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The Current State of Research on eGovernment in Developing Countries: A Literature Review

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Abstract. This paper reports a review of literature on eGovernment in the context of developing countries published between 2005 and 2010. The insights emerging from this review may guide researchers in their continued investigation of eGovernment implementation, especially in the context of developing countries. From a review of 108 papers, the study found some substantive changes in the field of eGovernment research. These included increased adoption of interpretive paradigm and increased use of theories in the research. Some future research direction from the methodological perspective were provided: paying more attention to research paradigm and methodology, preserving multiculturalism in eGovernment research, encouraging action research and longitudinal studies, and improving the research quality by grounding it on theories.

Keywords: eGovernment, developing countries, literature review.

1 Introduction

In a review of mainstream eGovernment literature from 2001 to 2005 (84 papers), Heeks and Bailur [1] unearthed several interesting findings. Here are some of them: no papers adopted interpretive paradigm, only one paper used theory, and more than one-quarter papers had no discernable research method. However, good practices were also identified [1], include significant recognition of human and other contextual factors that influenced the impact of eGovernment, use of a diverse range of ideas from other research domains, use of a range of different research methods and broad use of primary data. Although the study was not specifically on eGovernment research in the context of developing countries, but rather in a general context, it provided insights that can serve well as a starting point. Has something substantive happened in the meantime? Answer to this question is expected to provide insights to guide researchers in their continued investigation of eGovernment in the context of developing countries.

This paper aims to provide a more recent picture of eGovernment studies in the context of developing countries¹ from 2005 to 2010. This paper focuses on state of the eGovernment research.

¹ A list of developing countries drawn up by the International Monetary Fund in April 2010 was used as the reference base (<http://www.imf.org/external/pubs/ft/weo/2010/01/weodata/groups.htm#oem>).

Through a systematic process, this study reviews 108 papers dealing with the eGovernment research in the context of developing countries. Since the aim is to present the state of the eGovernment research, the review focuses on five main areas, i.e., research paradigm, knowledge framework, methodology, application, and focus of research [1].

The research questions addressed in this study are: (a) what is the current state of research on eGovernment in the context of developing countries?; and (b) what substantive changes we can observe from the development of eGovernment research in the period of 2005-10?

The analysis and detailed findings are presented as follows. Section 2 describes the research method for selection and analysis of the papers. Section 3 presents the findings, followed by discussion in Section 4. Section 5 concludes the paper.

2 Research Method

2.1 Selection of Literature

The set of guidelines proposed by Webster and Watson [2] for carrying out a systematic literature review was followed. This study focused on papers that explicitly dealt with eGovernment research in the context of developing countries published between 2005 and 2010. The search was limited to five prominent journals and or conference proceedings portals, namely ScienceDirect (<http://www.sciencedirect.com>), Ebsco (<http://www.ebscohost.com>), IEEE XPlore (<http://ieeexplore.ieee.org>), ACM Digital Library (<http://portal.acm.org>), and SpringerLink (<http://www.springerlink.com>). In addition, I also included *The Electronic Journal of Information System in Developing Countries* (<http://www.ejisdc.org>), which is one of the prominent ICT4D journals² that is not indexed in those five portals, in the pool. In doing so, I hoped that the review would cover as much of the relevant literature as possible.

The initial search was conducted using three combinations of keywords: electronic government and developing country, eGovernment and developing country, and digital government and developing country; in the title, the abstract, the keywords, and the text. The paper search was conducted in October 2010. After exclusion of duplicates, 134 papers were finally included in the pool. Second, the contents of the paper in this pool were carefully examined. This mechanism reduced the number of papers from 134 to 108 (2005: seven papers; 2006: eight; 2007: 19; 2008: 23; 2009: 35; and 2010: 16). Twenty-five papers were excluded for several reasons; e.g., they were not written in English, the focus was not on developing countries. Editorial papers were also excluded from the pool. In the final pool, 39 were journal papers, whereas the rest (69) were conference papers in proceedings. The final pool consisted of 95 empirical and 13

² See ICT4D Journal Ranking Table compiled by Richard Heeks (<http://ict4dblog.wordpress.com/2010/04/14/ict4d-journal-ranking-table>).

theoretical papers. A paper was considered to be empirical if it reported a real case, whether it used primary or secondary data or both.

2.2 Method of Analysis

Content analysis was used in this study. Several areas of categorization were used to analyse the papers. Selection of the areas was influenced by earlier research both in eGovernment and in general information systems [1, 3-6]. The following categorization was used to classify the papers.

Research paradigm. This was classified into three categories: (a) positivist; (b) interpretative; and (c) critical [4, 7]. A research is said to be positivist if it attempts to test theory to increase the predictive understanding of phenomena [7]. In this type of research, generally there is evidence of formal propositions, quantifiable measures of variables and hypothesis testing [8]. Interpretative studies generally attempt to understand phenomena through the meanings that people assign to them and interpretative methods are “aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context” [9:4-5]. Critical research deals with social critique by assuming that social reality is historically constituted and that it is produced and reproduced by people. Hence, critical research focuses on the oppositions, conflicts and contradictions in contemporary society [7, 10].

Knowledge framework. A set of categorized frameworks of knowledge used in eGovernment research proposed by Heeks and Bailur [1] was adopted. They grouped research as follows: (a) theory-based – when the paper made use of an explicit well-established theory such as structuration theory or institutional theory; (b) framework-based – when the paper used a framework from a body of theoretical work; (c) model-based – when the paper used a model presented without reference to any deeper knowledge framework, such as a stage model; (d) schema-based – when the paper made use of schemas of technique or a technical architecture of eGovernment; (e) concept-based – when the paper used a certain concept such as good governance or usability; and (f) category-based – when the paper presented a set of categories or list of factors. Papers that did not belong to any of these categories were categorized as non-framework-based research.

Methodology. The papers were also examined in accordance with the research method and data collection method used. The research methods were classified as: (a) survey; (2) case study; (c) experiment; and (d) action research [4]. The data collection methods were grouped as: (a) questionnaire; (b) interview; (c) reflection on project experience; (d) document analysis; (e) literature review; and (f) observation [1]. In addition, the papers were also examined in terms of the time dimension of the research undertaken, whether cross-sectional or longitudinal, and in terms of data type, i.e., qualitative or quantitative.

Application. Topics were also grouped: (a) eAdministration – initiatives dealing particularly with improving the internal workings of the public sector; (b) eService – initiatives dealing particularly with the relationship between

government and citizens as voters/stakeholders or as customers of public services; (c) eSociety – initiatives dealing with the relationship between public agencies and other institutions and with the relationship between civil society institutions; and (d) general eGovernment [3]. Examples of the last topic include studies that aim to identify eGovernment challenges, barriers, and opportunities in a general context.

Focus of research. This was divided into three categories: (a) techno-centric/online service delivery; (b) government-centric/organizational change; and (c) citizen-centric/better government. This categorization was based on a review of ten years of eGovernment development, which was conducted by Grönlund [5] and identified three main models of eGovernment development, namely (1) the service delivery model, (2) the organizational change model, and (3) the better government model. The first model focuses on online service delivery from provision of online information to full electronic case handling. eGovernment implementation in this model is seen from a techno-centric perspective [6]. On the other hand, the third model does not necessarily involve eService delivery. Introducing cyber laws protecting privacy and increasing accessibility of eGovernment services (i.e., eInclusion initiatives) to various societal groups, including the disadvantaged ones, are examples of the initiatives in the third model [5, 6]. The second model (i.e., the organizational change model of eGovernment) assumes that IT itself cannot offer significant benefits without organizational change.

3 Findings

3.1 Overview of the Papers

Forty-three countries were reported in the papers. When the countries were not clearly stated or the study covered a lot of countries (such as Arab countries, Africa, Asia), I classified the papers into ‘other countries’ (Table 1). India was found to be the most frequently (11 times) reported country in the papers under study, followed by South Africa, China, Kenya, and Nigeria.

3.2 Research Paradigm

I attempted to group the papers based on their research paradigms used in the studies, although any attempt at classifying the papers like this might raise a discussion. Hence, since many papers did not clearly state their epistemological stance, I used additional criteria to classify the papers as follows.

The papers on eGovernment architecture and other technical aspects of eGovernment infrastructure were classified as positivist research, since they focused on building information technology (IT) artefact [see e.g., 11]. More specifically, these papers reported design research whose epistemology was primarily positivistic [11]. Also in this group of positivist research were papers reported a research model with a set of dependent and independent variables and

used a statistical analysis to test some hypothesis [see e.g., 8]. The studies that carried out website evaluation were also grouped as positivist research. Almost half (42.6%) of the papers belonged to this group (see Table 2).

Table 1. List of countries reported in the papers

No	Country	n	No	Country	n
1	India	11	23	Chile	1
2	South Africa	7	24	Ethiopia	1
3	China	6	25	Jamaica	1
4	Kenya	6	26	Kazakhstan	1
5	Nigeria	6	27	Kuwait	1
6	Bangladesh	5	28	Malaysia	1
7	Indonesia	5	29	Maldives	1
8	Jordan	5	30	Mauritius	1
9	Morocco	4	31	Mexico	1
10	Nepal	4	32	Mongolia	1
11	Pakistan	4	33	Mozambique	1
12	Sri Lanka	4	34	Philippines	1
13	Argentina	3	35	Rwanda	1
14	Brazil	3	36	Saudi Arabia	1
15	Egypt	3	37	Senegal	1
16	Iran	3	38	Serbia	1
17	Turkey	2	39	Taiwan	1
18	Colombia	2	40	Tanzania	1
19	Ghana	2	41	UAE	1
20	Thailand	2	42	Uzbekistan	1
21	Uganda	2	43	Zambia	1
22	Cape Verde	1	44	Other countries	11

Table 2. Research paradigm used in eGovernment research

Research paradigm	Frequency	Percentage
Positivist	46	42.6
Interpretative	26	24.1
Critical	3	2.8
Other	33	30.6

The papers whose purpose was to evaluate and criticize the reasons or values behind an eGovernment initiative in a specific context were considered as critical research. Out of the 108 papers under study, only three papers that used a critical realism research paradigm.

The definition of interpretive research developed by Walsham [9] was adopted to classify the papers. Around one-quarter (24.1%) of the papers adopted interpretive stance.

Other papers that did not belong to those three groups were put in the 'other' group. Examples were the papers that used secondary data to summarize or to present some ideas or concepts related to eGovernment, e.g., scope and

challenges of eGovernment in a specific context. Descriptive literature review papers were also put in this group. This group had 30.6% of the papers.

3.3 Methodology

Case study was the most frequent research method used, although the protocols for conducting a proper case study research, such as those suggested by Benbasat et al. [12] and Yin [13], were in many cases not adequately followed (Table 3). I found that in 22.2% of the papers, the research methods were not easy to identify; for instance, the papers that attempted to assess development of eGovernment in a specific context lacked sufficient information on how the data were to be collected and conclusions drawn.

Table 3. Research methods used in eGovernment research

Research method	Frequency	Percentage
Survey	20	18.5
Case study	60	55.6
Experiment	1	0.9
Action research	3	2.8
Other	24	22.2

Distributing questionnaire was the most popular data collection method, followed by interviews (see Table 4). Eight papers reported that more than one data collection (mixed) method was employed. No paper used only observation as its data collection method. Eighteen papers even did not report how the data has been collected explicitly, in a research method section, or implicitly, somewhere else in the paper.

Table 4. Data collection methods used in eGovernment research

Data collection method	Frequency	Percentage
Questionnaire	21	19.4
Interview	21	19.4
Reflection on project experience	16	14.8
Document analysis	11	10.2
Literature review	1	0.9
Web content analysis	6	5.6
Observation	0	0.0
Hunt and peck*	6	5.6
Mixed	8	7.4
No discernable method	18	16.7

Note: * "A review of some relevant sources but without the rigor that might allow the approach to be called a proper literature review" [1]

As many as 28.7% of the papers (31) adopted an individual/personal level of analysis, whereas 35 papers preferred the group/organization level, and the rest (42) focused on societal or country level. Qualitative research was found to be the approach preferred (62 papers) over quantitative (31) and mixed approaches (10). This study found that only six papers employed longitudinal studies.

3.4 Application

This study found that the most frequently researched area of application was eService (46 papers), whereas the eSociety domain received the least attention (see Table 5). Thirty-five papers focused on eGovernment issues in general such as identifying eGovernment challenges, barriers, and opportunities.

Table 5. Area of application in eGovernment research

Area of application	Frequency	Percentage
eAdministration	17	15.7
eServices	46	42.6
eSociety	10	9.3
eGovernment (in general)	35	32.4

According to Heeks [3], the focus of eService is to talk to citizens about details of public sector activities, to listen to citizens to gain input into public sector decisions and action, and to improve public services, whereas eSociety initiatives are intended to work better with business, to develop communities, and to strengthen partnership. Both of these applications deal with the demand side of eGovernment, whereas eAdministration, whose objectives are to cut process cost, manage process performance, and make strategic decisions in government, treats the supply side [14].

3.5 Knowledge Framework

Sixteen (14.8%) papers under study explicitly used theory (Table 6). Diffusion and adoption theories (such as Rogers's diffusion of innovation theory) were the most dominant theory used (in seven papers). Other theories used were stakeholder theory (two papers), actor network theory (two papers), and Giddens's structuration theory (two papers). The other three papers used institutional theory, theory of development, and intellectual capital theory. Some of these theories have been popular in information system research in the context of developing countries [15].

Table 6. Frameworks of knowledge used in eGovernment research

Knowledge framework	Frequency	Percentage
Theory-based	16	14.8
Framework-based	8	7.4
Model-based	9	8.3
Schema-based	7	6.5
Concept-based	40	37.0
Category-based	15	13.9
Non-framework-based	13	12.0

A large proportion of the papers (37.0%) used one or more concepts to inform the research process and analysis. The concepts included awareness, trustworthiness, usability, pushing versus pulling systems, good governance, hospitality and drifting, and interoperability.

Some (7.4%) studies were framework-based. Various frameworks explicitly derived from a body of theoretical work used to study, e.g., information system adoption and success. Examples of scheme-based studies included the papers that used infrastructure scheme or architecture (6.5%). Model-based research (8.3%) mostly adopted stage model of eGovernment development. Fifteen (13.9%) papers fell into category-based studies. The categories used included gap-analysis, eGovernment barriers, and challenges.

In addition to the fact that only a limited number of the papers used theory explicitly, we should note here that 13 papers did not use any knowledge frameworks. One could ask whether the absence of theory in eGovernment research is a problem. If it is a problem, then it has been around for some years, as Heeks and Bailur [1] found a similar phenomenon. They found that the background of the researchers had influence in this regard. Researchers whose academic base was informatics or computer science generally made no use of theory or framework.

3.6 Focus of Research

This study revealed that the papers focused on various aspect of eGovernment, ranging from online service delivery, through organizational change, to better government (Table 7). The focus of research was reflected in the area of concern or in a more observable form, in the definition of eGovernment adopted by the researchers. For instance, one paper [16:124] that was dealing with online service delivery defined eGovernment as

“a web-based project to enhance communication between the government and citizens, business partners, employees and other agencies, and information publication from the authority”.

Table 7. Focus of eGovernment research

Focus of research	Frequency	Percentage
Techno-centric/online service delivery	57	52.8
Government-centric/organizational change	27	25.0
Citizen-centric/better government	24	22.2

As another example, a paper [17:37] that focused on organizational change defined eGovernment as

“a way of organizing public management in order to increase efficiency, transparency, accessibility and responsiveness to citizens through the intensive and strategic use of information and communication technologies in the inner management of the public sector (intra and inter governmental relations) as well as in its daily relations with citizens and users of public services”.

Other papers that used a more citizen-centric approach paid attention to eGovernment initiatives that were intended, for instance, to provide citizens with greater access to eGovernment services or to IT, especially the Internet, in general [e.g. 18, 19]. The main goal was to empower citizens and to realize the advantages of IT in development, where citizens are the main beneficiaries.

4 Discussion

Has something substantive happened in the field of eGovernment research since 2005? Findings from previous literature reviews made by Heeks and Bailur's [1] and Grönlund and Andersson [20] were used as bases for comparison. Although these studies dealt with the eGovernment research in a general context, and did not focus on the context of developing countries, the findings could provide useful insights. To put them into the context, another literature review made by Walsham and Sahay [15] on IS research in the context of developing countries were brought in.

This study revealed that research paradigms of 30.6% of the papers were not discernable. This finding indicates that many eGovernment researchers did not pay attention to research epistemology or philosophies. This finding is in line with the previous literature review conducted by Heeks and Bailur [1], who found that most eGovernment research contained no clear statement of research philosophy. It is possible that for many of the eGovernment researchers the relevance of the research was more important than rigour. As Heeks and Bailur [1:251] noted, this finding still left "an open question about the importance and role of research philosophy in eGovernment research".

In 2005, Heeks and Bailur [1] did not find any single papers that adopted interpretive paradigm. If we believe that interpretive research can provide more insights about a phenomenon under study, we may rejoice the recent development in our field since 24.1% of the studies adopted this paradigm. However, this study found that only few (2.8%) critical studies. This finding echoed the previous study made by Walsham and Sahay [15] that made a call for critical studies. They argued that this type of studies was important since it "can open up the 'black box' as an aid to deeper understanding, and a stimulus to appropriate action" [15:19]. It seemed that this call did not get a sufficient attention from the researchers of eGovernment in developing countries.

Walsham and Sahay [15] also recommended more action research and longitudinal studies. Similarly, Heeks and Bailur [1] also found that around 80.0% of the papers reported cross-sectional research. Again, not many papers in this current study addressed this recommendation. This study found that only six papers employed longitudinal studies and three that reported action research. According to Walsham and Sahay [15:19],

"action research would appear to be particularly relevant in contexts where resources are scarce, when it can be argued that outside researchers should not only go away with data for their own papers and academic careers, but also aim to make a specific contribution in the research setting itself."

The action research may be also carried out in longitudinal studies, when interventions in field sites taking place on several occasions spaced out over time [15]. Often, action research is done in close collaboration with real stakeholders.

This study found that the proportion of theory-based studies increased. Heeks and Bailur's study [1] found only 1.2% theory-based studies out of 84, while this study revealed that 14.8% studies were theory-based. As presented above, there

were a variety of theories brought in into the eGovernment research, such as institutional theory, theory of development, actor network theory, structuration theory, diffusion of innovation theory, and intellectual capital theory. This is promising since the quality of research can increase if the studies are theory-based. Theory is important in eGovernment research, because it serves as: (a) a means for researchers to communicate with practitioners; (b) a means for researchers to communicate with each other; (c) a means for accumulation of knowledge; and (d) a means for legitimacy and recognition of the field as an academic discipline [21]. During the research process, theory can be used to guide data collection and analysis [22].

In their study, Heeks and Bailur [1] revealed that 20 (23.8%) papers did not reported their data collection methods. They considered it as ‘bad practice’ in eGovernment research. Unfortunately, there was no substantive change in this regard. This current study found that research methodology of 22.2% of the papers was indiscernible. In addition, data collection methods of 18 (16.7%) papers were also difficult to identify.

In 2006, Grönlund and Andersson’s study [20] found that the eGovernment studies was increasingly focusing on IT. A different picture was offered by this study, which found significant recognition of human and other contextual factors in addition to merely technical actor, use of a range of different research methods and broad use of primary data, and attention to various eGovernment applications (i.e., eAdministration, eService, and eSociety). This was considered as good practices in Heeks and Bailur’s study [1]. Moreover, these practices were suggested by Grönlund and Andersson [20] in their study. Instead of focusing on IT itself, eGovernment studies should focus on the role of IT in the context of society and government organization [20].

To sum up, from the methodological perspective, some future research directions can be drawn from this discussion. These include

- (a) paying more attention to research paradigm and methodology;
- (b) preserving multiculturalism in eGovernment research, by adopting appropriate research paradigms;
- (c) encouraging action research and longitudinal studies; and
- (d) improving the research quality by bringing theories in.

5 Concluding Remarks

This paper has painted a current state of eGovernment research published between 2005 and 2010. The review was based on five areas of categorization, i.e., research paradigm, knowledge framework, methodology, application, and focus of research. Several future directions from the methodological perspective have been also presented. The main contributions of this paper are the answers to two research questions set at the outset. This study provided (a) a more recent picture of eGovernment research in the context of developing countries, and (b) a set of future research directions. This study was then expected to provide insights to eGovernment researchers.

Lastly, like any other studies, this study has some limitations. First, the paper focused on state of eGovernment research and not the research issue. I will present the latter in another future paper. Second, although I have tried to include most of the relevant papers in the review, it is certainly possible that some were omitted, especially those which were not indexed in the five portals and those which were not written in English. This might have caused some bias. Third, the validity of the study may be questionable and open for discussion, since I was the single coder for all the papers under study. Similar studies should if possible use more than one coder to improve validity.

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