

Themes of Research on eGovernment in Developing Countries: Current Map and Future Roadmap

Fathul Wahid^{1,2}

¹Department of Information Systems, University of Agder, Kristiansand, Norway

²Department of Informatics, Universitas Islam Indonesia, Yogyakarta, Indonesia
fathul.wahid@uia.no

Abstract

This paper reports a literature review of eGovernment research in developing countries published between 2005 and 2010. From a review of 108 papers, the present study found that the papers could be mapped into five main research themes: design/implementation, adoption, impact, evaluation, and context. For each main theme, several sub-themes were identified. The research approaches used to investigate each theme were described. In addition to presenting the current landscape of eGovernment research, this paper also provides future research directions related to the empirical, theoretical, and methodological domains.

1. Introduction

There has been increasing scholarly attention on information systems (IS) generally, and eGovernment specifically, in the context of developing countries [65]. Several publication outlets have been dedicated to this field, such as the *Electronic Journal of Information Systems in Developing Countries* and *Information Technology for Development*. However, to the best of my knowledge, there has been no comprehensive literature review specifically focusing on eGovernment research in the context of developing countries. Among a few exception are the review conducted by Dada [10] that focused on factors that were responsible for eGovernment failures and the review carried out by Hedström and Grönlund [23] that paid attention to the issue of development.

This study addresses this gap in the literature. It makes two key contributions. First, it provides a current picture of eGovernment research in this specific context, which likely differs from those in developed countries [8]. Second, the insight emerging from this review may guide researchers in their continued investigations of eGovernment implementation in developing countries.

Through a systematic process, this study reviews 108 papers dealing with eGovernment research in developing countries. The research questions addressed are (a) what are the themes of current research on eGovernment in developing countries and (b) what possible future research directions can be proposed?

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

2. Research method

2.1. Selection of literature

This study focused on papers that explicitly dealt with eGovernment research in the context of developing countries¹ published between 2005 and 2010. The set of guidelines proposed by Webster and Watson [66] for carrying out a systematic literature review was followed.

The search was limited to five prominent journals and/or conference proceedings portals, namely Science Direct (<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, *The Electronic Journal of Information Systems in Developing Countries* (<http://www.ejisd.org>), which is one of the prominent ICT4D journals² that is not indexed in those five portals was also included. By

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>).

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

doing so, it was 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, abstract, keywords, and text. The paper search was conducted in October 2010. After the exclusion of duplicates, 134 papers were finally included in the sample. Next, the contents of the papers in this sample were carefully examined. This mechanism reduced the number of papers from 134 to 108. Twenty-six papers were excluded for several reasons, such as they were not written in English or because the focus was not on developing countries. Editorial papers were also excluded. In the final sample, 39 were journal papers, whereas the rest (69) were conference papers in proceedings.

2.2. Method of analysis

This study used content analysis to identify and map research themes of the papers. Examining research themes (empirical domain) and their associated research approaches (conceptual and methodological domains) can provide useful insights to pave the way for future eGovernment research.

Research themes. Frameworks available in the extant literature [e.g., 11, 53] were considered to categorize the themes of the papers under review. For example, Scholl [53] proposed that eGovernment studies should take into account six high-level interrelated variables: information use, technology use, public policy, government operations, government services, and citizen engagement. These categories to some extent overlap with research foci presented below.

As another example, Dawes [11] in her study involving 383 eGovernment experts from 54 countries (only 19 experts were from developing countries) came up with 13 themes, such as data privacy and personal identity; trust in eGovernment; information quality; eParticipation, citizen engagement and democratic processes; ontologies and intelligent information and knowledge management; assessing the value of government ICT investments; mission-oriented goals and performance management.

This framework was useful as a reference; however, it could not suitably capture the main themes of the papers under review. This was probably because these frameworks were developed by considering mainly the context of developed countries as the points of departure. The priority of themes of eGovernment studies may also differ between these two contexts.

By taking these frameworks as references, a conceptual framework (a granular categorisation) was developed to structure the review (see Figure 1). This granular categorisation was also inspired by Esteves and Pastor's [16] study on the enterprise resource planning lifecycle. A broad guideline was developed to categorise the research themes as follows.

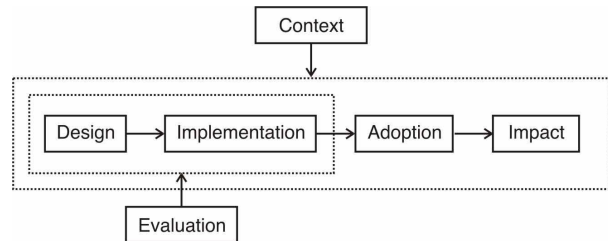


Figure 1. Conceptual framework for the categorisation of research themes

Design/implementation. Since the design and the implementation of the eGovernment system was inseparable in many papers, these two themes were grouped into one. This group included papers that dealt with the design of IT/IS artefacts related to eGovernment and/or its implementation (such as IS for eVoting) and those that proposed an IT/IS development framework (such as an interoperability framework).

Adoption. The papers in this group were studies of various aspects of eGovernment adoption, such as its determinants, processes, and barriers.

Impact. This group consisted of the papers proposing a framework to assess the impact of eGovernment and those reporting actual assessment in the context of implementation.

Evaluation. The papers in this group were those focused on the evaluation of the design and/or implementation of the eGovernment system from various perspectives, including technical, organisational, and social. Papers that also dealt with the success or failure factors during design/implementation were also included in this group.

Context. Papers were included in this group if they examined eGovernment issues from technical, organisational, or social contexts. Those that discussed other broad eGovernment-related issues, such as challenges and prospects, were also placed here.

Research approach. To enrich the analysis, this study also aimed to map research themes and their associated research approaches. It examined the approaches from the focus of the research, the research paradigm, and the use of a knowledge framework.

Research paradigm. This was classified into three categories: (a) positivist; (b) interpretative; and (c) critical [7, 43]. Research was said to be positivist if it attempted to test theory to increase the predictive

understanding of phenomena [43]. In this type of research, generally there is evidence of formal propositions, quantifiable measures of variables, and hypothesis testing [47]. Interpretative studies generally attempted to understand phenomena through the meanings that people assign to them; 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” [64:4-5]. Critical research deals with social critiques 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 [43, 44]. Papers that did not belong to any of these categories were grouped as ‘unclear’.

Research focus. This was divided into three categories: (a) techno-centric/online service delivery; (b) government-centric/organisational change; and (c) citizen-centric/better government. This categorisation was based on a 10-year review of eGovernment development [20]. The first category focuses on online service delivery from the provision of online information to full electronic case handling. eGovernment implementation in this model is seen from a techno-centric perspective [52]. By contrast, the third category does not necessarily involve eService delivery. Introducing cyber laws that protect privacy and increasing the accessibility of eGovernment services to various societal groups are examples of initiatives in the third model [20, 52]. The second category assumes that IT itself cannot offer significant benefits without organisational change.

However, it is worth to note here that these categories are not mutually exclusive and they may overlap to some extent. Online service delivery efforts might be part of bigger organizational change or even better government initiative. For example, developing an eGovernment application such as agriculture market information eService and national biometric database did not always fall into techno-centric/online service delivery studies. The former could belong to citizen-centric study if it put the service in a social context [27], while the latter could fall into government-centric study if it emphasised on organizational change [28].

Knowledge framework. The set of categorised frameworks of knowledge used in eGovernment research proposed by Heeks and Bailur [24] was adopted. These authors 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 techniques 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 categorised as non-framework-based research (or ‘unclear’).

3. Findings

3.1. Overview of the papers

The final sample consisted of 95 empirical and 13 theoretical papers. A paper was considered to be empirical if it reported on a real case, whether it used primary or secondary data or both. It appears that the number of publications in this area increased from year to year (2005: seven papers; 2006: eight; 2007: 19; 2008: 23; 2009: 35; and 2010: 16)³.

At least 43 countries were reported on in the papers. The studies that covered several countries (such as Arab countries, Africa, Asia), were classified as ‘multiple’. India was found to be the most frequently (11 times) reported country in the papers under study, followed by South Africa (7), China (6), Kenya (6), Nigeria (6), Bangladesh (5), Indonesia (5), and Jordan (5). A complete list of the reported countries can be found elsewhere [61]

3.2. Research themes

This study showed that the papers under review paid attention to various aspects of eGovernment (Table 1). When the papers had more than one theme, the grouping was based on the main theme. The evaluation of eGovernment initiatives was the most popular (28.7%) research theme, followed by studies on eGovernment contexts. Studies on the impact of eGovernment comprised 10.2% of the papers.

Table 1. Main themes of eGovernment research

| Theme | n | % |
|-----------------------|----|------|
| Design/implementation | 21 | 19.4 |
| Adoption | 18 | 16.7 |
| Impact | 11 | 10.2 |
| Evaluation | 31 | 28.7 |
| Context | 27 | 25.0 |

³ The number of papers published in 2010 did not reflect the whole picture since the paper search was conducted in October 2010.

In the following part, each of these specific research themes is discussed in more detail. Owing to the limited space available, not all papers under review are cited here. Instead, only examples are provided to highlight the identified research themes and sub-themes.

Design/implementation. These papers reported on eGovernment projects (seven papers) and focused on the design and/or implementation of (a) IT/IS artefacts and (b) IT/IS development frameworks. The former reported development of eGovernment applications such as those for eVoting [31], eProcurement [40], eHealth [46], and the national online registration of teachers [69]. Examples of the latter were the eGovernment interoperability framework [56], knowledge-based decision support system [35], eParticipation framework [39], dial-a-gov framework [19], and strategies or principles for the successful design/implementation of eGovernment initiatives [33].

Adoption. Three sub-themes could be identified from the papers in this group, namely (a) determinants, (b) processes, and (c) problems of adoption. The papers that focused on the determinants of eGovernment adoption paid attention to either internal/government perspectives [22, 34] or external/citizen perspectives [2, 6]. The reported determinants included trust [1], ease of use and usefulness [21], and citizen technical readiness [2]. The processes of adoption were studied using various models such as the eGovernment stage model [34] and the technology acceptance/adoption model [22]. Adoption problems included readiness [2] and citizen participation [6].

Impact. In general, the papers in this category focused on (a) developing a framework or an instrument to assess the impacts and (b) assessing the impacts in real settings. Various impacts were either included in the proposed instrument or assessed and they were either harvested by government agencies or enjoyed by citizens. The proposed or reported impacts could generally be viewed from two interrelated perspectives: the breadth of impact and the depth of impact. The former dealt with the impact on affected areas (such as economic [48], social [14]), or affected stakeholders (i.e., government agencies [60], and taxpayers [32]). The latter related to the level of impact, which was more general and comparable. Examples included efficiency [32, 60] and transparency [33, 48].

Evaluation. Some sub-themes were identified here. Some papers reported on the perspectives (i.e., technical, organisational/institutional, and social) used to evaluate eGovernment design/implementation [9, 13, 51], while others dealt with the success/failure

factors of eGovernment initiatives or lessons learned [28]. Examples of technical evaluation mainly related to website analysis [51]. Some papers evaluated eGovernment initiatives from an institutional perspective [9, 13, 57], while others did so from a social perspective [27]. The identified success factors included management support [58], infrastructure readiness [18], user satisfaction [58], and the awareness of local business players [41].

Context. The papers in this group presented or elaborated on the contextual issues of eGovernment implementation. Different perspectives were used, from technical [5], to organisational [17, 26], to social [42, 54] contexts. Examples of the technical context included the quality of IT infrastructure and problem of the digital divide [5]. The organisational issues reported on by these papers included the role of public managers and political leadership [36, 42], managerial decision making [26], and inter-organisational collaboration [17]. The social issues discussed by the papers included corruption [5] and local culture [54].

The papers in this group also identified the contextual promises and perils related to eGovernment implementation. Some papers discussed the opportunities of eGovernment initiatives [15], while others presented the challenges, barriers, and threats [5, 9, 18] that should be considered when implementing eGovernment systems. Examples of the identified opportunities offered by eGovernment initiatives included poverty reduction [5], improved public services [15], increased public participation [54], and corruption eradication [5]. Some contextual challenges were also identified or reported on by the papers. These related, for instance, to legal and administrative issues [50, 54], infrastructural readiness [5, 54], human resource readiness [50], budgeting [54], and corruption [5, 54]. It is worth noting here that in many cases, these opportunities and challenges were intertwined with the three contextual issues mentioned above.

In the following part, the identified research themes are mapped along with their associated research approaches.

3.3. Research approaches

Tables 2, 3, and 4 summarise the research themes that were cross-tabulated respectively with the research foci, the research paradigms, and the knowledge frameworks.

Research focus. In general, the papers with any research theme paid more attention to technical aspects and less to non-technical aspects (i.e., government/organisational and citizen/social aspects) (Table 2). However, a large proportion of the papers that dealt with impact (45.5%) were citizen-centric.

Table 2. Main themes and research focuses

| Theme | Techno-centric | | Government-centric | | Citizen-centric | |
|-----------------------|----------------|------|--------------------|------|-----------------|------|
| | n | % | n | % | n | % |
| Design/implementation | 14 | 66.7 | 2 | 9.5 | 5 | 23.8 |
| Adoption | 10 | 55.6 | 2 | 11.1 | 6 | 33.3 |
| Impact | 4 | 36.4 | 2 | 18.2 | 5 | 45.5 |
| Evaluation | 17 | 54.8 | 9 | 29.0 | 5 | 16.1 |
| Context | 12 | 44.4 | 12 | 44.4 | 3 | 11.1 |
| All | 57 | 52.8 | 27 | 25.0 | 24 | 22.2 |

Table 3. Main themes and research paradigms

| Theme | Positivist | | Interpretive | | Critical | | Unclear | |
|-----------------------|------------|------|--------------|------|----------|-----|---------|------|
| | n | % | n | % | n | % | n | % |
| Design/implementation | 15 | 71.4 | 2 | 9.5 | 0 | 0.0 | 4 | 19.0 |
| Adoption | 12 | 66.7 | 3 | 16.7 | 0 | 0.0 | 3 | 16.7 |
| Impact | 5 | 45.5 | 4 | 36.4 | 0 | 0.0 | 2 | 18.2 |
| Evaluation | 11 | 35.5 | 11 | 35.5 | 2 | 6.5 | 7 | 22.6 |
| Context | 3 | 11.1 | 6 | 22.2 | 1 | 3.7 | 17 | 63.0 |
| All | 46 | 42.6 | 26 | 24.1 | 3 | 2.8 | 33 | 30.6 |

Research paradigm. Positivist research was the dominant paradigm to study the various themes, except the evaluation- and context-related ones (Table 3). Few studies (2.8%) took critical realism as their research paradigms [e.g., 38]. The paradigm employed by 30% of the papers were difficult to identify

Knowledge framework. As regards the knowledge framework used, this study found that only 14.8% of the papers used recognised theories in their studies (Table 4). Further, no single study on the design/implementation of eGovernment used a theory. Examples of the theories used to study eGovernment adoption were the diffusion of innovation theory [62], technology acceptance model [22], and theory of reasoned action [21]. The papers that investigated eGovernment impact used, for instance, the theory of development [14] and intellectual capital theory [29]. Structuration theory was the only theory used by the one paper focusing on the eGovernment context [36], while various theories were used by the papers that dealt with eGovernment evaluation. These included stakeholder theory [13, 27], actor network theory [57], institutional theory [9], and structuration theory [12].

4. Discussion

4.1. Future research agenda

By taking the findings presented above into consideration, future research directions are proposed in the following. These directions are grouped into conceptual, methodological, and (mainly) empirical domains. However, in the discussion, these domains overlap to some extent.

Conceptual domain. From the perspective of the conceptual domain, this study found that most of the research was not sufficiently theoretically grounded. This finding is in concordance with the findings of a previous study by Heeks and Bailur [24]. Possible relevant theories can be proposed here. These include the theory of planned behaviour (especially for studying eGovernment adoption) [3], institutional theory [67] (for studying the adoption of eGovernment initiatives and their associated impacts), actor network theory [25] (for studying the implementation trajectory of eGovernment). Other relevant theories are structuration theory [30] (for studying the duality of technology such as technological artefacts and technology in practice), and stakeholder theory [27] (for studying the role of salient stakeholders and their attributes related to power, legitimacy, and urgency).

Methodological domain. In the methodological domain, researchers should pay more attention to using a research paradigm properly. A positivist stance still dominated the research paradigm used. In general, this paradigm cannot capture the intricate process during various stages of eGovernment implementation. In addition, future research may adopt other paradigms to address this issue. Additional notes are provided below when discussing research directions from an empirical perspective for each theme. More detailed findings from the methodological perspective using the same set of paper was presented elsewhere [61].

Empirical domain. Table 5 summarises the main themes and sub-themes of eGovernment research that emerged from the review. These were not mutually exclusive, but rather intertwined.

Table 4. Main themes and knowledge frameworks

| Theme | Theory | | Framework | | Model | | Scheme | | Concept | | Category | | Unclear | |
|-----------------------|--------|------|-----------|------|-------|------|--------|------|---------|------|----------|------|---------|------|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Design/implementation | 0 | 0.0 | 1 | 4.8 | 0 | 0.0 | 6 | 28.6 | 8 | 38.1 | 3 | 14.3 | 3 | 14.3 |
| Adoption | 6 | 33.3 | 3 | 16.7 | 1 | 5.6 | 0 | 0.0 | 7 | 38.9 | 0 | 0.0 | 1 | 5.3 |
| Impact | 3 | 27.3 | 1 | 9.1 | 2 | 18.2 | 0 | 0.0 | 4 | 36.4 | 0 | 0.0 | 1 | 9.1 |
| Evaluation | 6 | 19.4 | 1 | 3.2 | 4 | 12.9 | 1 | 3.2 | 13 | 41.9 | 4 | 12.9 | 2 | 6.5 |
| Context | 1 | 3.7 | 2 | 7.4 | 2 | 7.4 | 0 | 0.0 | 8 | 29.6 | 8 | 29.6 | 6 | 22.2 |
| All | 16 | 14.8 | 8 | 7.4 | 9 | 8.3 | 7 | 6.5 | 40 | 37.0 | 15 | 13.9 | 13 | 12.0 |

Table 5. Main themes and sub-themes of the eGovernment research

| Main theme | Sub-theme | Description |
|---------------------------|------------------------------------|---|
| Design/ implementation | - IT/IS artefacts | Developing applications for various purposes (such as eVoting and eHealth) |
| | - IT/IS development frameworks | Developing a variety of conceptual frameworks for design/implementation (such as interoperability framework and eParticipation framework) |
| Adoption | - Determinants | Identifying determining factors of adoption (such as trust, ease of use, usefulness, and citizen technical readiness) |
| | - Processes | Explaining adoption using various concepts/models (such as stage model and adoption model) |
| | - Problems | Identifying potential problems related to adoption (such as organizational readiness and citizen participation) |
| Impact | - Instruments/ frameworks | Developing an instrument to measure/assess impact without testing it in a real setting |
| | - Assessments | Using an instrument to assess impact in a real setting |
| Evaluation | - Technical | Evaluating eGovernment initiatives from technical aspects (such as website contents evaluation/analysis) |
| | - Organisational | Conducting evaluation from organizational perspective |
| | - Social | Evaluating implementation of eGovernment initiatives in a social context (such as agriculture market information eService) |
| | - Success/failure factors | Identifying factors that foster or hinder successful design/implementation (such as management support and infrastructure readiness) |
| Context | - Technical/resources | Understanding technical issues in implementation (such as infrastructure and digital divide problems) |
| | - Organisational/ institutional | Understanding organizational issues in implementation (such as the role of political leadership and inter-organisational collaboration) |
| | - Social/cultural | Understanding social/cultural issues in implementation (such as corruption and local culture) |
| | - Opportunities/ prospects | Identifying contextual promises related to implementation (such as poverty reduction and public service improvement) |
| | - Challenges/barriers/ threats | Identifying contextual perils related to implementation (such as human resource readiness and corruption) |

Design/implementation. Most papers that dealt with eGovernment design/implementation took a positivist stance. This indicated that many works were carried out in laboratories without going into the field to involve end-users and to test the system. However, some exceptions were found, such as the study by Kahani [31]. Moreover, none of the studies in this group used a theory. These findings lead to future research avenues.

This theme is important since solution-oriented research is often preferred in the context of developing countries [45]. However, some areas for improvement were identified. Taking the specificity of the context (e.g., by involving end-users/stake-holders and considering local readiness) in such research can improve its relevance, while grounding it in theory can increase its rigor. An emerging method called action design research could be useful in this regard to increase both rigor and relevance [55]. In the context of this theme, action design research addresses problems in design research that “value technological rigor at the cost of organizational relevance and fail to recognize that the artifact emerges from interaction with the organizational context even when its initial design is guided by the researchers’ intent.” [55:37].

Adoption. This study found that most of the papers in this group focused on answering *what* questions (as indicated by a positivist stance) and tended to be

techno-centric. Future research could be focused on addressing *how* and *why* questions, too.

Although an adoption model, for instance, is useful to identify adoption determinants, applying it mechanistically rarely provides richer insights [3]. The adoption of eGovernment is a political decision; hence, it is infrequently immune from political interest. The decision is rarely straightforward and it rather goes through an intricate process involving various actors with diverse interests [63]. The papers dealing with the issue of eGovernment adoption from an organisational perspective are limited (see Table 2).

Thus, more research on the adoption process in an organisational context is needed. Positivist research seems to find it difficult to capture this phenomenon. Instead, an interpretive stance is preferable. Thus, relevant theories (as exemplified above) may be adopted to provide a better understanding of the phenomenon under study.

Given the facts that various adoption determinants of adoption were identified and a variety of problems emerged, future research can pay more attention to identify conditions/circumstances in which certain factors are determining or specific problems are emerging during the adoption process. This can be done, for example, by synthesizing studies on adoption from diverse contexts.

Impact. This study found that only 10.2% of sample papers studied eGovernment impact. More

specifically, only a few reported on the real impact of eGovernment, despite the fact that many described the various expected impacts. Assessing impact is therefore another important research avenue. The main question here is have eGovernment initiatives lived up to their promises. Assessing the impact of eGovernment is one of the most challenging issues in eGovernment research [4, 37, 49].

However, to provide a good basis for such research, another challenging issue here is theorising eGovernment impacts. These impacts could be seen from their tangibility, measurability, and magnitude (breadth vs. depth), but at the same time the context specificity for developing countries should also be taken into account.

Evaluation. This theme showed a strong connection with the design/implementation theme, since as mentioned before, the papers in this group focused on the evaluation of the design/implementation of eGovernment systems. The papers in this group represented the largest proportion (28.7%). However, this study found that the approaches used were mainly techno-centric and only limited attention was paid to organisational and social aspects (see Table 2). The number of papers that took advantage of theories to improve the quality of research was also limited. The study further found that generally evaluation was separated from the design/implementation phase.

Hence, possible future research directions can be proposed. First, evaluation should not be separated from the design/implementation phase. Again, action design research is a relevant method here [55]. Another appropriate research method is longitudinal study, since the evaluation of the design/implementation of eGovernment is not straightforward, and in many cases takes some time to be useful. Second, a more comprehensive evaluation is needed beyond the techno-centric approach. Third, to improve our understanding of the evaluation process, researchers should ground their studies in relevant theories.

Context. Although one-quarter (25.0%) of the papers dealt with the contextual issues of eGovernment, some observations could be provided here. The research paradigms of the vast majority (63.0%) were unclear. Further, more than half (54.8%) of studies were techno-centric, while only one study used a theory (i.e., structuration theory). These findings lead to future research avenues.

First, more attention should be paid to the use of research paradigms appropriately and properly. As can be seen in Table 4, the research paradigms of 63.0% of the papers addressed this theme were unclear. Second, future research should address more on social contextual issues (see Table 2). For example, only a few papers dealt with the legal aspect of eGovernment. Third, grounding the research in relevant theories (as exemplified above) can help explain the context better and improve research quality (see Table 4). Fourth, due to the facts that different studies identified various contextual issues, future research can pay more attention to identify circumstances in which certain contextual issues are more influential than others. Future research can synthesize previous studies and take the diversities of developing countries/contextual issues into account.

Future research directions from the perspective of empirical domains are summarised in Table 6.

4.2. eGovernment research in developing versus developed countries

Does the picture from this study differ from the one from the context of developed countries? Out of the 13 themes proposed by Dawes [11], only mission orientation theme was rated more important in Asia and the developing world than elsewhere. Moreover, many of eGovernment projects in developing countries are sponsored by international aid agencies and involve ‘transfer of knowledge’ from developed countries.

Table 6. Future eGovernment research directions

| Theme | Future research |
|-----------------------|--|
| Design/implementation | <ul style="list-style-type: none"> - Considering the specificity of the context (such as by involving end-users/stakeholders and local readiness) - Incorporating evaluation in the design/implementation phase |
| Adoption | <ul style="list-style-type: none"> - Paying more attention to the adoption process (i.e., decision making, resource mobilisation, strategy, role of key actors/stakeholders) - Addressing how and why questions in addition to what questions (e.g., by adopting interpretive research paradigms) - Identifying conditions/circumstances in which certain factors are determining or specific problems are emerging (e.g., by synthesizing studies on adoption) |
| Impact | <ul style="list-style-type: none"> - Theorising impacts (such as tangibility, measurability, and magnitude) - Taking the specificity (such as scale and time-space) of the context into account when developing instruments/frameworks to assess impact |
| Evaluation | <ul style="list-style-type: none"> - Conducting a more comprehensive evaluation, beyond a techno-centric approach - Integrating evaluation with the design/implementation phase |
| Context | <ul style="list-style-type: none"> - Paying more attention to organisational and social contextual issues - Identifying conditions/circumstances in which certain contextual issues are more determining than others (by taking the diversities of developing countries/contextual issues into account) |

In general, the eGovernment development in developing countries lag behind [59]. To provide insight on the similarities and differences between eGovernment researches between the two contexts, some publications might be used as references [e.g., 11, 20, 68].

First, themes of eGovernment research in developed countries are more 'advanced'. For example, online service delivery are still dominating eGovernment research in the context of developing countries (see Table 2) which in the developed countries this issues is termed as 'the end of history' of eGovernment [20]. Many developing countries are still struggling to provide such service to their citizens, instead they establish 'service points' to enable citizens to access eGovernment services [see e.g., 18].

Second, themes of eGovernment research in developed countries are more 'specific and focused'. This is indicated by several focused themes such as trust, information quality, data privacy, personal identity, and intelligent information [11, 68]. These themes are difficult to find in the literature of eGovernment in the context of developing countries.

Third, although eGovernment research in both contexts pay attention to assessment of value or impact or eGovernment [68], differences are found. Contextual problems explain these differences. For example, in the context of developing countries, corruption eradication and poverty alleviation are often cited as the expected impact, while this is not the case in the context of developed countries.

A more careful investigation is needed to provide a clearer picture. Differences between the two contexts could be used as point of departure [8].

5. Concluding remarks

This paper mapped the themes of eGovernment research in developing countries published between 2005 and 2010. The review was based on a granular categorisation that consisted of five main themes: design/implementation, adoption, impact, evaluation, and context. However, specific sub-themes also emerged during the review process.

The main contributions of this paper are twofold. First, it provides a current picture of the research themes on eGovernment in the context of developing countries. Second, it proposes future research directions in the empirical, conceptual, and methodological domains, which may guide the continued investigation of eGovernment implementation in such contexts.

This study suffers from some limitations. First, it only focused on the literature published between 2005 and 2010. Extending the timeframe may provide a

better picture. Second, the validity of the study may be questionable, since only a single coder involved. Similar studies should use more than one coder to improve validity, if possible.

References

- [1] Avgerou, C., Ganzaroli, A., Poulymenakou, A., and Reinhard, N., "Interpreting the Trustworthiness of Government Mediated by Information and Communication Technology: Lessons from Electronic Voting in Brazil", *Information Technology for Development*, 15(1), 2009, pp. 133-148.
- [2] Awolaye, M., Oluwaranti, A., Siyanbola, W., and Adagunodo, R., "Assessment of E-Governance Resource Use in South-Western Nigeria", *Proceedings of the 2nd International Conference on Theory and Practice of Electronic Governance (ICEGOV '08)*, 2008, pp. 154-159.
- [3] Benbasat, I., and Barki, H., "Quo Vadis, Tam?", *Journal of the Association for Information Systems*, 8(4), 2007, pp. 211-218.
- [4] Bhatnagar, S.C., and Singh, N., "Assessing the Impact of E-Government: A Study of Projects in India", *Information Technologies & International Development*, 6(2), 2010, pp. 109-127.
- [5] Bhuiyan, S.H., "E-Government in Kazakhstan: Challenges and Its Role to Development", *Public Organization Review*, 10(1), 2010, pp. 31-47.
- [6] Chen, D.-Y., Huang, T.-Y., and Hsiao, N., "Reinventing Government through on-Line Citizen Involvement in the Developing World: A Case Study of Taipei City Mayor's E-Mail Box in Taiwan", *Public Administration & Development*, 26(5), 2006, pp. 409-423.
- [7] Chen, W., and Hirschheim, R., "A Paradigmatic and Methodological Examination of Information Systems Research from 1991 to 2001", *Information Systems Journal*, 14(3), 2004, pp. 197-235.
- [8] Chen, Y.N., Chen, H.M., Huang, W., and Ching, R.K.H., "E-Government Strategies in Developed and Developing Countries: An Implementation Framework and Case Study", *Journal of Global Information Management*, 14(1), 2006, pp. 23-46.
- [9] Ciborra, C., and Navarra, D.D., "Good Governance, Development Theory, and Aid Policy: Risks and Challenges of E-Government in Jordan", *Information Technology for Development*, 11(2), 2005, pp. 141-159.
- [10] Dada, D., "The Failure of E-Government in Developing Countries: A Literature Review", *The Electronic Journal on Information Systems in Developing Countries*, 26(7), 2006, pp. 1-10.
- [11] Dawes, S.S., "An Exploratory Framework for Future E-Government Research Investments", *Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS 2008)*, 2008, pp. 1-8.
- [12] De', R., "Caste Structures and E-Governance in a Developing Country", in (Wimmer, M.A., Scholl, H.J., Janssen, M., and Traunmüller, R., 'eds.'): *Electronic Government*, Springer, Berlin, 2009, pp. 40-53.
- [13] De', R., "E-Government Systems in Developing Countries: Stakeholders and Conflict", in (Wimmer, M.A.,

- Traunmüller, R., Grönlund, Å., and Andersen, K.V., 'eds.'): *Electronic Government*, Springer, Berlin, 2005, pp. 26-37.
- [14] De', R., "Evaluation of E-Government Systems: Project Assessment Vs Development Assessment", in (Wimmer, M.A., Scholl, H.J., Grönlund, Å., and Andersen, K.V., 'eds.'): *Electronic Government*, Springer, Berlin, 2006, pp. 317-328.
- [15] Dode, R.O., "Prospects of E-Government Implementation in Nigeria", *Proceedings of the 1st International Conference on Theory and Practice of Electronic Governance (ICEGOV '07)*, 2007, pp. 380-383.
- [16] Esteves, J., and Pastor, J., "An Erp Lifecycle-Based Research Agenda", *Proceedings of the 1st International Workshop on Enterprise Management Resource and Planning Systems (EMRPS) 1999*, 1999, pp. 359-371.
- [17] Ezz, I.E., and Papazafeiropoulou, A., "Inter-Organisational Collaboration Towards Process Integration in the Public Sector: E-Government Collaboration in Egypt", *Proceedings of the 39th Hawaii International Conference on System Sciences (HICSS '06)*, 2006, pp. 1-10.
- [18] Furuholt, B., and Wahid, F., "E-Government Challenges and the Role of Political Leadership in Indonesia: The Case of Sragen", *Proceedings of the 41st Hawaii International Conference on System Sciences (HICSS 2008)*, 2008, pp. 1-10.
- [19] Galpaya, H., Samarajiva, R., and Soysa, S., "Taking E-Government to the Bottom of the Pyramid: Dial-a-Gov?", *Proceedings of the 1st International Conference on Theory and Practice of Electronic Governance (ICEGOV '07)*, 2007, pp. 233-241.
- [20] Grönlund, Å., "Ten Years of E-Government: The 'End of History' and New Beginning", in (Wimmer, M.A., Chappelet, J.-L., Janssen, M., and Scholl, H.J., 'eds.'): *Electronic Government*, Springer, Berlin, 2010, pp. 13-24.
- [21] Hamner, M., and Al-Qahtani, F., "Enhancing the Case for Electronic Government in Developing Nations: A People-Centric Study Focused in Saudi Arabia", *Government Information Quarterly*, 26(1), 2009, pp. 137-143.
- [22] Hamner, M., and Qazi, R.-U.-R., "Expanding the Technology Acceptance Model to Examine Personal Computing Technology Utilization in Government Agencies in Developing Countries", *Government Information Quarterly*, 26(1), 2009, pp. 128-136.
- [23] Hedström, K., and Grönlund, Å., "The Quest for Development – Reviewing Ict4d Research", *Proceedings of the 1st Annual SIG GlobDev Workshop*, 2008.
- [24] Heeks, R., and Bailur, S., "Analyzing E-Government Research: Perspectives, Philosophies, Theories, Methods, and Practice", *Government Information Quarterly*, 24(2), 2007, pp. 243-265.
- [25] Heeks, R., and Stanforth, C., "Understanding E-Government Project Trajectories from an Actor-Network Perspective", *European Journal of Information Systems*, 16(2), 2007, pp. 165-177.
- [26] Hussein, R., Karim, N.S.A., Mohamed, N., and Ahlan, A.R., "The Influence of Organizational Factors on Information Systems Success in E-Government Agencies in Malaysia", *The Electronic Journal on Information Systems in Developing Countries*, 29(1), 2007, pp. 1-17.
- [27] Islam, M.S., and Grönlund, Å., "Agriculture Market Information E-Service in Bangladesh: A Stakeholder-Oriented Case Analysis", in (Wimmer, M.A., Scholl, H.J., and Grönlund, Å., 'eds.'): *Electronic Government*, Springer, Berlin, 2007, pp. 167-178.
- [28] Islam, M.S., and Grönlund, Å., "The Bangladesh National Biometric Database: A Transferable Success?", in (Andersen, K.N., Francesconi, E., Grönlund, Å., and Engers, T.M.V., 'eds.'): *Electronic Government and the Information Systems Perspective*, Springer, Berlin, 2010, pp. 189-203.
- [29] Joia, L.A., "Assessing the Intangible Value of G2g Endeavours", in (Wimmer, M.A., Scholl, H.J., Grönlund, Å., and Andersen, K.V., 'eds.'): *Electronic Government*, Springer, Berlin, 2006, pp. 305-316.
- [30] Jones, M.R., and Karsten, H., "Giddens's Structuration Theory and Information Systems Research", *MIS Quarterly*, 32(1), 2008, pp. 127-157.
- [31] Kahani, M., "Experiencing Small-Scale E-Democracy in Iran", *The Electronic Journal on Information Systems in Developing Countries*, 22(5), 2005, pp. 1-9.
- [32] Kettani, D., and Mahdi, A.E., "Back Office Integration Issues in Developing Country Context: Lessons Learned from a Case Study in Morocco", *Proceedings of the 2nd International Conference on Theory and Practice of Electronic Governance (ICEGOV '08)*, 2008, pp. 367-372.
- [33] Kettani, D., Moulin, B., Gurstein, M., and Mahdi, A.E., "E-Government and Local Good Governance: A Pilot Project in Fez, Morocco", *The Electronic Journal on Information Systems in Developing Countries*, 35(1), 2008, pp. 1-18.
- [34] Lau, T.Y., Aboulhosen, M., Lin, C., and Atkin, D.J., "Adoption of E-Government in Three Latin American Countries: Argentina, Brazil and Mexico", *Telecommunications Policy*, 32(2), 2008, pp. 88-100.
- [35] Liao, S.-H., and Jeng, H.-P., "E-Government Implementation: Business Contract Legal Support for Taiwanese Businessmen in Mainland China", *Government Information Quarterly*, 22(3), 2005, pp. 505-524.
- [36] Luo, G., "E-Government, People and Social Change: A Case Study in China", *The Electronic Journal on Information Systems in Developing Countries*, 38(3), 2009, pp. 1-23.
- [37] Madon, S., "Evaluating the Developmental Impact of E-Governance Initiatives: An Exploratory Framework", *Electronic Journal of Information Systems in Developing Countries*, 20(5), 2004, pp. 1-13.
- [38] Maumbe, B.M., Owei, V., and Alexander, H., "Questioning the Pace and Pathway of E-Government Development in Africa: A Case Study of South Africa's Cape Gateway Project", *Government Information Quarterly*, 25(4), 2008, pp. 757-777.
- [39] Miah, S.J., Gammack, J., and Greenfield, G., "An Infrastructure for Implementing E-Participation Services in Developing Countries", *Proceedings of the 3rd IEEE International Conference on Digital Ecosystems and Technologies (DEST '09)*, 2009, pp. 407-411.
- [40] Milovanovic, M., Bogicevic, M., Lazovic, M., Simic, D., and Starcevic, D., "Choosing Authentication Techniques in E-Procurement System in Serbia", *Proceedings of International Conference on Availability, Reliability, and Security (ARES '10)*, 2010, pp. 374-379.
- [41] Mitrovic, Z., and Bytheway, A., "Awareness of E-Government Related Small Business Development Services in Cape Town", *The Electronic Journal on Information Systems in Developing Countries*, 4(1), 2009, pp. 1-14.

- [42] Mwangi, W., "The Social Relations of E-Government Diffusion in Developing Countries: The Case of Rwanda", *Proceedings of the 2006 International Conference on Digital Government Research (dg.o '06)*, 2006, pp. 199-208.
- [43] Myers, M.D., "Qualitative Research in Information Systems", *MIS Quarterly*, 21(2), 1997, pp. 241-242.
- [44] Myers, M.D., and Klein, H.K., "A Set of Principles for Conducting Critical Research in Information Systems", *MIS Quarterly*, 35(1), 2011, pp. 17-36.
- [45] Negash, S., Anteneh, S., and Watson, R.T., "A Phd in Information Systems for Emerging Economies: The Addis Ababa University Model", *Information Technology for Development*, 18(3), 2011, pp. 270-276.
- [46] Nishantha, G.G.D., Uchida, Y., Cassim, M., Weerasinghe, J., Gunawardana, G., Hayashida, Y., and Goto, M., "Towards a Sustainable E-Health Deployment: An Integrated Medical Information System for Sri Lankan Case", *Proceedings of the 3rd International Conference on Pervasive Computing Technologies for Healthcare*, 2009, pp. 1-4.
- [47] Orlikowski, W.J., and Baroudi, J.J., "Studying Information Technology in Organizations: Research Approaches and Assumptions", *Information Systems Research*, 2(1), 1991, pp. 1-28.
- [48] Ouyang, Z., "The Epitome of Middle City's E-Government in China: Quanzhou", *Proceedings of the 7th International Conference on Electronic Commerce (ICEC '05)*, 2005, pp. 505-513.
- [49] Peters, R.M., Janssen, M., and Van Engers, T.M., "Measurement of E-Government Impact: Existing Practices and Shortcomings", *Proceedings of the 6th International Conference on Electronic Commerce (ICEC '04)*, 2004, pp. 480-488.
- [50] Rakhmanov, E., "The Barriers Affecting E-Government Development in Uzbekistan", *Proceedings of the Fourth International Conference on Computer Sciences and Convergence Information Technology (ICCIT '09)*, 2009, pp. 1474-1480.
- [51] Rorissa, A., Gharawi, M., and Demissie, D., "A Tale of Two Continents: Contents of African and Asian E-Government Websites", *Proceedings of the 43rd Hawaii International Conference on System Sciences (HICSS '10)*, 2010, pp. 1-9.
- [52] Sahraoui, S., "E-Inclusion as a Further Stage of E-Government?", *Transforming Government: People, Process and Policy*, 1(1), 2007, pp. 44-58.
- [53] Scholl, H.J., "Central Research Questions in E-Government, or Which Trajectory Should the Study Domain Take?", *Transforming Government: Process, People, Policy*, 1(1), 2007, pp. 67-88.
- [54] Schuppan, T., "E-Government in Developing Countries: Experiences from Sub-Saharan Africa", *Government Information Quarterly*, 26(1), 2009, pp. 118-127.
- [55] Sein, M.K., Henfridsson, O., Purao, S., Rossi, M., and Lindgren, R., "Action Design Research", *MIS Quarterly*, 35(1), 2011, pp. 37-56.
- [56] Shvaiko, P., Villafiorita, A., Zorer, A., Chemane, L., Fumo, T., and Hinkkanen, J., "Egif4m: Egovernment Interoperability Framework for Mozambique", in (Wimmer, M.A., Scholl, H.J., Janssen, M., and Traunmüller, R., 'eds.'): *Electronic Government*, Springer, Berlin, 2009, pp. 328-340.
- [57] Stanforth, C., "Using Actor-Network Theory to Analyze E-Government Implementation in Developing Countries", *Information Technologies & International Development*, 3(2), 2007, pp. 35-60.
- [58] Tadros, I., Hammami, S., and Al-Zoubi, K., "Government Resources Planning and User Satisfaction for Jordan E-Government", *Proceedings of the 3rd International Conference on Information and Communication Technologies: From Theory to Applications (ICTTA 2008)*, 2008, pp. 1-7.
- [59] United Nations, *United Nations E-Government Survey 2010: Leveraging E-Government at a Time of Financial and Economic Crisis*, United Nations, New York, 2010.
- [60] Waema, T.M., and Mitullah, W., "E-Governance and Governance: A Case Study of the Assessment of the Effects of Integrated Financial Management System on Good Governance in Two Municipal Councils in Kenya", *Proceedings of the 1st International Conference on Theory and Practice of Electronic Governance (ICEGOV '07)*, 2007, pp. 263-268.
- [61] Wahid, F., "The Current State of Research on Egovernment in Developing Countries: A Literature Review", in (Scholl, H.J., Janssen, M., Wimmer, M.A., Moe, C.E., and Flak, L.S., 'eds.'): *Egov 2012, Lecture Notes in Computer Science*, Springer-Verlag, Berlin Heidelberg, 2012, pp. 1-12.
- [62] Wahid, F., "Examining Adoption of E-Procurement in Public Sector Using the Perceived Characteristics of Innovating: Indonesian Perspective", in (Sideridis, A.B., and Patrikakis, C.Z., 'eds.'): *Lnicst: E-Democracy 2009*, Springer, Berlin, 2010, pp. 64-75.
- [63] Wahid, F., "Institutionalization of Eprocurement in Developing Countries: A Case Study from Indonesian Local Government", *Proceedings of the Transforming Government Workshop 2012*, 2012.
- [64] Walsham, G., *Interpreting Information Systems in Organizations*, Wiley, Chichester, 1993.
- [65] Walsham, G., and Sahay, S., "Research on Information Systems in Developing Countries: Current Landscape and Future Prospects", *Information Technology for Development*, 12(1), 2006, pp. 17-24.
- [66] Webster, J., and Watson, R.T., "Analyzing the Past to Prepare for the Future: Writing a Literature Review", *MIS Quarterly*, 26(2), 2002, pp. xiii-xxiii.
- [67] Weerakkody, V., Dwivedi, Y.K., and Irani, Z., "The Diffusion and Use of Institutional Theory: A Cross-Disciplinary Longitudinal Literature Survey", *Journal of Information Technology*, 24(4), 2009, pp. 354-368.
- [68] Wimmer, M., Codagnone, C., and Janssen, M., "Future E-Government Research: 13 Research Themes Identified in the Egovrtd2020 Project", *Proceedings of the 41st Hawaii International Conference on System Sciences (HICSS)*, 2008.
- [69] Wokocho, A.M., and Nwokeocha, S., "E-Governance: Lessons from the Capacity Building Project and Online Registration of Teachers in Nigeria", *Proceedings of the 3rd International Conference on Theory and Practice of Electronic Governance (ICEGOV '09)*, 2009, pp. 265-270.