with key informants who had knowledge and experience with government budgeting, the digitalization initiative, and its post-implementation outcome. The key informants were selected through purposive sampling (Creswell, 2013; Davidson & Chismar, 2007; Patton, 2002) from various ministries and agencies based on the relevance of their role in government budgeting as shown in Table 1.

Table 1: Interview Participants and Their Backgrounds

Participants	Institutional Level/Category	Role	Number
Internal	Ministries	Budget Officers	6
		Accountants	6
		IT Staff	5
	Departments/Agencies	Budget Officers	7
		Accountants	5
		IT Staff	4
	Local Government Assemblies	Budget Officers	5
		Accountants	5
		IT Staff	4
	Parliament	IT officer	1
	Audit Service	Audit and Account Officers	3
External	Consultants	IT Consultants	5
	Academic Researchers	Public Administration	3
		Accounting and Finance	2
		IT/IS	2
Total			***63***

Interview sessions were based on flexibly designed interview guides that accommodated emerging insights from the field. Each interview lasted between 30 minutes and 1 hour, was audio-recorded subject to the informed consent of the interviewee, and

subsequently transcribed for more detailed analysis. The researchers took notes in the case of participants who opted out of the audio recording.

Additional data came from related documentary sources, including laws, policies and regulations as well as project reports, working documents, budget documents, audit and parliamentary reports. With the exception of project reports and working documents that were privately received from internal participants, all other documents were publicly available online. We also gathered data from Internet search and newspaper archives. Beyond the documents, the researchers had the opportunity to observe some activities such as distribution and receipt of physical documents.

4.2. Data Analysis

Based on the interpretive tradition, data analysis occurred alongside data gathering (Walsham, 2006). The analysis was informed by concepts from institutional theory, especially deinstitutionalization and institutionalization. From the interpretive analysis perspective, our goal was not to test the theory but use it as a sensitizing device (Davidson & Chismar, 2007; Flynn & Gregory, 2004; Klein & Myers, 1999) to allow understanding to emerge from the data. For evidence of deinstitutionalization, the analysis focused on institutional barriers of the existing budgeting system and how they necessitated the decision to migrate to the digital environment. For reinstitutionalization, the focus was on the digital system implementation, efforts made to change the institutional environment and the actual outcome.

In doing the analysis, each researcher conducted an independent interpretive analysis. We however met frequently to discuss emerging findings following the principle of the hermeneutic circle (Klein & Myers, 1999; Myers, 2013). Where necessary, we followed up with the interview participants to verify emerging findings or seek additional data. The analysis ended when we realized that we had reached the theoretical point of saturation such that further analyses yielded no new and relevant insight (Day et al., 2009; Eisenhardt & Graebner, 2007).

5. CASE DESCRIPTION

Ghana is a developing country in Africa with an estimated population of 25 million. The system of government is a multi-party democracy with an elected President, 275 parliamentarians and an independent judiciary. The national constitution mandates the President to submit an annual budget of the following year to Parliament for approval before the end of each fiscal year. Figure 1 shows the four-phase budgeting cycle and participating institutions.

The Finance Ministry initiates and coordinates the budgeting process on behalf of the President. Each government unit has a budget committee that coordinates the process at that level. The participating units prepare and submit their budgets to the Finance Ministry, which consolidates them into a draft national budget. The consolidated budget goes through executive and legislative approvals by the President and Parliament respectively. The Finance Ministry with its accounting department subsequently coordinates the execution phase, prepares financial reports, and submits them to the audit service unit for assessment. The audited report goes to Parliament for discussion and recommendations on any discrepancies. The budget cycle is regulated by the 2003 Financial Administration Act, the 2004 Financial Administration Regulation and periodically issued government policies and directives.

In 1997, an Oracle based public expenditure management system was implemented without a budgeting module. Subsequently, a standalone Microsoft Access database application called Activate was implemented for budget preparation at the level of the participating units. In 2012, the Oracle expenditure management system was migrated onto a

digital platform called the Ghana Integrated Financial Management Information System (GIFMIS) but without an e-budgeting module. In 2014, an Oracle e-budgeting module called Hyperion was integrated with the GIFMIS with the aim to digitalize the complete budgeting cycle.

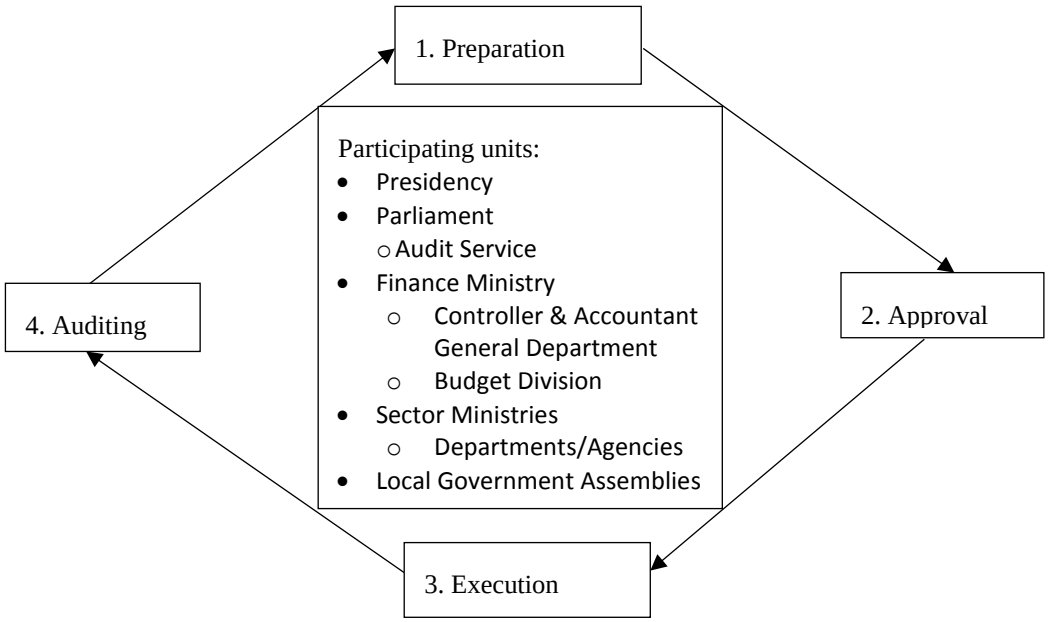

Figure 1: Ghana's Budget Cycle

5.1. Pre-Digitalization

The budget cycle before the digitalization was largely paper-based. At the start of the budget preparation, the Minister of Finance would prepare, print and circulate paper-based guidelines to the over 260 participating institutions. The guidelines were physically received by an administrator from a messenger. The administrator would physically sign for the receipt, date stamp the document and submit it to an appropriate authority for action. The authority would note on the document for photocopies to be made and distributed to all relevant officers. A budget officer in the Ministry of Finance commented on the physical document distribution process as follows:

You know, people have tendencies to give excuses for not receiving documents sent to their offices. So it is important to keep records whenever documents are received and also make copies for each officer. With this, they have no excuse for not receiving.

The institutional budget committee would coordinate the budget preparation and get the estimates entered into Activate. In the absence of network integration, budget entries were physically printed and sent to the Ministry of Finance to be re-keyed into the GIFMIS to generate the consolidated draft budget.

At the approval phase, the Ministry of Finance submitted hard copies of the draft consolidated budget with a physically signed cover letter to the Presidency for executive approval. After the executive approval, copies were sent to Parliament for legislative approval. At Parliament, copies were made for each of the 275 parliamentarians and related officers. Parliament debated the budget at both the committee and the floor levels. Where necessary, sector ministers were invited to defend their respective budgets. After the debate, Parliament passed the budget into an appropriation act, after which the President would sign a hard copy. Physical copies were subsequently made for each of the participating institutions and distributed according to the usual process.

At the execution phase, participating institutions submitted their work, cash payment and procurement plans to the Ministry of Finance. Based on the allocations, the Minister of Finance issued and signed hard copy expenditure warrants and instructed the Controller and Accountant General's Department to disburse funds accordingly. Periodically, the institutions would send hard copy requests and reports to the Controller and Accountant General's Department for the release of funds. After spending the funds, the participating institutions periodically submitted hard copy accounts to the Controller and Accountant General's Department to be keyed into the GIFMIS.

The auditing phase occurred at both the unit and the national levels. Each participating unit has an internal audit section that monitors the actual expenditures against the budget allocations. In line with legal requirements, the units prepared and submitted hard copy periodic reports on expenditures versus allocations with explanations for any deviations. The reports were sent to the Controller and Accountant General's Department. At the end of the year, the Controller and Accountant General's Department prepared and submitted a hard copy of the consolidated financial report to the Audit Service. The Audit Service conducted an independent audit of revenue and expenditure and submitted hard copy reports for parliamentary scrutiny. The Public Accounts Committee of Parliament first discussed the audit report and where necessary invited responsible units to answer queries. Finally, the report was further discussed on the floor of Parliament, after which hard copies of any recommendations were sent to the President for legal actions against misappropriations and misapplication if any.

5.2. Digitalization

The process to replace the existing paper-based budgeting with a digital or online system began with the government forming a project implementation team to work with a team of Oracle consultants to ensure successful implementation. The core aim of the project was to remove the delays, inefficiencies and undue bureaucracies including excessive printing and distribution of paper documents and to ensure that various participating units could work without the need for printing and distribution of physical documents. The digitalization project was considered as a form of public sector financial planning and management reform with the budgeting system as a significant component.

In 2012, an Oracle Hyperion online budgeting application was implemented to replace the existing standalone Activate software. In 2013, the implementation team successfully integrated the Hyperion budgeting system with the GIFMIS system to provide a complete online financial system with an e-budgeting module. The e-budgeting implementation was done in two phases. The first phase occurred from 2013 to 2014 and covered the central government units, namely the ministries, departments and agencies. In 2016, the Hyperion e-budgeting module was extended to the local government units—metropolitan, municipal and district assemblies. Because of the time lag between the two phases, the central government units started using digital budgeting before their local government counterparts, who continued with the traditional, paper-based budgeting.

As part of the transition to digital budgeting preparation and management, representatives from the participating units were trained to serve as trainers of trainers, advocates and change management champions. The trainers of trainers were trained by the Oracle consultants and were expected to transfer the acquired skills and knowledge to end-users in their respective local units. The role of the trainers of trainers was to provide user support at the local level during and after the implementation. In addition, a team of advocates for the digital budgeting migration was formed with members from the various participating units; their role was to promote the benefits of the new digital budgeting software and motivate its use throughout the public sector. In addition, a cultural change

management team was setup with a responsibility to promote positive attitudinal change among employees to enable them move from the existing paper-based budgeting to the online integrated digital budgeting platform. The change management team used several techniques such as demonstrations of the digital budgeting system at workshops, newsletters, online messages and establishment of unit-level advocates to promote acceptance of the new system.

5.3. Post-Digitalization

In 2014, the Hyperion e-budgeting system was used for the first time to prepare the 2015 budget. In 2015, it was used for the 2016 budget. In 2016, it was used for 2017 budget. Despite the e-budgeting system, the Ministry of Finance continues to issue hard copy budget guidelines and related directives to participating institutions. However, the ministry scans and uploads copies of the guidelines and directives on its website in PDF format. When asked why the participating institutions could not download the copies from the website or the ministry send e-copies via e-mail, a budget officer from the ministry noted as follows.

The culture in the public sector is to send physically signed documents with official letterheads. The documents should be physically received and recorded in a book so that no one can claim that they did not receive or see the documents. You know, the practice helps to avoid people giving excuses for not receiving documents.

The institutional budget estimates are entered directly into the Hyperion software. However, in 2014, some institutions could not gain remote access due to low network bandwidth and frequent electrical power interruptions. Also, due to the limited online access, the local government institutions continued to use the Activate software instead of the online integrated Hyperion. Also in 2016, due to network connectivity and electrical power failure problems, some institutions had to physically go to the Finance Ministry to enter their budget into the Hyperion system. Notwithstanding the introduction of the e-budgeting software, printing and submission of hard copy documents have continued alongside the electronic data submission. For example, the guidelines for the 2016 budget from the Ministry of Finance directed as follows:

Chief directors [of participating institutions] are … to ensure that all budget documents requested for in the guidelines reach the Office of the Director of Budget, Room 417, in the Ministry of Finance one week before the date scheduled for the budget hearings of their respective [institutions] in both hard and soft copies.

Despite the e-budgeting module, the approval process has continued to be paper-based. However, the execution phase has seen some digital data transformation. This time, the institutions can initiate online requests for funds on the GIFMIS. The institutions are however required to submit soft copies as well as duly signed hard copies. Just like the approval phase, the auditing phase continues to be paper-based.

Reported Challenges: Participants pointed out a number of challenges that have constrained a full transition to the online budgeting platform. Among such challenges are paper documentation and non-use of e-document management systems and e-signature. In the absence of e-document management systems, physical document flow persists. The existing laws also compel the institutions to distribute and keep physical documents. Moreover, instructions and manuals for budget and account preparation are often accompanied by a number of physical forms to be completed. Even where these forms are uploaded on websites, they are generally in PDF format such that they can only be downloaded, printed, manually completed and physically submitted. Another issue is the need for physical signature to authenticate documents. Notwithstanding these challenges, some benefits have been identified. In 2016, it was reported that integrating Hyperion with the GIFMIS has created a seamless interface for automated upload of budget estimates into the GIFMIS.

Before then, it could take over 3 weeks to manually load the budget estimates from the Activate software onto the Hyperion system.

6. ANALYSIS OF FINDINGS

This section draws on the institutionalization process approach to analyse the case study findings. First, the notion of deinstitutionalization is used to explain the problems with the existing paper-based processes and the reason behind the need for them to be replaced. Subsequently, the notion of reinstitutionalization is used to analyse the digitalization process, the intended goals, and the unintended consequences.

6.1. Intended Deinstitutionalization

From the case description, the focus of the deinstitutionalization was to remove institutional barriers that had made the paper-based budgeting system ineffective and inefficient. Such institutions included printing and physical distribution of documents with cover letters on physical letterheads and signatures. At the preparation stage, announcement and instructions on a particular year's budgeting were printed and physically distributed to all the participating units. Even after publishing the announcement and instructions on its website, the Finance Ministry had to print and distribute the documents to each participating unit. In each participating unit, the receipt of documents went through the bureaucratic receipt process of logging and signing by both the sender and the recipient. After the receipt, an administrator would make several copies for all managers and each member of the budget team.

At the approval phase, the Ministry of Finance had to submit hard copies of draft consolidated budget documents, again with a cover letter and physical signature on letterheads to the presidency. In line with legal and administrative requirements, the use of hard copy letterheads with physical signature had become the culture of document handling throughout the budgeting cycle. Printing and exchange of documents between the Ministry of Finance and the Presidency could take a number of rounds before the documents are subsequently submitted in hard copies to Parliament for legislative approval. At the Parliament, copies get made for each member at the committee level and later for all members of the house. The same practice of printing and physical distribution of paper documents with signed cover letters on physical letterheads had become the culture in the execution and the control phases.

Notwithstanding the use of computers in the various participating units, the absence of digital interconnectivity among the standalone computer networks did not stop the culture of printing and distribution of physical documents. Thus, the absence of reliable computer networks among all participating units throughout the country was part of the reason for the persistence of the physical paper printing and distribution culture. In addition, the existing administrative guidelines and laws that govern the budgeting cycle also provided legitimacy for the paper printing and physical distribution culture among participating units in the budgeting cycle. The negative effects of delays and bureaucracy as well as high operating costs resulted in an inefficient budgeting process. Consequently, the focus of the budgeting digitalization process was to remove such barriers.

6.2. Intended Reinstitutionalization

Once the culture of printing and distribution of physical documents was identified to be deinstitutionalized in order to address existing problems in the budgeting cycle, the project team worked to get the existing system digitalized. The reinstitutionalization process introduced the online digital budgeting system to replace the existing paper-based process. The digital budgeting system was intended to remove the existing cultural practices by

migrating all the activities online so that there would be no need to print and physically distribute documents among the participating units. To enable this, the e-budgeting application was configured with the general financial management system to serve as the infrastructure for the reinstitutionalization.

As part of the reinstitutionalization, training programmes were conducted to ensure that users received the needed skills. Moreover, required interventions such as change management and technical support teams were established to promote the culture of online budgeting. However, as noted from the case description, the digitalization did not succeed in completely reinstitutionalizing the existing paper-based culture into an online culture. Rather, it led to a parallel system where the digital and the paper-based budgeting processes ran side-by-side. A number of reasons accounted for the unintended consequences of the parallel paper-based and digital processes. First, notwithstanding the intention to use digitalization to reinstitutionalize the paper-based budgeting, the e-budgeting module was implemented without an e-document flow management system. Following this, the new digital budgeting system could only handle structured data sharing among the participating units. Moreover, there was no digital document management system to support online document creation, approval and sharing of unstructured data such as reports, memos and letters.

Consequently, the intended online budgeting process became partially institutionalized at just the preparation and execution phases where structured data sharing dominate. Thus in all the situations where documents had to be shared, paper-based practices continued. Another reason for the unintended parallel paper-based and digital processes was the fact that not all the participating units had reliable access to the digital budgeting platform due to low bandwidth and sometimes electricity interruptions. Also because the focus was more on the technology and internal processes, not much attention was paid to the need to change the existing legal and administrative institutions that had provided legitimacy for the printing and distribution of physical documents among the participating units. As noted from the case description, the laws that govern the budgeting practices were outdated and thus did not fit the current digital environment.

7. DISCUSSION

In line with the research question on how and why the government budgeting digitalization was constrained by its institutional contexts, this section discusses the research findings in terms of three barriers, namely physical paper document flow, outdated laws and partial rather than complete digitalization of the whole budgeting cycle.

7.1. Paper Document Flow

Findings from the analysis show that the culture of printing and distribution of paper documents persisted even after the implementation of the digital budgeting system. The reason for this persistence can be attributed to the focus on digitalizing the structured financial data through the use of a centralized financial database management system without an e-document and workflow management system. Thus, because the financial management system was already in place, it was easier to integrate the budgeting data as part of the accounting system. However, the physical paper document flow, cover letters and signatures received less attention from the digitalization team. The lack of digital document, e-signature and e-workflow management systems constrained the deinstitutionalization of paper document flow culture from becoming successful. Within the developing country e-government literature, bureaucratic culture based on physical documents has been identified as a source of inefficiencies in public administration (Cid & Gil-Garcia, 2004; Wiredu, 2012). The fact that excessive paperwork results in undue delays and prevents innovation in the public sector is well noted (Davison et al., 2005).

E-Government research in developing countries generally highlights e-illiteracy, lack of skills, and limited infrastructure as the key constraints to e-government assimilation (Nkohkwo & Islam, 2013; Nkwe, 2012). However, the findings in this study indicate that failure to digitalize physical paper and signature flows in administrative processes is a significant barrier that requires attention. As the experience in this case shows, although budgeting uses accounting and financial data, which are largely structured and easier to digitalize through a centralized relational database management system, it also involves document flows for communication and approval purposes. As a result, in digitalizing such systems, it is important to go beyond the structured databases to include e-document, e-signature and e-workflow management systems in order to achieve maximum benefits.

7.2. Outdated Laws

Failure to revise existing regulations and traditions that had institutionalized the practice of physical paper distribution was one of the key reasons why the intended digital budgeting system failed to fully replace the old one. With such a situation, the digital budgeting system had to operate alongside the paper-based one, thus leading to two parallel systems. What this means is that the reinstitutionalization failed to achieve the intended results within the expected time. In the developing country e-government literature, the use of inappropriate policies and regulations has been considered as a major barrier to digitalization of public administration. A study on the computerisation of a Municipal Assembly in Ukraine by Sanford and Bhattacherjee (2007) found that failure to pass new laws to support the initiative was one of the key constraints to its success. Generally, since public administration is a bureaucratic field, institutionalized laws will definitely shape behaviour, hence the need to change existing laws in the attempt to reinstitutionalize through digitalization. What this finding means is that regulatory institutions should form part of requirements analysis and design of e-government digitalization initiatives. Moreover, innovations in e-government need to go alongside related legal reforms in order to achieve intended purposes.

7.3. Partial Digitalization

The findings show that the budgeting digitalization was partial rather than holistic and integrated. The partial digitalization is revealed in two ways: (1) focusing on some phases to the neglect of others and (2) failure to ensure that all participating agencies have uninterrupted and reliable access to the online budgeting system. In the first case, instead of focusing on the complete budgeting cycle, the digitalization focused mainly on the preparation and the execution stages to the neglect of the approval and the control stages where communication and document flow dominate. The findings highlight the need for framers of e-government initiatives to consider an integrated rather than a functional approach in order to avoid creating partial digital processes. Contemporary technologies such as cloud computing, middleware and workflow management systems provide opportunities for system integration to promote e-transformation (Janowski, 2015).

Also, while some participating units had reliable access to the online budgeting system, others, especially in remote parts of the country had challenges with accessing the system due to low bandwidth or electrical power interruptions. As a result of the partial digitalization, the post-digitalization budgeting system followed a dual paper and digital process, contrary to the intention to deinstitutionalize the paper culture. Notwithstanding the digitalization, the two situations have resulted in functional insularity where some participating units in the approval and control stages, as well as those without uninterrupted and reliable online infrastructure, are digitally separated from the online budgeting system. By failing to get all the participating units on the online platform, the insularity resulted in the persistence of the printing and distribution of paper documents alongside the digital process.

Functional insularity in the public sector due to lack of digital integration has been identified as a constraint to e-government (Davison et al., 2005; Marche et al., 2003). The experience from this case shows that without complete process digitalization, deinstitutionalization of paper document printing and distribution culture cannot succeed.

8. CONCLUSION

The purpose of this study was to understand how and why institutional barriers constrained government budgeting digitalization in a developing country context. The findings show how a process digitalization initiative of government budgeting only succeeded in promoting data sharing at the preparation and execution phases but failed to institutionalize the whole budgeting cycle as an integrated multi-agency digitalized process. The key barriers identified for limiting the digitalization process were: (1) failure to adopt an integrated process approach; (2) failure to completely deinstitutionalize the existing paper-based process flow and physical signatures, and (3) failure to update outdated laws and procedures.

The study contributes to research, practice and policy. For research, the study reveals institutionalized paper-based activities and physical signatures, non-use of a system integration approach to e-government implementation, as well as failure to update outdated laws and procedures as some of the key barriers to e-government digitalization in a developing country context. By identifying these institutional barriers, this study extends existing knowledge on barriers to e-government innovation in developing countries. The existing literature rather emphasizes technological barriers as constraints to e-government initiatives. The paper also demonstrates the usefulness of the institutionalization process involving deinstitutionalization and reinstitutionalization as relevant concepts for investigating e-government digitalization to provide insight on related barriers in the innovation process. The use of the theory helped to understand the research phenomenon as a change process with intended and unintended consequences.

In terms of practice, the findings show that e-government practitioners should not only address technical issues but also focus on deinstitutionalizing existing practices that can serve as barriers to digital innovations in the public sector. In addition, e-government practitioners need to collaborate with policy- and law-makers to make updating existing laws and procedures an integral part of e-government innovation projects. As the findings show, failure to update previously institutionalized laws constrained the digitalization initiative. In terms of policy, the findings suggest the need for developing country governments to review existing laws and procedures in light of digital technology evolution to ensure smooth institutionalization of digital processes.

The limitation of the study lies in its single country case study approach. Nevertheless, from the perspective of interpretive research, which does not seek statistical generalization but focuses on contextual and theoretical generalization, the findings can be generalized to developing countries that share a similar e-government context with Ghana. Also, the study is limited by the research period, in that the barriers identified may be addressed in future thereby removing their negative effects. However, such an initiative can only become a subject for future research, which can focus on how developing countries can address institutional barriers to e-government innovation projects.

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