

The Government of Jamaica's electronic procurement system: experiences and lessons learned

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Abstract

Purpose – Realizing value from information and communication technology (ICT) in procurement in developing countries is complex due to diverse stakeholders and intertwined procurement processes. The purpose of this paper is to examine the experience of the Government of Jamaica in leveraging ICTs as an intervention to transform its procurement operations and combat corruption.

Design/methodology/approach – The study examines conversations with employees in the Government of Jamaica to understand key milestones in its procurement history. Based on the view that the intervention context is an ecosystem where multiple and inconsistent views of the e-procurement system evolve over time, the study analyzes milestones to reveal key actions that contributed either to the initial success of or introduced challenges to the e-procurement system.

Findings – The findings suggest that inducing positive sentiments about the intervention through transparency will overcome a long history of negative sentiments about the initiatives of government bodies in general. Furthermore, positive sentiments may not be directly related to the e-procurement system.

Research limitations/implications – The study offers important insights that government bodies in similar contexts can apply to guide initiatives for transforming procurement operations. For instance, training should emphasize not only the technical aspects of the system from the perspective of different stakeholders but also their job descriptions. Future research may examine other initiatives in developing countries to compare the role of sentiments over time.

Originality/value – The study adopts a unique approach to understand the experience of a developing country in harnessing ICTs to transform procurement operations.

Keywords Developing countries, E-commerce, Jamaica, E-procurement, Success, Sentiment

Paper type Case study

1. Introduction

Government bodies in developing countries operate amid complex societal and infrastructure challenges (Deng *et al.*, 2018; Majchrzak *et al.*, 2016; Zhao, 2011). International organizations continue to raise concerns on the limited progress in tackling many of these societal and infrastructure challenges such as corruption (for more examples, see reports by International Transparency, 2017). The Government of Jamaica faces many similar challenges, such as the lack of transparency, absence of accountability structures, and limitations in external and internal infrastructure (see Deng *et al.*, 2018; Venkatesh *et al.*, 2010), in providing basic services (Srivastava and Shainesh, 2015), all of which influence the effectiveness and efficiency of government operations (Brinkerhoff and Wetterberg, 2016). For procurement operations in particular, late payments to contractors, credit issues, and high inventory costs have often been reported by the Government of Jamaica as persisting issues.

Many government bodies around the world pursue e-government initiatives to digitize their operations (Concha *et al.*, 2012; Srivastava *et al.*, 2016; Zhao, 2011) and, ultimately, improve their effectiveness and efficiency. The term e-government refers to the use of



information and communication technology (ICT) to enhance access to and delivery of all facets of government services and operations, including procurement operations, for the benefit of its stakeholders, such as citizens and businesses (Dwivedi *et al.*, 2012; Srivastava *et al.*, 2016). As for procurement operations, Concha *et al.* (2012) described e-procurement as an essential component of e-government initiatives as it facilitates transparency and efficient vendor relationships to ensure fair treatment of contractors (Wu and Wang, 2010) and safeguard public resources (Girth, 2017). In online environments, in general, transparency involves providing information cues that guide users in their decisions (Cheung *et al.*, 2014). With the promising value of e-procurement in providing information cues to diverse stakeholders, the Government of Jamaica aspired to improve the effectiveness and efficiency of its public procurement services by 2030 (Vision 2030 Jamaica, 2009).

Researchers and practitioners, however, are in agreement that realizing value from ICT-enabled interventions and e-government initiatives in developing countries is difficult (Alcaide-Muñoz and Rodríguez Bolívar, 2015; Deng *et al.*, 2018; Wowak *et al.*, 2016) due to many challenges related to stakeholders, such as conflicting roles and interests, and diverse environments or sub-systems and products, such as goods and services with different standards (Brown *et al.*, 2018; Deng *et al.*, 2018; Venkatesh *et al.*, 2010). Hence, it is important to disentangle contextual elements to understand value from ICTs in developing countries (Venkatesh *et al.*, 2010; Wowak *et al.*, 2016). For instance, Leonardi *et al.* (2016) noted that surrogate users might emerge and control the dynamics of success/failure. McGrath (2016) emphasized that unintended or unexpected mechanisms, such as positive or negative sentiments about the e-government initiative, could emerge to facilitate/hinder intervention success. Furthermore, contextual differences may not only emerge between developing and developed countries but also among developing countries. For instance, the majority of studies have been conducted in the context of developing countries that tend to be geographically far from developed countries such as India and African countries. Jamaica, in contrast, is geographically close to the USA, a developed country, that suggests possible cultural similarities to some extent (McLeary and Cruise, 2015). With societal and infrastructure challenges, however, Jamaica will still operate like a developing country.

We examine the experience of the Government of Jamaica in digitizing procurement processes. A study on e-procurement systems in Caribbean countries noted that Jamaica is attempting to catch up with other countries to fully automate its procurement processes and offer more interactive websites (Concha *et al.*, 2012). However, little is known about the nuances of such a large-scale transformation. We leverage insights on developing countries and societal challenges (Majchrzak *et al.*, 2016) to guide our examination of the success/failure of the e-procurement system in Jamaica. We view the context where the intervention is implemented as an ecosystem (Leonardi *et al.*, 2016) where multiple and perhaps inconsistent views of the e-procurement system evolve over time. We report on the progress of an e-procurement project and analyze key milestones to identify the main challenges/benefits that are associated with the e-procurement system implementation by the Government of Jamaica.

Our findings are build on the existing body of knowledge and practice of large-scale ICT-enabled implementation in developing countries in at least three ways. First, we highlight additional challenges that emerged in the context of Jamaica over time. Second, we generate explanations of the initial success/failure of the e-procurement system. Finally, we generate courses of action that government bodies in similar contexts/countries may adopt to lead e-government initiatives in general and e-procurement systems in particular.

2. ICTs in developing countries

As an ICT initiative in developing countries, e-government delivers all facets of government services and operations for the benefit of diverse stakeholders such as

citizens and businesses (Deng *et al.*, 2018; Dwivedi *et al.*, 2012; Srivastava *et al.*, 2016; Zhao, 2011). There are three main components of e-government that involve diverse stakeholders and support different services and operations (Norris, 2010): government to government (G2G), government to citizen (G2C) or citizen to government (C2G) and government to business (G2B) or business to government (B2G). The last component covers procurement processes such as tendering and purchasing (Sambasivan *et al.*, 2010; Sang *et al.*, 2009). Research on G2B or B2G and G2C suggests that digitized processes foster trust between governments and businesses (Deng *et al.*, 2018; Venkatesh, Thong, Chan and Hu, 2016), as they enable transparency and maintain efficient vendor relationships (Concha *et al.*, 2012).

E-procurement generally incorporates a wide range of processes such as supplier selection via tendering or reverse auctions, order placement, order fulfillment, payment and settlement (Rai *et al.*, 2006). Other relevant views classify e-procurement into six forms (de Boer *et al.*, 2002): electronic ordering/maintenance, web-based enterprise resource planning, electronic sourcing, electronic tendering, electronic reverse auctioning/electronic auctioning or combinatorial auctions, and electronic informing. More recent views incorporate RFID and big data technologies (Fosso Wamba and Mishra, 2017) in supply chain operations in general. As e-procurement digitizes processes between businesses and government bodies, both parties are expected to realize value due to transparency and reduced manual work (Sambasivan *et al.*, 2010). For instance, supplier selection is conducted through platforms or electronic marketplaces (Rai *et al.*, 2006), where suppliers attempt to create competitive offers. Suppliers realize value in terms of fair participation (Wu and Wang, 2010) and that has implications for developing and maintaining trust in government bodies (Alcaide-Muñoz and Rodríguez Bolívar, 2015). Trust has been identified as a key factor in online environments (Cheung and Lee, 2006; Elbeltagi and Agag, 2016; Sang *et al.*, 2009) and e-procurement is not an exception. Government realizes value in terms of reducing search costs and developing efficient relationships with suppliers (Concha *et al.*, 2012; Sambasivan *et al.*, 2010).

Realizing and assessing value from e-procurement in developing countries is, however, difficult because e-procurement involves many intertwined processes and stakeholders (Alcaide-Muñoz and Rodríguez Bolívar, 2015; Brown *et al.*, 2018) and complex societal challenges and infrastructure limitations (Majchrzak *et al.*, 2016; Srivastava and Shainesh, 2015). Early research on large-scale ICT implementations in general focused on developing a holistic view of outcomes to incorporate three levels: individual, group and organizational (Lapointe and Rivard, 2007). Some studies suggest social outcomes such as quality of life (Akter *et al.*, 2019). More recent research continues to emphasize the complex nature of systems in general (Matook and Brown, 2017) and the need to be patient about realizing value from ICT implementations in developing countries (Srivastava, 2015). When assessing value from ICT implementations, researchers and practitioners need to examine system use by individuals, resistance by groups (i.e. groups within stakeholders or departments) and routinization by organizations (Lapointe and Rivard, 2007). As for resistance, Lapointe and Rivard (2007) suggested that it is important to study resistance at the group level because it tends to be more powerful relative to resistance by individuals in organizations.

Building on complexities of large-scale ICT implementations, more recent research has focused on the unique aspects of developing countries. As for outcomes, the quality of ICT implementations could be conceptualized in terms of three sub-dimensions that are commonly applied in relevant studies (Akter *et al.*, 2019). The sub-dimensions include system quality (reliability, efficiency, flexibility and privacy), interaction quality (responsiveness, assurance, and empathy), and information quality (utilitarian and hedonic). The three sub-dimensions influence service system quality in developing countries (Akter *et al.*, 2019). Venkatesh *et al.* (2010) highlighted four main dimensions that shape success of ICT implementations: environmental barriers, learning difficulties, culture shock and employee valuation.

For instance, culture shock is a powerful barrier because stakeholders feel threatened by change initiatives that are originally designed for western contexts (Venkatesh *et al.*, 2010). Hence, more recent studies examined how different dynamics that are associated with change are managed in developing countries. For instance, McGrath (2016) examined an e-government initiative for supporting identity verification in three developing countries. There were fears about security and misusing data that could translate into resisting enrollment in and use of the identity verification system. Countries with histories of negative voting experiences or other catastrophic political events faced more hurdles in managing change and gaining citizens' trust (McGrath, 2016). In contrast, countries with slightly more positive histories were able to gain citizens' trust by inducing positive sentiments not only about the e-government initiative (Sang *et al.*, 2009) but also about other governmental initiatives. When initiatives involve buying/selling transactions or tend to be commerce-based, additional complex dynamics emerge from different users (Leonardi *et al.*, 2016). Users may exercise their human agency in an unexpected way as the system implementation unfolds (Leonardi, 2011). For instance, in a study of a banking system for facilitating transactions at local retail stores and post offices, Leonardi *et al.* (2016) found that some stakeholders adopted unexpected roles that contributed to system success. Although employees at the examined retail stores were not formally conducting banking transactions, they volunteered to help clients with questions about banking transactions. The employees exercised unexpected human agency as they had social connections to their communities and benefited financially from increased traffic into their stores (Leonardi *et al.*, 2016).

The experience of the Government of Jamaica reflects a rich context that resembles experiences studied in the context of other developing countries (Lapointe and Rivard, 2007; Leonardi *et al.*, 2016; McGrath, 2016). Guided by the previous insights on the role of context in shaping the success of ICTs in developing countries, we study the experience of the Government of Jamaica in implementing and assessing an e-procurement system. In sum, we draw on three key ideas: role of government bodies in inducing positive or negative sentiments about the system (McGrath, 2016); perceptions of different groups of users (Lapointe and Rivard, 2007; Leonardi *et al.*, 2016); and interactions between sentiments and users and their association with outcomes (Lapointe and Rivard, 2007) at the organizational level, such as cost, or individual level, such as perceived ease of use. We take a holistic contextual view that goes beyond the actual implementation of the e-procurement system to incorporate the history of procurement in general. Our conceptual view is consistent with the notion of ecosystems (Leonardi *et al.*, 2016) where history provides a background of positive/negative sentiments about change and multiple and perhaps inconsistent views of the system evolve over time.

3. Case description: the experience of the Government of Jamaica

We discuss the experience of the Government of Jamaica implementing the e-procurement system. Figure 1 depicts our approach in examining the experience by focusing on three main areas. First, we highlight issues with public procurement. Second, we elicit important changes in laws and regulations about governance in general and procurement in particular. According to recent studies on e-government initiatives (Choi *et al.*, 2017), combining policies and institutions with e-government is important to understand development in countries (Zhao *et al.*, 2015). Third, we examine the e-procurement system implementation in relation to other ICT implementations and technology regulations. Specifically, we discuss how the Government of Jamaica viewed and realized ICT capabilities for addressing many governance problems in general and procurement in particular and formulated technology laws and regulations. We conclude the case description with a view of the expected benefits from the e-procurement system to understand the extent to which the system met the government's expectations.

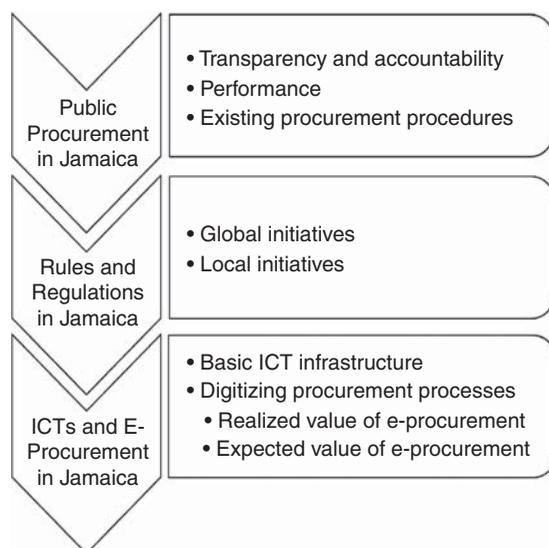


Figure 1.
The experience
of the government
of Jamaica

3.1 Public procurement in Jamaica

Public procurement in Jamaica encountered many transparency and accountability issues (Neuman, 2002). Jamaica's central supplies division was regulated by the Financial Administration Regulations, 1963 that was deemed inadequate. Procurement processes and procedures were not streamlined efficiently and effectively. Hence, several problems emerged in procurement such as late payments to contractors, credit issues and high inventory costs. Persistent problems compromised good relationships with vendors and resulted in a trust deficit. For instance, there were no clear rules for consultancies that in turn led to subjectivity in selecting contractors. Procurement was merely viewed as a clerical task. There was no comprehensive document that incorporated procurement rules and procedures. Explicit policy direction for public procurement and contracting was missing. Furthermore, the audit of procurement processes highlighted the lack of in-house trained professionals and limited compliance monitoring.

Public procurement in Jamaica operated using public funds to acquire and manage goods and services. Most countries spend around 10–25 percent of their gross domestic product on public procurement. In 2014 and 2015, the Government of Jamaica spent J\$60 Billion, which was about 30 percent of the country's GDP, on more than 8,000 public procurements contracts (Jamaica Information Service, 2016). Public procurement processes were tedious as individuals had to visit the procurement office personally and buy hard copies of bidding documents for the contract. After finalizing the documents, the bidder had to visit the procurement office to deposit the required documents in a tender box. Such inconvenient and error-prone processes made public procurement susceptible to waste, mismanagement, fraud and corruption. In sum, conducting public procurement was often associated with tensions among public expectations of high standards of governance, management requirements for performance, and political influence (Curtin University of Technology, 2007). These different tensions intensified the complexity of public procurement processes.

3.2 General rules and regulations in Jamaica

As several countries had similar issues in transparency and accountability, there was an increased interest in examining different forms of transparency, such as policy information,

policy content information, and policy outcome (Grimmelikhuijsen and Welch, 2012) and a global move to transform procurement through decentralizing governance. The United Nations, Organization for Economic Co-operation and Development, World Bank, Inter-American Development Bank and International Monetary Fund pursued anti-corruption programs to encourage government bodies to make reforms in public procurement. With such international pressures, Jamaica revamped its legal framework and established regulatory institutions with oversight responsibilities of public procurement procedures. The procurement policy became responsible for steering procurement and asset policy unit, which worked under the Government of Jamaica's Ministry of Finance. In 2001, a National Procurement Policy statement was developed. In the same year, a *Handbook of Public Procurement Procedures* and an *Environmental Guide to Public Sector Procurement* were developed. In 2008, the Government of Jamaica launched a comprehensive public procurement policy, formulated public procurement regulations, and developed standard bidding documents. Such an initiative helped in revising the Government of Jamaica's *Handbook of Public Sector Procurement Procedures* in 2008, 2010, 2012 and finally, 2014.

In 2012, the Procurement Appeal Board was established to promote accountability and transparency. Appeal and complaint processes were formulated to include five stages: review by the procuring entity; review by the national contracts commission; review by the procurement appeals board; review by the financial services commission; and judicial review as a final stage, in case the complaint was not solved in any of the previous stages. To ensure smooth flow of public procurement-related activities, the Public Procurement Certification Program was started in 2014 and, later, the classification of procurement practitioners in public services was completed. The Public Procurement Act, 2015 represented a comprehensive legal instrument for public procurement in Jamaica. In this act, the legal and regulatory framework was segregated into different pieces of legislation that were applied to the procurement process (e.g. Financial Administration and Audit Act; Contractor General Act, 1983, amended in 1999; Public Sector Procurement Regulations, 2008). These reforms ensured that the Public Procurement Act promoted economic development by ensuring value for money in public expenditure and participation in public procurement by qualified suppliers of goods and services. Changes in these reforms strengthened and expanded functions of the institutional arrangements in relation to public procurement policy. The Procurement Policy Office was established. The Public Procurement Commission and the Procurement Review Board ensured adherence to public procurement processes. The law relating to public procurement was modernized by replacing the outdated and fragmented legislative framework with an updated comprehensive law containing provisions that reflected new policy thinking and international best practices.

The objectives of legislative reforms in the Public Procurement Act were to maximize efficiency in public procurement, obtain the best value for taxpayer's money, promote transparency, facilitate fair and easy participation in the marketplace, and enable economic development by fostering useful competition in goods/services supply. The legislation improved administration by restructuring and strengthening public procurement regulation. The modernization was an effort to learn from international best practices to improve operational and management structure. The modernization also strengthened the government's commitment to openness, transparency and accountability by improving connectedness among government regulators, procuring entities and participating citizens.

3.3 ICTs and e-procurement in Jamaica

The Government of Jamaica demonstrated interest in adopting and assimilating ICTs in its operations since the liberalization of the telecommunication industry. The government pledged to improve the quality of public services by being more responsive to citizens and increasing their access to services (Vision 2030 Jamaica, 2009). Jamaica's e-government

policy objective involved creating a transformational state bureaucracy, on demand government through integrated end-to-end processes across the government services and with stakeholders and effective communication (Government of Jamaica, 2011).

3.3.1 ICTs in Jamaica. The Government of Jamaica acknowledged that infrastructure and participation by citizens and businesses were important for a successful e-government initiative. The government presented its five-year ICT strategic plan in 2000. The plan covered infrastructure and access, electronic government, economic development and electronic business (Brown and Thompson, 2011). Launching a strategic plan helped the Government of Jamaica in making progress. For instance, according to a United Nations e-government survey (United Nations, 2016) that ranked government based on their use of technologies for managing government operations, Jamaica ranked 112th (out of 193 countries). Jamaican citizens and businesses were increasingly using more ICTs to conduct transactions since the introduction of ICTs. The Government of Jamaica aspired to fully engage its citizens by studying best practices of e-government structures in developed countries such as Singapore and North American countries. The Government of Jamaica rebranded Fiscal Services Ltd in 2013 as eGov Jamaica Ltd with broadened responsibilities to streamline its efforts. eGov Jamaica Ltd aimed to harness ICTs in transforming interactions with entities, citizens and businesses (eGov Jamaica Ltd, 2013). In a short span of time, eGov Jamaica Ltd showed promise in improving public accessibility and engagement that was expected to enhance service accountability. In continuation of governance transformation efforts, the Government of Jamaica aimed to digitize public procurement processes to improve economic development of all stakeholders.

3.3.2 E-procurement implementation: experienced benefits and issues. The Government of Jamaica continued to invest in ICTs in procurement and disseminate procurement policies. We discuss the implementation of the e-procurement system and procurement rules and regulations, as both complement each other in transforming procurement. Readiness assessment for e-procurement was conducted during 2005–2007. The assessment suggested that Jamaica was ready for digitizing its procurement processes. The assessment indicated that with e-procurement, Jamaica could save 2 percent on annual procurement spending. The assessment recommended that all procurement-related modules should operate through a single portal to make the process effective and efficient for all stakeholders. The assessment suggested dividing the e-procurement implementation into two phases: e-Tendering and Contract Management module and Purchasing (e-Catalogue) module. Based on this recommendation, the e-Tendering and Contract Management module went live in July 2015 and a pilot was successfully completed in early December 2015. A broader roll-out to other ministries, departments, and agencies was completed by the end of 2015. The Purchasing (e-Catalogue) module also similarly went live during this same period.

The Government of Jamaica passed a Public Procurement Bill in July 2015. According to the bill, public procurement workers and suppliers of goods and services were to be under greater scrutiny. In light of this bill, the Ministry of Finance and Planning launched Jamaica's first e-procurement platform in July 2015. The project was funded by the Government of Jamaica and the Inter-American Development Bank (Jamaica Information Service, 2016). The aim of the project was to develop an e-procurement system to deliver a single gateway for government procuring and tendering agencies and suppliers. Jamaica took many initiatives to transform and modernize the public sector such as improving procurement through: training and certification courses for procurement staff; technical assistance to produce a new procurement handbook following enactment of the procurement law; implementation of e-tendering, including IT equipment; communication and awareness of new procurement law, handbook and e-tendering system among

government and contractors; and new contractor registration system as a module of the e-tendering system (Cabinet Office: Jamaica, 2015). The Government of Jamaica publicly described its e-procurement system as:

A web-based, collaborative system to facilitate the full lifecycle of a tendering process, for both buyers and suppliers. It offers a secure, interactive, dynamic environment for procurements of any nature, complexity or value, enforcing (where appropriate) and encouraging recognized best practices. Electronic public procurement system supports the process of procuring works, services and supplies electronically. Different public procurement procedures are supported for both one-off or repetitive purchases through several dedicated sub-modules providing facilities for user registration, competition notification, bid preparation and submission, online bid evaluation, contract awarding, creation and management of catalogue-based information, placement of electronic purchase orders, electronic invoicing and order tracking (GOJEP Website - Government of Jamaica Electronic Procurement, 2018).

The pilot phase of the e-procurement project, as noted earlier, ran from July 31, 2015 to December 2015 with the theme: “Faster, Easier and More Efficient Way of Doing Business.” The pilot was Jamaica’s first e-procurement platform. During this time, there were 10 transactions from three entities that participated in the pilot including eGov Jamaica Ltd, National Health Fund and the Ministry of Finance.

3.3.2.1 Experienced benefits and issues: suppliers. The overall feedback was positive. The e-procurement system reduced bureaucracy and red tape (Van Loon *et al.*, 2016). The suppliers showed greater interest and enthusiasm toward bids posted on the e-procurement platform. The system became more efficient as the cost of conducting procurement transactions went down by at least 2 percent during the pilot phase (Jamaica Information Service, 2016). The government opined that such savings could go toward other areas of national development. In the 2016–2017 fiscal year, the e-procurement system was extended to 40 of the largest agencies, which represented 80 percent of the procurement spending, including the National Works Agency, the Urban Development Cooperation, the Ministry of Education, and the National Housing Trust.

Suppliers viewed the system as simple and easy to use. Given that the system involved a learning component, usability or other service design factors become important drivers of system or citizen satisfaction (Cheung and Lee, 2008, 2011; Elbeltagi and Agag, 2016; Venkatesh *et al.*, 2014; Venkatesh, Hoehle and Aljafari, 2017), loyalty and continued intention to use (Hoehle *et al.*, 2015; Hoehle *et al.*, 2016; Hoehle and Venkatesh, 2015), and actual transactions (Sambasivan *et al.*, 2010). Perceived ease of use (Thong *et al.*, 2011; Venkatesh, 2000; Venkatesh and Bala, 2008) and usability or functionality of the website (Venkatesh *et al.*, 2012) have been consistently studied as important factors in other e-government services such as health insurance (Venkatesh *et al.*, 2014; Venkatesh, Hoehle and Aljafari, 2017). Once a supplier registered, s/he became pre-qualified to participate. Then, the supplier accessed contracts available for bidding and user guides that included legislations and regulations, downloaded documents related to new contracts available for bidding, received customized notifications and reminders for biddings, requested clarification, and submitted bids with the click of a button. The supplier was able to track bidding processes, access opened bids, and awarded contract details (GOJEP Website – Government of Jamaica Electronic Procurement, 2018). All stages of the tendering process were completed electronically. It was also possible to extract data electronically for statistical and audit purposes. Face-to-face contact was reduced that in turn allowed suppliers to submit proposals for evaluation at their convenience. In general, the suppliers viewed the e-procurement system and relevant policies as beneficial to their work. The suppliers leveraged different features such as self-registration, automatic alerts, electronic collaboration and electronic bid submission, online annual procurement plan management,

and tender management. Collaborative platforms in general may foster reciprocity and influence user satisfaction (Cheung *et al.*, 2013), which was one of the benefits that the suppliers experienced.

3.3.2.2 Experienced benefits and issues: government. We discuss benefits and issues at two levels within the government: higher levels (i.e. government officials and policy makers or regulators) and medium/lower levels (i.e. employees dealing directly with the e-procurement system to facilitate transactions for suppliers). At the higher level, we discuss feedback about the system and continued improvements in relevant laws and regulations. Given that employees at medium/lower levels are not directly involved in laws and regulations revisions, we focus mainly on their feedback about the e-procurement system.

At higher levels, the e-procurement initiative improved fairness, transparency and accountability by reducing administrative costs and processing time. Regulators/policy offices used the system to develop a comprehensive single procurement database and standard classification. Regulators/policy offices believed that the system will continue to improve economy, competition, efficiency, equity, integrity, fairness, transparency, accountability, reliability and value for money.

Legislation development also contributed to the initial positive feedback about the e-procurement system. The legislation improved administration by restructuring and strengthening the Government of Jamaica's public procurement regulation. There were significant efforts to learn from international best practices to improve operational and management structures. The international best practices strengthened the government's commitment to openness, transparency, and accountability by improving connectedness among the government regulators, procuring entities, and citizens. Under the institutional arrangements, the Procurement and Asset Policy Unit became the Office of Public Procurement. The National Contracts Commission transformed into the Public Procurement Commission. Specialist sector committees (e.g. consultancies, works, and general services) supported the new commission. Specialist procurement unit and procurement committees supported procuring entities.

The Office of Public Procurement continued to be responsible for developing and informing public procurement policy, legislation and procedures. The main function was to monitor the operation of the procurement process and compliance with the provisions of the Act and regulations. The office reviewed methods, procedures, and processes used in procurement and recommended modifications. Furthermore, the office periodically issued administrative guidance and directives, guidelines, instructions, and technical notes or manuals relating to the execution of procurement transactions. The office also formulated a code of conduct for procuring entities, developed standard forms of contract, bidding documents, pre-qualification documents, and other procurement-related documents, established and managed an e-procurement system, developed and maintained a database of public procurement statistics, undertook research and statistical analysis to inform policy development, and conducted training programs for stakeholders.

The Public Procurement Commission was responsible for approving or endorsing the award of procurement contracts above the head of procuring entity's contract approval limit; registering and classifying suppliers; approving unregistered suppliers; assessing suppliers on an on-going basis to ensure the consistency of capacity and performance with registration and classification requirements; establishing and maintaining a register of suppliers; and establishing, managing, and overseeing the activities of sector committees as reconstituted based on specialization. The head of procuring entity ensured compliance with all procurement processes, verified the establishment of a specialist procurement unit staffed by competent and adequately trained practitioner, streamlined constitution of procurement committee and ensured the preparation and publication of an annual procurement plan.

The procuring entity published a notice of awarding procurement contracts that specified the name of awardees and contract prices.

Under the Public Procurement Act, any aggrieved party had the right to seek a reconsideration or review of any procurement proceeding – if there was a claim of injury or suffered loss due to any action or decision of the procurement entity taken in a procurement proceeding. If an aggrieved bidder failed to get adequate redress from the administrative review process, the final option was for a judicial review. Suppliers had the option to appeal registration matters. Bidders had the option to appeal procurement proceeding matters. Procuring entities also had the option to appeal the decision of the commission. The board could take any action it saw fit (e.g. prohibit the procuring entity or the commission as the case may be from acting or taking decision or following a procedure, confirm the decision of the procurement entity or the commission, order procurement proceedings to be terminated, dismiss the application, require payment of compensation, or convene a public hearing). Any person, firm or entity with sufficient interest in the procurement proceedings to which an application was made could participate in the hearing. Participation also involved entities for technical or legal assistance, any officer of the procurement entity or commission, and any other person involved in the procurement proceeding.

At medium/lower levels, the picture was less positive from the employees' perspective. Public sector workers showed some resistance to the e-procurement system. It was somewhat surprising to observe such form of resistance as the Government of Jamaica organized training seminars for all categories of stakeholders—a success enabler that has been widely supported by empirical research (Sambasivan *et al.*, 2010). Some employees felt that digitizing procurement processes would replace them. Some employees expressed serious concerns about losing their job during informal conversations with one of the authors. For example, with the new filing process, bidding documents were automatically uploaded to the system. Given that the employees used to help with preparing and reviewing bidding documents, they felt that their help was not needed and that the system would ultimately replace them.

The government officials realized that resistance from employees can affect the e-procurement system's success. Despite the important milestones that the Government of Jamaica accomplished – including training and communicating important changes to the public – the officials acknowledged the need to manage resistance. Hence, they communicated a decision to conduct additional training to support employees at medium/lower levels. They decided to increase the government capacity by training at least 500 procurement officers. The training program was implemented not only to control resistance but also to gain the maximum benefits from the suppliers' perspective (Jamaica Information Service, 2015).

3.4 Expected value of e-procurement

The government was aware that digitizing public procurement processes through e-procurement could facilitate online presence and publication of relevant procurement documents, such as tender notices and contract awardee information, which represent helpful information cues (Cheung *et al.*, 2014). Furthermore, e-procurement could increase participation of bidding parties and help in promoting trust in government bodies. The government envisioned that the ability to audit and find any traces of fraud and corruption could become easier that in turn was also expected to improve accountability and transparency. From a cost perspective, the government viewed e-procurement as a promising mechanism to reduce processing time of public procurement activities, paperwork, and storage space required to keep bidding documents along with other procurement documents. The government also expected that requirements for office supplies and printing costs would decrease significantly.

From administrative and economic perspectives, the government expected several benefits. Government procurement agencies could decrease the time to complete tendering processes with an anticipated faster and cheaper flow of information. Procurement officials expected that their workload would be reduced. Furthermore, accountability and transparency of e-procurement could assist in procuring better quality goods and services. Transparent bidding competition for tendering opportunities and centralized purchasing would eventually help the economy. Supplier cost of preparing to submit bids was also expected to reduce. The system could enable suppliers to submit completed documents online that in turn could reduce their cost and time to prepare and submit bids. Ultimately, the government envisioned that suppliers would be in a position to offer competitive prices for conducting the government's procurement operations.

Public procurement officials could record and communicate spending information more effectively. Transparent and electronically recorded information (Cheung *et al.*, 2014; Sambasivan *et al.*, 2010) regarding previous procurement spending would facilitate managing and planning future expenditure. Spending information could be managed more effectively using electronic domains. This approach could facilitate future negotiations and ultimately, achieve competitive pricing from suppliers. Availability of real-time information would help in running procurement operations more effectively. Purchasing behavior could be analyzed to generate insights for guiding future policies on annual spending, developing new businesses, creating jobs, and identifying businesses that were needed to support the economy. For instance, some suppliers might sell the same item to different ministries at different prices. The government saw that digitization will be one way to minimize such risks and make procurement processes streamlined and more effective. It would help the government get discounted pricing across agencies.

Suppliers also expected to find it easier to search for and submit bids. Suppliers could choose to get notifications and alerts electronically to stay updated. Provided they had an internet connection, bidders expected to submit their bids from anywhere. With increased accessibility and flexibility, the need to physically drop the required documents in tender boxes would be eliminated. They expected that e-procurement would enforce transparency and accountability, as digitization increases the ability to track and monitor public procurement activities. Transparency would decrease chances of fraud and corruption, and improve auditing capability. Public and suppliers could view up-to-date policies, standardized documents, bidding processes, and monitor whose bid was accepted. With such timely information, the Government of Jamaica could create and foster a competitive, transparent, and accountable environment for its stakeholders.

The Government of Jamaica also envisioned cross-border business opportunities. Suppliers could access related tender information without geographical constraints. The government expected that accessing international opportunities for goods or services that may not be available locally at a reasonable quality, such as software services, design competitions and help-desk job opportunities (European Commission, 2010), would become easier. The government could access a larger pool of suppliers and competitive offers for the public procurement process. Overall, the Government of Jamaica expected many benefits of e-procurement by decreasing bureaucratic costs of public procurement (Van Loon *et al.*, 2016) and enhancing user satisfaction with broader options (Cheung and Lee, 2008; Cheung and Lee, 2011).

Figure 2 summarizes the case description over time. The figure depicts important milestones in developing laws and regulations about governance and procurement and launching ICT initiatives – those related to e-government in general and e-procurement in particular. The diamond shapes represent positive events or sentiments. The square shapes represent negative events or sentiments. As can be noted from the figure, diamonds outnumber squares. Hence, the e-procurement system met the majority of the expected benefits.

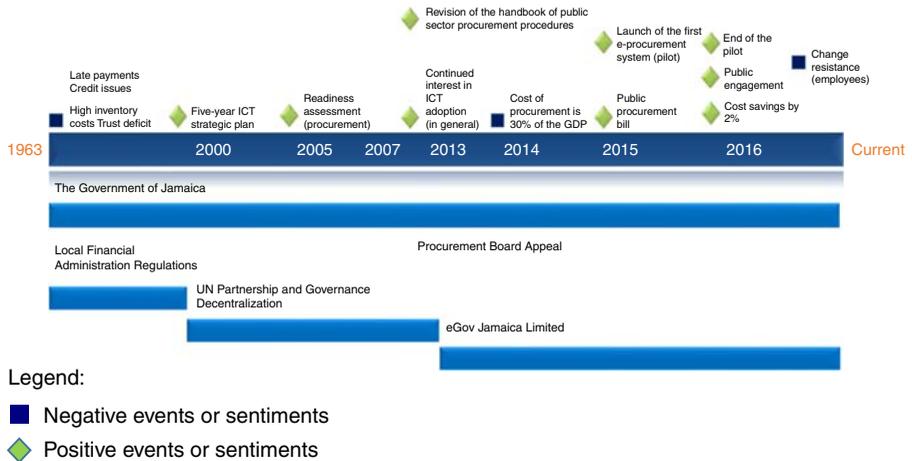


Figure 2.
Summary of the case description

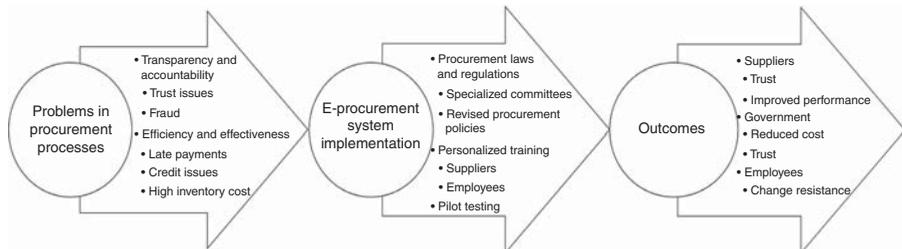
Although only a few challenges or issues remained, it was likely that some issues could jeopardize the initial system success if it escalated.

Figure 3 collapses the milestones in Figure 2 into a description of the procurement transformation in terms of problems with existing procurement processes, implementation of the e-procurement system, and outcomes from the perspectives of suppliers, government, and employees. As can be noted from the figure, the majority of problems with old procurement processes were addressed with the implementation of the e-procurement system. In the next section, we discuss insights on the summarized milestones in laws, regulations, and ICT initiatives to generate key lessons.

4. Case analysis: lessons learned

We observed several factors that contributed to the initial success of the e-procurement system. Despite a long negative history that goes back to 1963 (e.g. late payments and credit issues), the Government of Jamaica was able to gain back suppliers' trust. About 15 years prior to the e-procurement system implementation, the government worked intensively on developing competencies in ICTs and communicated governmental initiatives to the public with high degree of transparency (Grimmelikhuijsen and Welch, 2012). The government announced ICT strategic plans and relevant policies. From the public's perspective, communicating constructive changes to e-government, e-procurement and associated policies over time (Zhao *et al.*, 2015) created an overall positive sentiment about the Government of Jamaica.

Figure 3.
Transformation of procurement in Jamaica



The government continued to be consistent with its approach in harnessing ICTs in e-government. For instance, implementation of the e-procurement system was gradual and important feedback about the system and relevant policies was communicated to the public. The government also conducted a thorough readiness assessment. Stakeholders of all types were given formal training on two modules that were implemented over two phases: e-Tendering and Contract Management in Phase 1 and Purchasing (e-Catalogue) in Phase 2. The gradual implementation facilitated a smooth transformation of procurement processes. The Government of Jamaica also focused on aligning policies with technologies. The government was aware that change was not only about technologies, but also relevant rules and regulations. For instance, the *Handbook of Public Sector Procurement Procedures* had been revised multiple times and the revisions were publicly available. By aligning technologies and policies, the Government of Jamaica realized initial cost savings in its procurement processes. Furthermore, positive feedback from the suppliers indicated that the Government of Jamaica was successful in combating corruption and gaining back its suppliers' trust.

4.1 Theoretical implications

Our observations suggest that the context of Jamaica introduces nuances that are consistent with research on ICT in developing countries and other nuances that deviate from research on developing countries. Such nuances may be partially due to the unique status of Jamaica—with its close proximity to developed countries, especially the USA, but societal and infrastructure challenges that are prevalent in developing countries. For instance, consistent with McGrath (2016), government may take several initiatives to gain and maintain their citizens' trust, even with a history of negative events or sentiments. Government could foster various forms of policy transparency and development (Grimmelikhuisen and Welch, 2012; Zhao *et al.*, 2015). Furthermore, positive sentiments influenced trust in the ability of government to conduct online transactions faithfully, which has been identified as an important antecedent to acceptance of the system (Sang *et al.*, 2009). We observed similar dynamics in the case of Jamaica.

Although the Government of Jamaica conducted training for its employees, there were some forms of change resistance. The employees were still worried that the system would replace their jobs. We believe that there were two potential reasons behind this negative sentiment. First, employees' training emphasized the technology aspect of the system. Given that there were general perceptions that procurement was merely a clerical task before the e-procurement system implementation, employees felt that automation would replace them. For instance, reducing face-to-face contact was a favorable change from the suppliers' perspective. From the employees' perspective, reducing face-to-face contact amplified their fears of being replaced by the system. Hence, there was also some lack of knowledge about the employees' role in the new business processes, which is similar to what has been found in the context of other developing countries (see Venkatesh *et al.*, 2010; Venkatesh, Bala and Sambamurthy, 2016). Second, with close proximity to developed countries, the Government of Jamaica assumed that there will be an open mindset about technology change. Hence, training designed for employees overlooked potential negative dynamics about change and perceptions.

Overall, we did not observe conflicting or evolving roles of users (Leonardi *et al.*, 2016) during the pilot phase. The transformation went smoothly for suppliers, who were also able to realize value from the system immediately. Although the employees exhibited resistance to change, their roles did not interfere with the initial success of the e-procurement system. They expressed fears from losing their jobs during informal conversations without taking specific actions. However, employees probably exercised their human agency to change routines and adapt as research suggested in other contexts (Goh *et al.*, 2011; Leonardi, 2011). Over time, employees in the Government of Jamaica could exercise their agency if their fears escalate.

4.2 Practical implications

Our observations suggest that the Government of Jamaica took several actions that either contributed to success or translated to negative sentiments. Table I synthesizes practical key lessons. We mapped key actions that the government took and the corresponding outcomes from the perspectives of suppliers, employees and government. According to the triple view of information systems implementations (Lapointe and Rivard, 2007), the government realized more positive outcomes at the individual, group, and organizational levels. At the individual level, suppliers viewed the e-procurement system as simple and easy to use. The training was responsible for the suppliers' positive view of the system. Furthermore, the increased enrollment and participation of the suppliers indicated that their fears of corruption and inefficiency turned into trust and confidence in the system's capabilities (Cheung and Lee, 2006; Elbeltagi and Agag, 2016). Developing and communicating ICT plans were responsible for fostering trust and confidence among suppliers. At the group level, employees resisted change by the e-procurement system, but suppliers were more engaged as a group and participated in electronic markets. The training with more emphasis on technology was responsible for the less positive views by the employees. Finally, the government realized cost benefits at the organizational level. There were savings in the cost of conducting procurement transactions by 2 percent. Gradual implementation of the e-procurement system was responsible for these savings. Hence, government in similar contexts should develop their e-procurement systems and associated rules and regulations over time to maintain a positive image and realize more benefits in the long term. Government should also focus on controlling negative sentiments of employees through training seminars that are more focused on procurement processes and the new jobs. This recommendation is consistent with the internet kiosk training in rural India that was aimed at providing information regarding entrepreneurship, farming, and health, wherein the training focused exclusively on how the kiosk could be leveraged for information using hypothetical user stories and use cases, rather than training about the technology (see Venkatesh and Sykes, 2013; Venkatesh, Rai, Sykes and Aljafari, 2016; Venkatesh, Shaw, Sykes, Wamba and Macharia, 2017; Venkatesh *et al.*, 2019; Venkatesh *et al.*, forthcoming).

5. Conclusion

The Government of Jamaica went through a rich experience of harnessing ICTs in procurement processes. Despite the negative sentiments in its history, the government was

Action	Benefits and issues
Training suppliers and employees Suppliers' training: equal emphasis on processes and technologies Employees' training: less emphasis on processes (i.e. procurement remained a clerical task) and more emphasis on technology	Perceptions of the system as simple and easy to use (suppliers) Perceptions of the system as transparent and trustworthy (suppliers) Perceptions of the system as a replacement of human roles (employees) Change resistance by employees
Developing and communicating ICT plans	Perceptions of the government as trustworthy (suppliers)
Revising and developing governance rules and regulations	Perceptions of the government as trustworthy (suppliers and other governmental agencies)
Revising and developing procurement rules and regulations	Perceptions of the government as trustworthy (suppliers and other governmental agencies)
Implementing e-procurement over two phases	Smooth transformation to digitized procurement and increased participation by suppliers Cost reduction by 2%

Table I.
Summary of key lessons learned

able to gain the suppliers' trust and engage them in e-procurement processes. The government took various actions that may not be directly related to procurement but played an important role in inducing positive sentiments, such as governance and e-government, over time. Training was more effective from the suppliers' perspective, as evidenced by their positive feedback and participation, but less effective from the employees' perspective, as evidenced by their negative sentiment about the e-procurement system. Although there was some level of employee resistance to change, it did not interfere with the e-procurement success.

The Government of Jamaica can be expected to continue to benefit from a holistic approach toward ICT initiatives in general. Specifically, continuous development of the e-procurement system and associated rules and regulations will be important to maintain the current positive impression about the government and realize more benefits in the long term. Negative sentiments by employees are remaining concerns that the government will need to address before they escalate. Developing training seminars that are more focused on procurement processes and the new jobs could be one approach to address these concerns. Training seminars will be more effective once they transform the employees' view of e-procurement as a clerical job and how e-procurement will be expected to facilitate rather than replace their jobs.

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