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Review

The public value of E-Government – A literature review

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\textbf{ABSTRACT}

This study organizes existing research on the public value of e-government in order to investigate the current state and what value e-government is supposed to yield. The two questions that guided the research were: (1) What is the current state of research on the public value of e-government? And (2) What value is e-government supposed to yield? Six, sometimes overlapping, values were found: Improved public services; improved administrative efficiency; Open Government (OG) capabilities; improved ethical behaviour and professionalism; improved trust and confidence in government; and improved social value and well-being. These six public value dimensions were thereafter generalized into three overarching, and also overlapping, public value dimensions of Improved Public Services, Improved Administration, and Improved Social Value. The improved public services dimension influences other dimensions. Hence, this literature study theorizes a descriptive and multidimensional framework that can improve our understanding of the public value of e-government from different viewpoints, and the overlap between them in actual e-government designs and implementations. Regarding the current state of research on the public value this study found a lack of research on the public value of e-government, especially, in the context of developing countries – and more importantly – a total absence of this kind of research in the Least Developed Countries (LDCs). There is also a lack of comparative studies at national, regional, and project level; and a lack of research on the generative perspective.

1. Introduction

First and foremost, as used in this article, the concept “public value” is defined as citizens’ collective expectations in respect to government and public services (Moore, 1995). Citizens are defined as people in their different stakeholder roles, that is, as policymakers, public servants, users or customers of public services, participants, tax-payers or entrepreneurs, and citizens as such (Castelnovo, 2013).

e-Government is commonly conceptualized as governments’ use of Information and Communication Technologies (ICTs) combined with organizational change to improve the structures and operations of government (Field, Muller, Lau, Gadriot-Renard, & Vergez, 2003). Also, the implementation of e-government is expected to help governments deliver services and transform relations with citizens, businesses and other arms of government (Grönlund & Horan, 2005; Guida & Crow, 2009).

Nowadays, in contrast to developed countries where e-government is well-established, there are many challenges for e-government in the Least Developed Countries (LDCs). These challenges include, but are not limited to, a large digital divide, inadequate e-infrastructure and a lack of skills and competencies for design, implementation, use and management of e-government systems (Heeks, 2003; Mutula, 2008; Nabatu & Maiga, 2012; Nkohkwo & Islam, 2013; Shin, 2008; Twizeyimana, 2017). A high failure rate of e-government in the LDCs has been identified with estimations that 35% of projects are total failures, 50% are partial failures, and that only 15% are successful (Heeks, 2003). Failing e-government entails a lot of distress such as loss of time and money, loss of the good image of involved actors and last, but not least, an increase of future costs.

For example, failing e-government projects increase resistance for future e-government projects, due to the loss of credibility and trust in e-government as a mean for modernizing the public sector (Heeks, 2003). Despite the high failure rates, over the past few years the interest in the topic has increased considerably from West to Africa (Berman & Tettey, 2001; Heeks, 2002; Hornnes, & Langeland, 2010; Nkohkwo & Islam, 2013).

\textbf{ABBREVIATIONS:} EGRL, E-Government Reference Library; G2C, Government to Citizens; G2B, Government to Business; G2G, Government to Government; G2E, Government to Employees

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We are at the moment researching an e-government initiative in one LDC – Rwanda – and in this project we have heard politicians and public managers claiming that their end is not just the implementation of e-government, but to create value. Then, our argument is that: (i) we need to understand what people mean by value creation through e-government. We also assume a relationship between the “value creation” and “success” of e-government projects. In this direction, there is a good number of supporting arguments. For example, Ndou (2004) argues that many e-government initiatives fail due to a poor understanding of the e-government concept, processes and functions, which in turn restricts the range of opportunities it can offer. Flak et al. (2009) argue that a structured way of understanding public sector values will make it easier to design e-government projects and also to contribute to the alignment of different actors in the public sector. Scott, Delone, and Golden (2016) argue that the success of e-government systems depends on how citizens perceive the value realized from using those systems. Similarly, Rose, Persson, and Heeager (2015) argue that studying the values embedded in the perceptions of e-government projects is a way of understanding their superordinate goals, and that coordinating stakeholders’ basic values in the execution of e-government projects may be an important route to success.

This research aim is to investigate existing research on the public value of e-government in order to understand the existing knowledge about the public value of e-government. The research questions are:

(i) What is the current state of research on the public value of e-government? And
(ii) What value is e-government supposed to yield?

We answer these questions by means of a literature review where we investigate how the value of e-government is conceptualized with an aim to come up with a framework that can guide research and practice in LDCs. To this end we relate the elicited public value dimensions to the Ndou’s framework (2004) as a step towards a comprehensive framework to understanding the public value of e-government.

The remains of the paper is structured as follows: the next section discusses related research on public value and the Ndou’s e-government framework that we use to relate our findings to. The following section motivates the research methodology. After that we present the results, followed by a discussion and conclusions.

2. Theoretical background

2.1. Public value of E-Government

It is known that technology is not value free, rather, its implementation is driven by perceived values (Bannister & Connolly, 2014). The understanding of e-government and the value it is supposed to create requires an understanding of public sector management. Although both public and private organizations exist to serve people, their concerns are different. Private organizations serve people as customers and they quest for maximizing profit, whereas government organizations serve people as constituents (i.e., as citizens or simply owners of the government). As a result, government organizations not only quest for money income for their sustainability, they also have additional concerns to account for “public value”.

In this article, the theory of “public value” is adopted from public administration and more specifically Moore’s theorizing of the “public value” as citizens’ collective expectations in respect to government and public services (Moore, 1995). According to Castelnovo (2013), government actions do not usually make a direct impact on particular citizens or citizens in a broad sense; rather they are intended to impact directly on stakeholder groups and on their interests. Castelnovo (ibid) argues that the analysis of public value must centre on particular stakeholder groups and their interests. For example, not the citizen in a broad sense, but rather citizens in their different stakeholder roles which include: citizens as policy makers, citizens as civil servants, citizens as participants, citizens as tax payers, and citizens as such.

Harrison et al. (2012) supported Moore (1995) and Jørgensen and Bozeman, (2007) to argue that, the creation of public value should be the goal of public organizations because through public value, public organizations meet the needs and wishes of the public.

Cordella and Bonina (2012) argue that the notion of public value is a more fruitful channel to address the complex socio-political impacts of ICT adoption in the public sector. The public value framework proposes public sector reforms as composite outcomes of socially shared expectations of fairness, trust and legitimacy, whose effects would depend on the social and political context in place (Cordella and Bonina, 2012).

Castelnovo and Simonetta (2008) and Castelnovo (2013) argue that policies for e-government can be evaluated according to their ability to increase the public administration’s capacity of producing public value for citizens as users, customers, policy makers and as operators of public administration.

In the context of ICT-enabled public sector reforms, Moore’s “public value” theory (Moore, 1995), originally or through its adaptations, has been increasingly used to study those reforms. For example, Kearns (2004) adopted the framework by Kelly et al. (2002) to study public value and e-government. Bannister and Connolly (2014) studied the impact of ICTs on public sector values and came up with a suggestion that, in the context of ICTs, “public sector value” should be understood and converted into a behavioral form where ICT has the potential to modify or transform.

In the quest for “public value”, governments deal with strategic goals which go beyond economical gains to account for political and social objectives such as efficiency in public service, equal treatment of constituents, social inclusion, openness, community regeneration, community well-being, stewardship and accountability (Chirucu, 2008; Chirucu & Lee, 2005; Cordella & Bonina, 2012; Grimsley & Meehan, 2007; Moore, 1995). That is, achieving “public value” in e-government should be understood as the ability of e-government systems to provide improved efficiency in government, improved services to citizens, and social values such as inclusion, democracy, transparency, and participation. For example, in their research, Pang, Lee, and DeLone (2014) found that IT resources should create public value through five organizational capabilities: the public service delivery capability, public engagement capability, co-production capability, resource-building capability, and public-sector innovation capability.

2.2. Ndou’s e-government framework

Ndou’s e-government framework (2004) is detailed and extends other models of e-government, for example, Heeks’ (2001) and Grönlund’s (2001). Ndou’s framework was produced from a thorough analysis of principal definitions of e-government which were available in the literature. According to Ndou, the existing web of definitions of e-government yields to three major components that characterize an e-government framework. Those are: (i) transformation areas; (ii) users, stakeholders and their interrelationships, and (iii) e-government application domains.

Ndou’s e-government framework is described in more detail below.

(i) E-Government transformation areas: internal, external, and relational

Internal refers to the use of ICT to improve the efficiency of the internal functions and processes of government. For example, e-government connects different departments and agencies, thus making information flow much faster and more easily among different governmental departments.

External refers to how ICT opens up new possibilities for governments to be more transparent to citizens and businesses through
dissemination of, and access to, a greater range of information collected and generated by the government. Relation refers to how ICT adoption may enable fundamental changes in the relationships between the citizens and the state, with implications for the democratic process and structures of the government.

(ii) E-Government users, stakeholders, and their interrelationships

Ndou (2004) argues that e-government encompasses the following four main groups of stakeholders: citizens, businesses, governments (other governments and public agencies) and employees. The electronic transactions and interactions between government and each group constitute the following e-government web of relationships: G2C, G2B, G2G, and G2E.

(iii) E-Government Application Domains


In reference to Heeks’ three main application domains for e-government, we have adopted them, and for practicalities and convenience, we have re-arranged them as follows. We have separated e-Citizens from e-Services to make e-Services stand on their own, and due to their closeness in scope, e-Citizens are now combined with e-Society to become the e-Citizens and e-Society domain.

Thus, the domains as adapted are: E-Administration – for automation and computerization of administrative tasks and for realization of strategic connections between internal processes, departments and functions.

E-Services – to realize connections and interrelationships among governments, citizens, businesses and to deliver automated services. E-Citizens and E-Society – to enable relationships and interactions among public agencies, citizens and civil community in general.

3. Research method

This research article follows a thorough review process following the method suggested by Webster and Watson (2002). We have reviewed the literature on the value of e-government published in academic journals and conference proceedings from year 2005 to 2016.

According to Webster and Watson (2002), a literature review on a specific topic is worthwhile if there is a growing interest and accumulation of research on that topic. A thorough review should also account for a reasonable quantity and quality of relevant literature (Schwarz, Mehta, Johnson, & Chin, 2007), where this reasonable and coherent literature review should emerge from a coherent conceptual structuring of the existing research (Rowe, 2014; Webster & Watson, 2002). Also, a thorough review should facilitate theory development, close areas where a plethora of research exists, and uncover areas where research is needed (Webster & Watson, 2002).

3.1. Search strategy

For the literature review process, Webster and Watson (2002) suggest a structured approach by which the searching of material would start from leading journals in the field. Thus, we searched the latest version of the e-Gov. Reference Library (EGRl) in 2016. The latest version was the EGRL 12.0 (of July 2016) which contains 8181 peer-reviewed references in the study domains of e-government. The EGRL aims at capturing and integrating into one source the majority of English language and peer-reviewed academic papers in e-government. More information about the EGRL core journals and conferences are available in Appendix A.

Additionally, we have improved the search through “snowball” sampling. That is, we scanned and used the reference list of relevant papers obtained in the previous search in EGRL. Then, by means of the databases Summon, Google scholar, ISI Web of science and Scopus we have searched for these new citations.

For the quest of inclusion and accuracy in the search we have used the following criteria: For inclusion, we have adopted the broad definition of e-government that defines e-government as the use of Information and Communication Technologies (ICTs) by public administration.

Thus, for searching for articles relevant to the study of the value of e-government in that context, the following keywords were selected: “Value, IT, government, public administration, public sector, public organizations, public agencies, public institutions, and e-government.” For accuracy, i.e., getting only the articles that focus on the value of e-government, we have combined the keywords in the search string using the AND/OR operators and wild card (where “*” is set to include possible segments after the phrase) to produce the following search strings: “e-gov* AND value*; IT value* AND government; IT value* AND public (sector, administration, organization*, agencies, and institution*)”. We have performed a search by keyword and by title for the accuracy quest in the search results. The selection of articles to be included in the review was based on the fulfilment of the following five inclusion criteria. Included were articles that were: (i) published in peer-review journals or conference proceedings in the period 2005 – July 2016; (ii) written or presented in English; (iii) discussing the value of IT projects in the context of e-government; (iv) either conceptualizing, measuring or implementing the value of IT in the context of e-government; and (v) available (their contents) to the researchers for examination.

The initial search returned 161 articles in total. We have removed exact duplicates and omitted versions of articles published in conference proceedings in case its journal version was available. 88 articles remained that fulfilled the inclusion criteria (ii) and (ii) as described above. We applied criteria (iii) and (iv) to the remaining articles through examination of the articles’ abstracts, objectives, findings and conclusions. 46 articles now remained that fulfilled the inclusion criteria (i) to (iv).

In the next step, we applied the inclusion criteria (v) and we then ended up with 42 articles which fulfilled all inclusion criteria. Finally, via the snowball sampling in the 42 relevant articles from the original search, 11 new articles were identified that fulfilled all the inclusion criteria. Thus, by combining these two sets of relevant articles, 53 were selected as the final set of relevant articles for this study.

3.2. Data analysis

The current review has aimed at theory building by organizing existing research on the value of e-government. The aim was to come up with a descriptive conceptual framework that improves the understanding of the public value of e-government. The data analysis was inductive and the process was as follow:

First, Webster and Watson’s (2002) concept-centric idea was adopted to investigate the current state of research on the public value of e-government. For this purpose 53 articles have been categorized based on their main thesis, foci, and orientations. This categorizing is what we refer to as a “concept-centric” view (Webster & Watson, 2002) and the artefact created (an ensemble view of created public value dimensions) is referred to as a “concept-matrix”. This concept-centric view, helped us categorize the existing research into its main foci, and we have been able (in terms of foci) to identify areas where a plethora of research exists, and areas where research is needed in the field of the public value of e-government.

Secondly, we have not only addressed the question about the current state, but also the question of understanding the public value of e-government. To do so, content analysis (Vaimoradli, Turunen, & Boudas, 2013) has been used to analyze narratives about the value of e-government as stated in existing research, assessed by reading each of
the 53 articles selected for this study. Through content analysis, open coding was used (Benaquisto & Given, 2008). That is, we have read each paper carefully, captured what was being said about the value of e-government, and finally compared these single values and grouped them into main public value dimensions based on their relationships (Dwivedi, Singh, & Williams, 2011). Thus, from content analysis, overarching dimensions of the public value of e-government were produced and generalized.

Finally, we have compared the elicited dimensions of the public value dimensions of e-government to Ndou’s E-Government framework (2004). This final approach helped us position the dimensions of the public value of e-government in the context of how we, from different angles and perspectives, talk about e-government (i.e., in the perspective of users, stakeholders, their interrelationships, and application domains).

4. Results

Guided by Webster and Watson (2002) structured process for the search and selection of relevant articles; the analysis left us with 53 papers that can broadly be summed up accordingly: 2 papers were comparative studies, the case of Brazil and Canada – Porto Alegre and the British Columbia Citizens’ Assembly (Smith, 2009) and the transfer of parliamentary webcasting/telecasting systems from the US to Pakistan (Ahmed, Janssen, & van den Hoven, 2012); 2 papers were based on case studies with a focus on a specific project/industry – The Urban Transportation Agency’s Enterprise Asset Management Improvement Program (Cook & Harrison, 2015) and the digital postal system (Church & Moloney, 2012); 7 papers were in the context of developing countries – Mexico, India, Pakistan, China (excluding Hong Kong or Tai-wan), Iran, Turkey and Sri Lanka; 17 papers were conceptual studies. An additional 25 papers discussed the developed country context. There were no papers specifically targeting LDCs.

By following Webster and Watson’s (2002) concept-centric idea, we analyzed the objectives and conclusions of each of the 53 articles, and this analysis categorized existing research on the public value of e-government into three overarching and overlapping streams of research as follow: (i) 6 articles are concerned with hypothesizing (understanding) the value of e-government; (ii) 28 articles are mainly concerned with hypothesizing the value of e-government by developing methods for measuring e-government from a value perspective; (iii) and 19 articles are concerned with hypothesizing the value of e-government for developing methods for design and implementation of e-government from a value perspective. For a full account of papers please refer to Appendix C.

By means of a content analysis of each of the 53 articles selected for this study, six overlapping dimensions of the public value of e-government are identified. They are improved public services; improved administrative efficiency; Open Government (OG) capabilities; improved ethical behavior and professionalism; improved trust and confidence in government; and improved social value and well-being.

Then, by a critical analysis of relationships between those six dimensions of the public value of e-government, among them, the improved administrative efficiency, Open Government (OG) capabilities, and the improved ethical behavior and professionalism are seen as closely related, and are in line with improving the administration of the government. Hence, they are considered to belong to the overarching dimension here labeled as “improved administration”. Using the same approach, improved trust and confidence in government, and improved social value and well-being are related, mainly in line with the social value; and are consequently considered to belonging to the overarching dimension labeled “Improved Social Value”. The remaining dimension “Improved Public Services” forms the third dimension of the public value of e-government.

Hence, generalization of the content analysis results yield to three overarching dimensions of the public value of e-government. They are – Improved Public Services; Improved Administration; and Improved Social Value.

Table 1 and Fig. 1, allocate the identified six dimensions of the public value of e-government into three main dimensions.

Fig. 1, in a sphere form, illustrates the four main viewpoints or directions (South, North, Quest, and East) which represent the e-government world in relation to public value.

The next section describes the three main dimensions of the public value of e-government and their corresponding six dimensions of the public value of e-government which were identified from the content analysis of each of the 53 articles. In Appendix B a full account of which, and how many, papers that have addressed each of the main dimensions is given. Appendix D gives a description of the six public value dimensions and associated Key Performance Indicators (KPIs).

### 4.1. Improved public services

The public value dimension of “Improved Public Services” refers to different service improvements offered by e-government. For example, the adoption of digital platforms for the purpose of improved public services propositions and deliverables, improved access, and delivery of public services (Pirannejad, 2011). E-government-enabled improvements are for example, in terms of better service to the citizen, responsiveness, effectiveness, efficiency, cost-reduction (Bannister & Connolly, 2014; Castelnovo, 2013), transparency and collaboration in...
the delivery of public services (Bannister & Connolly, 2014; Castelnovo, 2013; Karkin & Janssen, 2014). These improvements concern providing services directed towards the public good (Rose, Persson, & Heeager, 2015; Rose, Persson, Heeager, & Irani, 2015), accessibility, citizen engagement, dialogue, and the balancing of interests (Karkin & Janssen, 2014). Others are related to better communication, or interaction, between government and its constituents, citizens' improved access to government information and services (Pirannejad, 2011; Rose, Persson, & Heeager, 2015; Rose, Persson, & Heeager, 2015).

According to Rose et al. (2015), public service, citizen orientation, service level, and service quality are the underlying values of e-government from the view of the public service ideals and customer orientation of New Public Management. Omar, Scheepers, and Stockdale (2011) argue that providing citizens with services is one of the main sources of public value, and this value is highly dependent on the level of quality of the service delivered by a public organization. However, service improvements should not only relate to the quality of public information and services (Hellang & Flak, 2012; Jansen, 2012), but also relate to many factors such as increasing the quantity of public information and services (Pang et al., 2014), and the provision of more inclusive public services, for example, public (citizen)-centered services and personalized public services such as special provision for the disabled, language support for minorities, online advice, etc. (Grimsley & Meehan, 2007; Hellang & Flak, 2012; Jansen, 2012b; Rose, Persson, & Heeager, 2015; Rose, Persson, & Heeager, 2015).

4.2. Improved administration

4.2.1. Improved administrative efficiency

The dimension “Improved Administrative Efficiency” includes purposes of efficiency, effectiveness, increasing quality, and lower cost for administrative processes, systems, and services (Castelnovo, 2013; Hellang & Flak, 2012; Mkude, Pérez-Espés, & Wimmer, 2014; Ndou, 2004). It also concerns keeping government operations systematic, sustainable, flexible, robust, lean and agile, better management of public resources and economy (Castelnovo, 2013; Rose, Persson, & Heeager, 2015; Rose, Persson, & Heeager, et al., 2015).

Improved administrative efficiency also relates to reducing the administrative burden, reducing bottleneck and queues in the delivery of services to citizens, increasing quality of processes and services to citizens (Castelnovo, 2013), enabling better communication, cooperation and coordination in the public administration (Bannister & Connolly, 2014; Castelnovo, 2013; Karkin & Janssen, 2014), and enabling public empowerment and capacity building (Ndou, 2004), better organization, and efficient use of IT (Hellang & Flak, 2012). Other improvements to the administrative efficiency are related to making government operations more responsive (Castelnovo, 2013) through transparency, participation and inclusiveness (Bannister & Connolly, 2014; Castelnovo, 2013; Karkin & Janssen, 2014). Also, e-government is expected to facilitate the maintaining of accurate durable records, building durable and competent institutional capacity and impartially serving citizens (Grimsley & Meehan, 2007; Rose, Persson, & Heeager, 2015; Rose, Persson, Heeager, et al., 2015) and decisions by law and authorized policy (Bannister & Connolly, 2014). According to Bannister et al. (2014), via e-government, humans can be removed from the decision-making chain, rules can be formalized and embedded in the IT artefact and thus deliver (to some extent) greater fairness, honesty, equality, reduce or eliminate the risk of corruption and abuse of the law by public servants, etc.

4.2.2. Open Government (OG) capabilities

Castelnovo (2013) argues that OG enables citizens to derive substantive financial, social, political or strategic values and also intrinsic values related to the government itself. For example, e-government impacts on openness, transparency, participation, communication, and collaboration to provide personal or corporate influence and control on government actions or policy – thereby enabling more political possibilities, opportunities, and innovations (Castelnovo, 2013; Jansen, 2012b; Liu, Derzsi, Raus, & Kipp, 2008). The dimension open government capabilities also refers to public engagement, well-informedness, the sharing of databases, skills and resources – hence, capacity building and empowerment.

The OG value is achieved through the achievement of democracy dimensions such as openness, transparency (Jansen, 2012b), participation and collaboration (Castelnovo, 2013; Harrison et al., 2012). For example, online platforms can facilitate government agencies and departments to collaborate by e.g., sharing databases, resources, skills and capabilities (Ndou, 2004). A transparent environment is established by a proactive dissemination of timely information to citizens (Karkin & Janssen, 2014), thus making citizens well informed and able to participate in decision-making (Scott et al., 2016). Information that can be disseminated can be about laws, rules and regulations, government budget, (Pirannejad, 2011), financial bids, and official information beneficial for citizens (Karkin & Janssen, 2014).

Also, in today's dynamic environment, OG would then support government or public organizations to collaborate, or be in partnership with, other public organizations or with private-sector businesses to deliver quality public services (Pang et al., 2014).

4.2.3. Improved ethical behavior and professionalism

The dimension “Improved Ethical Behavior and Professionalism” is related to “Foundational values” by Rose, Persson, and Heeager (2015). These values are at the backbone of government operations and policies (Rose, Persson, Heeager, & Irani, 2015). They include, but are not limited to, responsibility to the citizens, proper and efficient use of public funds, facilitation of the democratic will, integrity, honesty, fairness, accountability, economy or parsimony, rectitude, legitimacy, rule of law, effectiveness, coherence, adaptability, impartiality, objectivity, trustworthiness, and openness (Bannister & Connolly, 2014; Mkude & Wimmer, 2013; Rose, Persson, & Heeager, 2015; Rose, Persson, Heeager, et al., 2015). Foundational values refer to robustness, reliability, demand for good information for decisions, security, efficiency, effectiveness, better access to government information and services, collaboration, participation, maintaining accurate durable records, durable and competent institutional capacity (Grimsley & Meehan, 2007; Rose, Persson, & Heeager, 2015; Rose, Persson, Heeager, et al., 2015), and decisions by law and authorized policy (Bannister & Connolly, 2014). For example, automated services via e-government can help remove face-to-face interactions between public servants and citizens. Also, through e-government humans can be removed from the decision-making chain by embedding rules in the software, thus, reducing or eliminating the risk of corruption and abuse of the law by public servants and deliver (to some extent) greater fairness, honesty, and equality.

4.3. Improved social value

4.3.1. Improved trust and confidence in government

The dimension “Improved Trust and Confidence in Government” refers to “social trust”, trust that is gained from the extent to which the public funds, facilitation of the democratic will, integrity, honesty, fairness, accountability, economy or parsimony, rectitude, legitimacy, rule of law, effectiveness, coherence, adaptability, impartiality, objectivity, trustworthiness, and openness (Bannister & Connolly, 2014; Mkude & Wimmer, 2013; Rose, Persson, & Heeager, 2015; Rose, Persson, Heeager, et al., 2015). Also, through e-government humans can be removed from the decision-making chain by embedding rules in the software, thus, reducing or eliminating the risk of corruption and abuse of the law by public servants and deliver (to some extent) greater fairness, honesty, and equality.

E-government can improve public trust through increasing transparency, citizen participation, and by providing the public with more control of actions and decisions of their government (Castelnovo, 2013). Public trust is also gained by providing the public with better access to government information and services (Rose, Persson, & Heeager, 2015; Rose, Persson, Heeager, et al., 2015), and by increasing flexibility, reliability and customer service (Chiru, 2008). According to
Grimsley and Meehan (2007), citizens' experience of service provision and service outcomes contribute to the formation of public trust. Increased government trust is produced by improved interactions through e-government at the local level (Boughton, 2006). Also, visiting a local government website leads to enhanced trust in local governments, and interaction through online transactions increases trust – “process-based trust” – or trust created during interaction (Tolbert & Mossberger, 2006).

Trust can be gained through increased reliability (Chircu, 2008) and security, for example, when governments are more flexible and agile to cope with emerging challenges (Pang et al., 2014), protect foundational values of trustworthiness, openness, robustness, reliability, accountability and security (Rose, Persson, & Heeager, 2015). Trust via transparency is created when public organizations disclose their decision-making processes and procedures through e-government (Castelnuovo, 2013). For example, government websites can make the government more transparent through dissemination of timely information to citizens (Karkin & Janssen, 2014), thus, making citizens able to be well-informed and able to participate in decision-making (Scott et al., 2016).

Trust via participation is created by public organizations by allowing and increasing citizens’ participation in public discussions (Karunasena, Deng, & Singh, 2011).

4.3.2. Improved social value and well-being

The value dimension “Social Value and Well-Being” includes values created by governments for the family, community, and other relationships (Cook & Harrison, 2015; Srivastava, 2011). For example, increased social status, relationships, and opportunities; increased safety, trust, and well-being (Liu et al., 2008; Raus, Liu, & Kipp, 2010). Enabling freedom, capacity building, empowerment and equal rights impacts the individual and household health, security, satisfaction and general well-being (Cook & Harrison, 2015), impacts citizen’s income, assets, property, and wealth (Srivastava, 2011). The increased ease of doing business can create a value for citizens as such, in terms of the country’s better economic conditions that in the long term can contribute to increasing the citizens’ well-being and quality of life (Castelnuovo, 2013).

E-government can impact social value and well-being in many ways. For example, social media platforms (twitter, blogs, etc.), could increase citizens’ levels of social contact, hence, increase citizens’ social health. Well-Being is also supported by e-government through facilitating a better management of public resources by means of online (zero paper) applications and transactions, by improving the quantity and quality of services to citizens, etc. (Rose, Persson, & Heeager, 2015; Rose, Persson, Heeager, et al., 2015). The dimension social value and well-being of e-government relates to the ability to support governments in achieving better outcomes in areas of peace, security, poverty reduction, public health, employment, crime rates, clean streets, improved environment and better educational achievements (Osmani et al., 2014).

4.4. Positioning public value dimensions into the E-Government framework

When discussing what benefits, or values, that e-government can bring we need to discuss these values in relation to what e-government is. We have therefore compared the identified six public value dimensions with how e-government is conceptualized. For this purpose, we have adopted the Ndou’s e-government framework (2004). Ndou’s framework (2004) represents e-government from three perspectives of (i) transformation areas (internal, external, and relational); (ii) users, customers, actors and their interrelationships; and (iii) e-government application domains (e-Administration, e-Services, e-Citizens and e-Society). Hence, we have positioned the six dimensions of the public value of e-government into each of the three perspectives and the result is presented in Tables 2–4 below.

Also, the in-depth analysis of Table 4a (e.g., by respectively replacing each column’s heading by its first item as described below).

<table>
<thead>
<tr>
<th>e-Administration</th>
<th>e-Services</th>
<th>e-Citizens and e-Society</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Public Services</td>
<td>Improved Open Government (OG) Capabilities</td>
<td>Improved Trust and Confidence in Government</td>
</tr>
</tbody>
</table>

That extension of Table 4a resulted in Table 5 (see Table 5).

The new table, Table 5, shows strong relationships between the six dimensions of the public value of e-government. For example, if we look at their content (i.e., their associated specific dimensions), the public value dimension “improved public services” contains the other remaining two. This finding shows dependencies between the three main dimensions of the public value of e-government (i.e., Improved Public Services, Improved Administrative Efficiency, and Improved Social Value and Well-Being), where the public value dimension of “improved public services” enables the others. The figure below, Fig. 2, presents the main three dimensions of the public value of e-government together with their dependencies.

From left-right and bottom-up, Fig. 2, shows relationships between the public value dimensions of e-government whereby the improved public services dimension influences other dimensions.

5. Discussion and conclusion

The current study organized existing research on the public value of e-government to investigate the current state of this research and to identify the public value of e-government.

We acknowledge that there has been a growing body of research, both theoretical and empirical, on the value of e-government. For example, Bannister and Connolly (2014) have used an extensive review of the literature to understand the relationship between “public sector values” and ICT reforms. Flak et al. (2009) conducted what they called...
an “informal” literature review to discuss how values can be realized from e-government efforts. In the current study, by means of content analysis of existing research, a concept matrix, and by comparing and positioning the findings from content analysis into Ndou’s e-government framework (2004), we have contributed to the existing research as follow.

First, the findings revealed a lack of research on the value of e-government in developing countries in general and a total absence of this kind of research in the LDCs. The study also identified a need for comparative studies at national, regional, and project level. For example, the findings show that, among 53 articles reviewed, 2 articles are comparative studies, 2 are case studies, 7 articles are in the context of developing countries, 17 articles are conceptual studies, and 25 discuss the developed country context. Also, the findings would confirm claims by Bannister and Connolly (2014), Rose, Persson, and Heeager (2015) who claim that there is a bias in existing research on the value of e-government, a bias in the shape of a focus on producing categories of values. For example, when we looked at the objective of each of the reviewed articles (Appendix C), the findings revealed that, except slight differences, the existing research in this field, is mainly about the production of categories of understanding the value of e-government.

We support Rose, Persson, and Heeager (2015) who argued that there is a need for looking at other aspects. Thus, we claim a need for research on the generative perspective, research where the practicality of these frameworks is tested in actual implementations of e-government. In fact, we propose research into something like a descriptive and/or prescriptive framework about “how do we achieve the value of e-government?”, and “how do we know that we are there?” – “what are the measures?” and “how do we measure?”

Secondly, the findings revealed that the dimensions improved public services; improved administrative efficiency; Open Government (OG) capabilities; improved ethical behavior and professionalism; improved trust and confidence in government; and improved social value and well-being are overlapping and that Improved Public Services, Improved Administration, and Improved Social Value are three overarching and also overlapping dimensions of the public value of e-government.

Through Tables 2–5, this research positioned the identified six public value dimensions of e-government into the Ndou e-government framework (2004). The findings from this positioning revealed value predominance. For example, a look at Table 2–5, shows that the public value dimension of “Open Government (OG) capabilities” appears to intersect with every column in all tables.

According to Castelovo (2013) and Jansen (2012a), the concept “Open Government” would mean that government actions and policies should be designed and operated with, and in, openness, inclusiveness, transparency, participation, and collaboration. Hence, the value dimension “Open Government capabilities” encompasses those behavioral characteristics which are expected to characterize government actions and policies. It is hence expected to have predominance of the dimension “Open Government capabilities” when talking about e-government from various angles of how e-government is conceptualized. That is, in practice, governments via e-government want to improve internal relations (e.g., G2G, G2E) and the external relations (e.g., relations with citizens (G2C), businesses (G2B)) with inclusiveness, participation, openness, and collaboration.

The findings also showed the predominance of ambitions of governments for using ICT to improve the relationships between the citizens and the state, with implications for the democratic process and the very structures of the government. This is shown in Table 2, in the column entitled “relational” where the distribution of the six value dimensions is high in this column when compared to any other column of the same table. Also in Table 3, if we look at the distribution of the six value dimensions in the columns entitled “G2C and G2B”, and Table 4b, the columns entitled “e-services, e-citizens and e-society” we find that it all relates to government relations with its citizens (i.e., citizens as beneficiaries or clients of government services).

In Fig. 2, findings suggest that the service improvement dimension is at the center of other public value dimensions of e-government. That is, when improving the public services, you are (to some extent) improving the public administration. It is not surprising because the public administration aims for better provision of services to the public (i.e., citizens in their different roles: politicians, tax-payers, businesses, etc.). In the same way, by improving the public services, you are improving the well-being of the society. Hence, through its e-services component, e-government is expected to improve public services, and in turn, improve the administration, and the well-being of the society.

From this theoretical study, the findings generally show that public expectations of e-government is much in the direction of improving the relationships between the citizens and the state, with implications for

| Table 4a | The public value of e-government in the perspective of e-government application domains. |
|-----------|---------------------------------|---------------------------------|---------------------------------|
| e-Gov. application domains | e-Administration | e-Services | e-Citizens and e-Society |
| Improved Public Services | x | x | x |
| Improved Administration | x | x | x |
| Open Government (OG) Capabilities | x | x | x |
| Improved Ethical Behavior and Professionalism | x | x | x |
| Improved Social Value and Well-Being | x | x | x |
| Improved Trust and Confidence in Government | x | x | x |

| Table 4b | The public value of e-government in the perspective of e-government application domains. |
|-----------|---------------------------------|---------------------------------|---------------------------------|
| e-Gov. application domains | e-Administration | e-Services | e-Citizens and e-Society |
| Improved Public Services | Improved Administration | Improved Open Government (OG) Capabilities | Improved Open Government (OG) Capabilities |
| Improved Administration | Improved Ethical Behaviour and Professionalism | Improved Trust and confidence in government |

| Table 5 | Extension of Table 4a by respectively replacing each column's heading by its first item. |
|-----------|---------------------------------|---------------------------------|---------------------------------|
| Improved Administration | Improved Public Services | Improved Social Value and Well-Being |
| Improved Open Government (OG) Capabilities | Improved Open Government (OG) Capabilities | Improved Open Government (OG) Capabilities |
| Improved Ethical Behaviour and Professionalism | Improved Ethical Behaviour and Professionalism | Improved trust and confidence in government |
| Improved Social Value and Well-Being | Improved trust and confidence in government | |
the democratic process and the very structures of the government.

Fig. 2 depicts relationships between the dimensions of the public value of e-government, and Appendix D describes the Key Performance Indicators (KPIs) of each of the six dimensions.

Finally, we argue that, through all results presented this literature study theorizes a descriptive and multidimensional framework that can improve our understanding of the public value of e-government from different viewpoints and the overlap between these values in actual e-government designs and implementations. For practical ends, this multi-dimensional framework can be used by governments to assess the performance of e-government initiatives. Having said that, we support Moore who argues that government policies and actions should be evaluated from the public value produced. In brief, the “public value” of e-government should be understood as the impact of e-government in respect to government operations, actions, policies, and services for citizens. This perspective on the public value is important when studying the implementation and success of e-government.

Fig. 2. The public value dimensions of e-government – a conceptual model.

A first test of the framework will be conducted by us when we embark on our value-based evaluation of an extensive e-government project in Rwanda. In the Rwandan project, we have heard implementers often claiming that they are not only implementing e-government, but also that they want to create value. We aim to use this framework to investigate what value is created, especially, the value created for the government as an entity, for users (public servants, citizens), and main stakeholders in the project. Possible adjustments to the framework may thus be a continuation of this research.

5.1. Limitations

As with all literature studies, an obvious limitation of this study is coverage. There will always be additional papers written on the topic at hand that is not covered given the performed search for papers. Having said this, the reference library used in this study should capture the majority of English language and peer-reviewed academic papers in e-government and we did use snowball-sampling as an additional search strategy. Another limitation related to the selection of papers is the definitional vagueness of the very concept of e-government – there will most likely be papers discussing e-government, but not labelling it as such. A final limitation to this study is that although this research systematically included and analyzed the literature to come up with a multi-dimensional framework for studying the public value of e-government, the conceptual framework that is produced is not tested to any extent. Given this limitation, there is ample opportunity for future research. An interesting avenue is to validate our framework, either as a whole or in part, in different e-government projects and contexts. Such findings will give a deeper understanding of the framework’s strengths and limitations.

Appendices

A. Core sources of the E-Government Reference Library (EGRL)

<table>
<thead>
<tr>
<th>Core journals</th>
<th>Core conferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Government Information Quarterly (GIQ);</td>
<td>- HICSS (Hawaii International Conference on System Sciences – e-Gov track),</td>
</tr>
<tr>
<td>- Information Polity (IP),</td>
<td>- IFIP EGOV (International Federation for Information Processing),</td>
</tr>
<tr>
<td>- International Journal of Electronic Government Research (IJEGR),</td>
<td>- dg.o (Digital,Government Society of North America),</td>
</tr>
<tr>
<td>- International Journal of Public Administration in the Digital Age (JPAADA),</td>
<td>- ICEGOV (International Conference on Theory and Practice of Electronic Governance),</td>
</tr>
<tr>
<td>- Journal of Information Technology &amp; Politics (JITP),</td>
<td></td>
</tr>
</tbody>
</table>
B. Categories of eGovernment values as addressed in research

<table>
<thead>
<tr>
<th>Value dimension (number of papers)</th>
<th>Papers addressing the dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved administrative efficiency (22)</td>
<td>Bai, 2013; Bannister &amp; Connolly, 2014; Bonina &amp; Cordella, 2009; Castelnovo, 2013; Cook &amp; Harrison, 2015; Dzumalieva, Noel, &amp; Baudu, 2015; Hellang &amp; Flak, 2012; Jansen, 2012a, b; Karkin &amp; Karunasena et al., 2011; K. Karunasena &amp; Deng, 2012; Karkin &amp; Janssen, 2014; Liu et al., 2008; Mkude et al., 2014; Prakash, Jaiswal, &amp; Gulla, 2009; Raus et al., 2015; Rose &amp; Persson, 2012; Rose, Persson, &amp; Heeager, 2015; Rose, Persson, Heeager, &amp; Irani, 2015; Scott et al., 2016; Smith, 2009; Srivastava, 2011; Tolbert &amp; Mossberger, 2006)</td>
</tr>
<tr>
<td>Value of improved trust and confidence in government (13)</td>
<td>Boughton, 2006; Castelnovo, 2013; Chircu, 2008; Grimsley &amp; Meehan, 2007; Karkin &amp; Janssen, 2014; Karunasena et al., 2011; Osmani et al., 2014; Pang et al., 2014; Rose &amp; Persson, 2012; Rose, Persson, Heeager, 2015; Rose, Persson, Heeager, et al., 2015; Scott et al., 2016</td>
</tr>
<tr>
<td>Open government capabilities (8)</td>
<td>Castelnovo, 2013; Harrison et al., 2012; Jansen, 2012a; Karkin &amp; Janssen, 2014; Liu et al., 2008; Pang et al., 2014; Pirannejad, 2011; Scott et al., 2016</td>
</tr>
<tr>
<td>Improved social value and well-being (7)</td>
<td>Castelnovo, 2013; Cook &amp; Harrison, 2015; Osmani et al., 2014; Rose &amp; Persson, 2012; Rose, Persson, &amp; Heeager, 2015; Rose, Persson, Heeager, et al., 2015; Srivastava, 2011</td>
</tr>
</tbody>
</table>

C. Concept-matrix on main foci of the existing research on the value of e-government

<table>
<thead>
<tr>
<th>Themes</th>
<th>Hypothesizing (understanding) the value of e-government</th>
<th>Hypothesizing the value of e-government for developing methods for measuring e-government based on a value perspective</th>
<th>Hypothesizing the value of e-government for developing methods for design and implementation of e-government based on a value perspective</th>
</tr>
</thead>
</table>

D. six dimensions of the public value of e-government and associated Key Performance Indicators (KPIs)

1. Improved Public Services
   - provision of services to citizens
   - increased quantity of public information and services
   - increased quality of public information and services
   - provision of more inclusive public services
   - provision of public (citizen)-centered services
   - provision of personalized services (e.g., special provision for disability, language support for minorities, online advice, etc.)
   - provision of services directed towards the public good,
   - improved delivery of public services
   - enabled transparency, participation, and collaboration in the delivery of public services
   - provision of more responsive, efficient, and cost-effective public services
   - improved access to government information and services

2. Improved Administrative Efficiency
   - better management of public resources and economy
   - cost-reduction
   - reduced administration burden
   - reduced bottleneck and queues in the delivery of services to citizens
   - a robust government (e.g., operations are systematic, efficient, effective, sustainable, flexible, lean, and agile)
   - more responsive government operations
• increase efficiency, effectiveness and the achievement of desired outcomes
• increased quality of processes, systems, and services to citizens
• better collaboration, cooperation, and better communication
• increased transparency, participation, and inclusiveness
• enabled public empowerment and capacity building
• enabled durable and competent institutional capacity and impartially serving citizens
• maintained accurate and durable records
• enabled government to taking decisions by law and authorized policy
• reduced or eliminate the risk of corruption and abuse of the law by public servants
• enabled greater fairness, honesty, equality

3. **Open Government (OG) capabilities**

• more open government or public sector operations
• increased transparency of public sector operations
• increased public/citizens participation in government actions and policy making
• improved public engagement and well-informedness
• improved communication and collaborative actions in the public sector
• improved partnerships (within government or in the form of public private partnerships (PPP))
• improved public control and influence on government actions and policies
• improved political possibilities and innovations
• improved capacity building and empowerment
• increased frequency and intensity of direct involvement in decision making

4. **Improved Ethical Behavior and Professionalism**

• maintenance of fundamental beliefs and constitutional principles (e.g., responsibility to the citizen/politician)
• proper and efficient use of public funds
• facilitation of democratic will
• compliance with the law
• make decisions by law and authorized policy
• demand for good information for decisions
• reduction or elimination of the risk of corruption and abuse of the law by public servants
• increased integrity, honesty, fairness, equality, accountability, responsibility, economy parsimony, rectitude
• achievement of legitimacy, rule of law, coherence, adaptability, impartiality, legality, equality before law, objectivity, professionalism, trustworthiness, and openness
• achievement or increased robustness, reliability, security, efficiency and effectiveness of government
• increased citizens' access to government information and services
• provision of quality services to citizens
• increased collaboration and participation
• maintenance of accurate durable records
• creation of durable and competent institutional capacity

5. **Improved Trust and Confidence in Government**

• better security of public information and privacy of citizens
• better management of public organizations, manage economy, public resources
• better delivery of public services
• increased transparency (i.e., government (or public sector) is more transparent)
• increased citizen participation
• citizens have more control of actions and decisions of their government
• citizens have better access to government information and services
• increased flexibility, reliability, agility, and security
• increased quality of public services
• increased quantity of public services
• improved citizens' experience of service provision and service outcomes
• improved interaction at the local level (e.g., visiting a local government website increase citizens' trust in local governments)
• protection of foundational values of trustworthiness, openness, robustness, reliability, accountability and security
• increased citizens' well-informedness

6. **Improved Social Value and Well-Being**

• improved social well-being
• increased social status, relationships, and opportunities
• improved capacity building and empowerment
• creation of value(s) for families, community, and other relationships
• increased safety
• achievement of better outcomes in areas of peace, security, poverty reduction, public health, high employment, low crime rates, clean streets, improved environment and better educational achievements
• enabling freedom and equal rights
• improved citizens’ levels of social contact
• improved citizens’ social health
• impact on individual and household health, security, and satisfaction
• increased quantity and quality of services to citizens
• improved economic well-being
• impact citizen’s income, assets, property, and wealth
• increase ease of doing business (i.e., create a value for citizens in terms of increased citizens’ well-being and quality of life)
• improved better management of public resources (e.g., by means of online applications and transactions)
• a more flexible, pervasive, and cost-effective public sector (e.g., provision of online applications and transactions)

References


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