



# A structured analysis of e-government studies: Trends and opportunities



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## ABSTRACT

E-government involves the use of information and communications technology to facilitate government interaction with citizens, employees, businesses and other governments. E-government studies provide a platform to examine prior developments, and explore future opportunities in the field. This paper presents a theoretical model for the analysis of e-government studies and further uses a bibliometric analysis to examine constructs such as theoretical perspectives, methods, and units of analyses. We examine current trends in e-government research, and discuss emerging opportunities.

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## 1. Introduction

The primary function of e-government is to support communication between governments and citizens via web-enabled computer technologies (Evans & Yen, 2006). E-government uses technology to support a government's interaction with multiple stakeholders including employees, businesses, and other government agencies. E-government projects can be differentiated into categories based on the stakeholder involved. The four main categories of e-government are government to citizen (G2C), government to business (G2B), government to employee (G2E), and government to government (G2G). Each of the above categories highlights the specific stakeholder that interacts with a government. E-government can be classified based on primary stakeholders as described above, or based on different levels of government such as local, state, or federal. Other global classifications for e-government can occur at levels such as municipal, county, country blocs, or regions.

The mid 1990s witnessed the dawn of e-government, essentially driven by growth and development of internet-based technologies and electronic commerce. Countries such as the United States, the United Kingdom, and Australia lead the way in facilitating more immediate and effective communication between a government and its constituents (Lee, Tan, & Trimi, 2005). The twenty-first century gave rise to increased attention to the transformative powers of e-government. Terms such as e-voting, e-governance, e-democracy and m-government are emerging as key evolutionary constituents in the e-government domain. Naturally, as research moves forward in this inter-disciplinary field many new and challenging questions arise.

This study examines the current state of e-government studies, specifically in the areas around research methods and contextual variables that affect the projects. These contextual variables include

number of methods used, units of analysis, region of study, and focus of the study. These parameters provide an empirical context to evaluate the state of e-government studies. The primary research question in this study focuses on research methods in the area of e-government. An exploration of what methods and underlying methodologies are being used in e-government can serve to extend the body of knowledge in the field. Insights from the past can provide direction and guidance to future studies in the field. The secondary research question examines what other contextual constraints have defined e-government studies in the period 2005–2010. As a rich emerging area for research and practice, e-government studies utilize a variety of theories, concepts, and methods in the pursuit of solving unanswered questions.

A study of 110 peer reviewed articles acquired from different journals in the e-government literature found that 24% of the studies focused on conceptualization, 18% on technology diffusion, 34% on e-service, and 25% on e-democracy (Andersen & Henriksen, 2005). This indicates that almost one quarter of all e-government studies have focused on conceptual modeling. Another study using a single journal as its source for analysis also found that the majority of e-government papers were conceptual in nature, followed by the use of case studies (Dwivedi, 2009). A third study examined 73 articles in the period 1999–2005 to produce a multidimensional model to identify determinants, characteristic, and results of e-government (Luna-Reyes, Gil-Garcia, & Romero, 2012). The past focus on theory building papers might be directly attributed to the youthfulness of the e-government field. The earliest noted reference of the term “e-government” dates back to only 1997 (Heeks & Bailur, 2007). As part of the evolutionary development of the field a punctuated analysis of e-government studies can provide insights about the direction(s) that the field is moving in.

This paper provides a time sensitive checkpoint analysis on the state of e-government research. This self-evaluation can be a very useful tool in an emerging discipline such as e-government. Following the

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introduction we present an overview of the current state of e-government. This is followed by a theoretical model to empirically test the two related research questions listed below:

1. What are the primary research methods and methodologies in current e-government research?
2. What are the contextual factors that constrain e-government research?

This is followed by an explanation of the methodology employed in this study. The results, discussion, research implications, limitations and recommendations follow. We end the paper with a succinct conclusion.

## 2. The current state of e-government

E-government is an emerging and developing field. From a practical perspective many governments have identified the value of interacting electronically with key stakeholders, and undertaking a variety of e-government projects. These projects are identified at a variety of levels. A recent study by the United Nations has shown that many emerging economies are making positive strides to develop their e-government capabilities (UNPAN, 2008).

Given global financial challenges funding of e-government projects may have been cut or modified due to limited funds. Countries and regions that are facing financial austerity and political upheavals may also make strategic decisions regarding e-government project funding. As such, e-government is one of the unique fields with both real time practical and research implications. One question in this field seems to be whether practice is driving the research or is research driving the practice?

From the research side of the equation there is no single dominant theme in e-government. The field is as diverse as possible. A mere inventory of where e-government research is being conducted ranges from Business Schools, Political Science Departments, Public Policy Groups and Social Engineers. This fact in itself sheds some light on the difficulty in capturing a clear path of where the discipline is going, or what factors are driving and affecting research foci.

## 3. Theoretical framework

This study is framed along two theoretical perspectives. The first part of the theoretical framework discusses the underlying philosophical concepts used to classify research studies. The second theory framing this study is the bounded rational which identifies that decision making, such as selecting the elements of a research project, occurs in a constrained environment and does not necessarily result in the selection of the optimal decision.

For a research proposal four distinct elements exist: epistemology which refers to the origin of knowledge; theoretical perspective which refers to the philosophical basis for research; methodology which refers to the strategic plan for the research; and methods which are the specific procedures followed (Crotty, 2003). Specific examples for each of the four listed categories are: epistemology – objectivism, constructionism; theoretical perspective – positivism, interpretivism; methodology – experiment, survey; methods – questionnaire, case study (Crotty, 2003).

From a research perspective the selection of a research method is largely dictated by a set of research questions. Methods refer to the specific tools that are used for data collection, while the methodology is a broader more encompassing construct that identifies both an overall plan and the reasoning behind the selection of the methods. Epistemology refers to the nature and origin of human knowledge, while the term ontology deals with the nature of being (dictionary.com, 2009). For the purposes of this study, we exclude a discussion on ontology due to its metaphysical realm and initiate the discussion from the point of epistemology. As examples of epistemology, objectivism sees the world as holding a set of unmistakable truths, while

constructionism sees multiple perspectives of the world based on the meanings that people discover (Crotty, 2003).

The quantitative–qualitative dichotomy is ever present in research discussions. Crotty (2003) states that the discussion between quantitative and qualitative research does not occur at an epistemology or theoretical perspective level, but instead at the method level. Crotty (2003) further argues that there is limited justification for the association of quantitative methods with positivism, and the association of qualitative methods with interpretivism. In fact, it is entirely feasible to conduct a positivist case study (Weber, 2004; Yin, 1994). However, researchers who employ quantitative methods typically have a positivist perspective originating from objectivism; while those who employ qualitative methods typically have a constructivist perspective; and lastly there is a third group of researchers who employ mixed methodologies incorporating both quantitative and qualitative methods (Teddlie & Tashakkori, 2009). This study focuses on the background of research studies conducted in the field of e-government.

Bounded rational indicates that the rational decision making process is constrained by both 1. limited search and 2. inadequate information and control, that results in a satisfying rather than optimal outcome (Hellriegel & Slocum, 2008). For any research study, the researchers make decisions about many different elements including the selection of appropriate methods, units of analyses, duration of study, and types of data. Based on the bounded rational theory many of the elements that make up the research study are selected in a constrained environment and the end result is the choice of an acceptable alternative, and not necessarily the optimal one. Additionally, the researcher's underlying theoretical perspective can drive the strategic planning for a research project and ultimately the selection of appropriate methods and other tools needed to complete the study. As with any research project the researcher is further constrained by various factors such as time, money, access to information, knowledge of subject, support and other tangible and intangible variables.

## 4. Methodology

One way to effectively analyze the methodological preferences and supporting contextual factors in e-government research is to conduct a structured analysis of published articles via a bibliometric study. Bibliometric studies examine artifacts such as research notes, conference proceedings, journal articles, and databases to collect and analyze documents on a particular subject area (Schneider & Borlund, 2004). Some bibliometric studies use specific bibliometric databases and citation databases for data collection. To minimize the inherent challenges of the lack of consistency of findings, and to counter the inclusion/exclusion of specific articles, a broad enough time frame along with multiple data sources should be considered when utilizing a bibliometric research method (Frandsen & Nicolaisen, 2008). Consequently, this study focuses on the trends in the time period 2005–2010.

The information systems literature contains several instances of classifications for research methods (Vessey, Ramesh, & Glass, 2005). Vessey et al. (2005) identified nineteen different research methods that were applicable to studies housed under the broad umbrella of computing disciplines. This research will not characterize or attempt to characterize the underlying epistemology of any of the studies that are examined. The primary reason for this exclusion is that authors do not always clearly articulate their perspective in a single paper, and this would require unnecessary speculation and conjecture. Titah and Barki (2006) used several sources including varying journals and databases to examine e-government studies (Titah & Barki, 2006). A more recent study used a single journal as the data source to analyze its publication of e-government articles (Dwivedi, 2009). The articles cited above indicate that both single and multiple sources have been used in prior studies to evaluate a single research topic.

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