International E-Government Development

Policy, Implementation and Best Practice

Edited by Laura Alcaide Muñoz
and Manuel Pedro Rodríguez Bolívar

International E-Government Development

Laura Alcaide Muñoz
Manuel Pedro Rodríguez Bolívar
Editors

International E-Government Development

Policy, Implementation and Best Practice

palgrave
macmillan

Editors
Laura Alcaide Muñoz
Department of Accounting
and Finance
University of Granada
Granada, Spain

Manuel Pedro Rodríguez Bolívar
Department of Accounting
and Finance
University of Granada
Granada, Spain

ISBN 978-3-319-63283-4 ISBN 978-3-319-63284-1 (eBook)
DOI 10.1007/978-3-319-63284-1

Library of Congress Control Number: 2017953876

Printed on acid-free paper

Credit: cofotoisme / iStock / Getty Images Plus

This Palgrave Macmillan imprint is published by Springer Nature
The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Foreword

Challenges and Best-practices: Overcoming the Barriers to a Successful Implementation of E-government

During recent decades, e-government initiatives have spread all over the world. Countries in all regions are increasingly embracing innovation and using Information and Communication Technologies (ICTs) to deliver services and engage people in decision-making processes (UN 2016). The efforts, through funding programs, guidelines, studies and policies of international organizations, by the World Bank, the Organization for Economic Co-operation and Development, the International Monetary Fund and the United Nations, highlight the importance of e-government for developed and developing countries. Through advanced electronic and mobile services, e-government aims at improving the relationship between people and their government; making public services delivery more effective, accessible and responsive to people's needs; increasing participation in decision-making and making public institutions more transparent and accountable (UN 2016).

However, as in many other public administration reforms, e-government initiatives can fail to achieve their objectives. Ndou (2004) argues that these failures are due to a lack of understanding of the concept of e-government, while Alcaide and Rodríguez, in Chap. 1, show that there may be also a lack of a clear e-government strategy. At the same time, probably linked to the latter, there are often insufficient mechanisms to measure the effectiveness of e-government initiatives (Rodriguez-Bolivar

2014). Moreover, ICTs and e-government usually come with an additional barrier or challenge, namely, the digital gap.

Besides these barriers, both the developed and developing world are taking steps towards ICT implementation, and e-government initiatives are reaching higher levels of sophistication and maturity. Thus, in this rapidly changing environment, there is a need for governments to take a step back and rethink their e-government aims and strategies. ICTs and e-government require an integrated approach to public policy which would help governments to avoid failures and confront the barriers and risks of e-government. Making clear that e-government should be more than just adding the "e" and that it requires planning and resources, this book provides a comprehensive view of e-government practices around the world along with answers and tools for success. The editors have posed and solved some of the key questions that an e-government strategy should address.

Government readiness varies across nations (UN 2016). Decisions about e-government strategies should take readiness as their starting point. The roles of organizational structures and processes, investment in infrastructures and citizen training are acknowledged in Chap. 1 as part of the strategic planning process of e-government initiatives. Chapter 2 shows that e-government is not only about the readiness of developed and developing countries but also about creating a collaborative research framework that may lead to a better diffusion of best practices and their feasibility. Chapter 3 illustrates the trade-offs between tradition and innovation and between law and ICTs, acknowledging that certain settings, such as justice, require an even more careful definition of what e-government is for and how it can be implemented. It has been argued that an enabling legal framework is essential for e-government (Gasco 2005). This chapter also shows that law and e-government sometimes require a mutual adaptation. The last chapter of the first section, Chap. 4, not only emphasizes the role of e-government in citizen engagement but also highlights how readiness in this field requires training both citizens and leaders/decision-makers. To deal with new decision-making environments, a consensus about the changing role of politicians and managers is necessary.

Each nation has a different level of e-government scope and density (Kahill 2011), but these variations are also found between regions and local governments within the same country. This variety means that there are a large number of experiences to learn from and also provides the adequate setting to test potential barriers and to identify explanatory factors and cultural influences. In the second section, this book assumes the

challenge of identifying the explanatory factors that should be used for future reforms to determine the strengths and weaknesses of an organization when implementing e-government initiatives. This section not only highlights the importance of a strategy but also provides a list of barriers that should be carefully dealt with. Chapter 5 shows the importance of privacy issues, while it addresses the problems of legal stability within the rapid changing environment of ICTs. Factors affecting the development of ICTs, such as economic levels, location, corruption, the digital divide, leadership, organizational culture and integration, are discussed in Chaps. 5, 6 and 7 showing their effects in Asia and Latin America. This section ends with Chap. 8 that includes an analysis of the preconditions for success and indicates the steps to be followed in the implementation of e-government, applying the analysis to Africa but providing conclusions that are applicable elsewhere.

After a thoughtful review of existing problems and barriers and of the preconditions for success, there is a need to establish a route to follow and/or the tasks pending for the future. This is done in the last section of the book. Chapter 9 provides an analysis of e-democracy measurement systems, showing clearly that, in order to move forward in this area, additional theoretical work is necessary. As indicated before, e-government is continuously evolving and the co-creation of public value (Chap. 10) and Open Data (Chap. 11) are two ICT-related innovations that require research attention to provide professionals with the adequate knowledge. These two chapters give us both an example of best practices and a series of questions to be answered. The section finishes with the views of the citizens, who are the ultimate target of the e-government reforms but who frequently receive little attention. Chapter 12 gives interesting clues about how transparency in webpages could be linked to improved trust. It also shows the characteristics that the information provided should have to be perceived as valuable.

This book makes a significant contribution to the e-government literature as it provides a thoughtful analysis of existing experiences, shows how to evaluate the readiness of institutions to implement e-government, analyses the key ingredients of successful implementations and the barriers that may hinder this implementation and, finally, suggests questions for future research.

Universidad de Zaragoza
Zaragoza, Spain Ana Yetano

References

United Nations (UN). (2016). United Nations e-Government survey 2008. New York.

Gasco, M. (2005). Exploring the e-Government gap in South America. *International Journal of Public Administration, 28*(1), 15–30.

Khalil, O. E. M. (2011). E-Government readiness: Does national culture matter? *Government Information Quarterly 28*(3), 388–399.

Ndou, V. (2004). E-Government for developing countries: Opportunities and challenges. *Electronic Journal on Information Systems in Developing Countries, 18*, 1–24.

Rodríguez-Bolívar, M. P. (Ed.). (2014). *Measuring e-Government efficiency. The opinions of public administrators and other stakeholders*. Public Administration and Information Technology Series 5, New York: Springer.

Contents

List of Figures

List of Tables

PART I

E-Government Regulations, Guidelines, Code of Best Practices, Programs and Policies of International Organizations

CHAPTER 1

Experiences of E-Government Development Implementation in Developing Countries: Challenges and Solutions

Laura Alcaide Muñoz
and Manuel Pedro Rodríguez Bolívar

1.1 Introduction

In the past decade, many governments have made numerous efforts to innovate the public sector and implement e-government strategic projects, which many of them have adopted successfully while others have fallen by the wayside. These implementations and experiences have been collected in a number of studies and research projects published in different knowledge disciplines (Alcaide Muñoz and Rodríguez Bolívar 2015; Alcaide Muñoz et al. 2014).

Most e-Government research has been focused on developed countries, neglecting the area of developing economics (Rodríguez Bolívar et al. 2016). However, this analysis is of particular importance in developing countries because prior research has indicated that e-Government constitutes a central element in the process of modernizing the public sector (Chan and Chow 2007) and strengthening governance within democratic

L. Alcaide Muñoz (✉) • M.P. Rodríguez Bolívar
University of Granada, Granada, Spain

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_1

societies (Calista and Melitski 2007). In addition, academic studies have indicated that countries which invest more in e-Government achieve larger reductions in levels of corruption than those which do not make such investments (Andersen et al. 2011; Andersen 2009; UNDESA 2016).

In addition, many of these efforts fail because a great deal of e-Government implementations were not carried out in the end, were implemented but immediately abandoned, or were implemented but major goals were not attained and there were undesirable outcomes (Choi et al. 2016). Research in this field of knowledge shows that only an adequate implementation of e-Government, and its subsequent evolution and development, promotes the economic growth of the country (Serenko et al. 2010), especially developing countries (Lee et al. 2011), seeking contexts wherein to build solid structures for participatory democracies (Reddick 2011).

Therefore, the success in the implementation of e-Government is essential, with special attention paid to developing countries, since these countries have a limited number of resources at their disposal and cannot afford to waste the large amounts of money necessary to carry out e-Government projects (Weerakkody et al. 2009). Given the organizational transcendence and support with economic resources and political awareness that involves the adoption and implementation of Information and Communication Technologies (ICTs), knowledge of the conditions and processes of socio-technical change in developing countries acquires general significance for research and practice.

To acquire this knowledge, the analysis of research into e-Government initiatives implementation could be relevant. According to King (2004), the quality and quantity of scholarly publications reflect a nation's scientific wealth and boost its economic prosperity. In fact, there is a positive relationship between the gross domestic product and the volume of scientific research (Serenko et al. 2010), which is particularly apparent in underdeveloped countries (Lee et al. 2011). Nevertheless, previous studies have highlighted that the academic research of information systems in developing countries are poorly understood (Liu and Yuan 2015; Alcaide and Rodríguez 2015). In this regard, we need to examine experiences in the implementation of e-Government in developing countries with the aim of identifying mistakes in order to correct and prevent them in the future. Similarly, it is also relevant to highlight challenges that the political leaders of developing countries have to face in adopting e-Government initiatives.

So, the objective of this chapter is to highlight the challenges, problems and recommended solutions for improving the implementation of e-Government in developing countries in the future, which could help to achieve more transparent, participative and democratic societies. To this end, this chapter is organized as follows. Section 1.2 describes the context and importance of e-Government in developing countries. Then, Section 1.3identifies the limiting factors that hinder the successful implementation of e-Government in developing countries and, examine possible and recommended solutions for preventing failed implementation in the future. Finally, the discussions and conclusions section (Section 1.4) reflects on issues raised in the chapter.

1.2 Importance of E-Government in Developing Countries

Previous studies highlighted that e-Government promotes civic engagement by enabling the public to interact with government officials (Susha and Grönlund 2014; Cheng et al. 2015), providing greater access to government information, making government more accountable and reducing corruption (Andersen 2009; Andersen et al. 2011), and delivering higher quality services to citizens (Sá et al. 2016). Therefore, the implementation and adoption of e-Government has many advantages for governmental organizations around the world, given that it can support integrated services delivery in the economic, social and environmental dimensions of sustainable development, while also supporting integration across these three dimensions (UNDESA 2016; Estevez and Janowski 2013).

However, this development of e-Government has not occurred equally in all countries. The *United Nations e-Government Survey 2016* (UNDESA 2016) shows that the number of countries with a low e-Government Development Index (EGDI) value remains at 32 in 2016, out of which 29 are least developed countries. So, in the light of this data, there is the risk that the digital divide persists and remains anchored in time in developing countries, despite many developments and efforts carried on in many countries.

The United Nations' Programme of Action (UN 2011) shows that low productive capacity and structural challenges, as well as lack of ICT infrastructure and limited access to technologies are related problems and limitations, which continue to challenge e-Government advancement in

developing countries. These technological issues provoke system incompatibility and problems in the use of e-Government applications, which, in turn, generate distrust in citizens when using e-Government services, platforms, apps and tools (Arendsen et al. 2014). Therefore, it is important that the political leaders and public managers in developing countries have clear ideas of how to provide universal access to quality services while ensuring coherent decisions, developing integrated policies and increasing effectiveness, transparency and accountability.

But to achieve these goals, governments of developing countries must take many decisions and undertake coordinated actions plans, i.e. political leaders and managers in the public sector will need a more strategic, integrated and sustained approach that is ambitious yet focused, with realistic commitments towards sustainable development and concrete ways to ensure the inclusiveness of online services (Axelsson et al. 2013). These countries will need to avoid the technocratic approach to e-Government which means providing basic online services and irrelevant websites, given that the use of ICT is not merely a cost or labour saving tool, but should go further (UN 2002).

Previous studies have highlighted that e-Government, coupled with smart and timely governmental policies, has the potential to reach development objectives faster and at a lower cost than conventional approaches (Brown and Thompson 2011). But developing countries need to make enormous efforts to provide and develop an ICT infrastructure in order to improve access to knowledge and technologies. In this way, governments will respond to their citizens increasingly varied and complex needs, as well as the persistent call for new, better and faster public services.

Together with the provision of appropriate and modern ICT infrastructure, the governments of developing countries must face the limited internet access of certain sectors of the population—the so-called digital divide—(Zhao et al. 2014). To deal with this problem, political leaders and governmental organizations should provide communal access through village computer centres or kiosks, and combine access with training courses, communication programmes and promotion campaigns on the importance of using the Internet in everyday life (Atkin et al. 2008; Schuppan 2009).

Also, access to ICT infrastructure and the provision of education, including ICT literacy, are highly related to the income level of a nation. This correlation shows that countries that have performed well in e-Government development are more competitive. E-Government gives

rise to new business models and revolutionizes industries, bringing greater promise of a future wave of innovations in both the public and private sectors that could drive longer-term growth (Schwab and Sala-i-Martín 2015).

In addition, e-Government has the potential to involve citizens in the governance process by engaging them in interaction with policymakers through the policy cycle (Callanan 2005). Strengthening civic engagement contributes to building public trust in government. This is associated with the high commitment to promote transparency and accountability, which also leads to fighting corruption (Andersen 2009; Andersen et al. 2011; UNDESA 2016). Finally, these initiatives increase trust in the government and the way it is perceived by citizens.

In brief, e-Government implementation in developing countries is necessary to help them on their way to improve economic and social development, as well as build stronger democracies.

1.3 Challenges, Problems and Solutions in the Implementation of E-Government in Developing Countries

Previous research has shown that the unsuccessful implementation of e-Government initiatives by public administrations in developing countries is due to some major limiting factors—see Table 1.1.

1. Strategic E-Government Plan. One of the major problems lies when a project is initiated without a strategy, clear objectives and decisions about the use of financial resources, and a clear description of the role of government. Hence, there are many developing countries that have prjects which show a lack of project scoping, have unrealistic goals and lack alignment with organizational goals (Picazo-Vela et al. 2012; Zhao et al. 2012). Offline processes need to be consolidated before putting them online, and the focus of projects and online services should be from the users' perspective in order to respond to local needs.

These limitations favour the lack of control mechanism and vision, and coordination between government departments, causing efficiency problems and limiting the participatory process. Also, lack of cooperation inside governments and incoordination between departments favour the implementation of a rigid structure that does not encourage open debates and an open concept. To solve this problem, governments should establish an organization for programming, supervising, implementing and controlling e-Government development projects—elaborate systems for

Table 1.1 E-Government challenges and recommended solutions

Challenges and problems	*Initiatives and public policies to face the challenges*
(1) Strategic e-Government plan • No defined strategy e-business plan for the implementation of e-Government • No clear objectives and decisions—unrealistic goals • No clear description of the role of the government • Lack of control mechanism • No coordination and cooperation between departments—efficiency problems	– Elaborate systems for reporting and monitoring – Establish a strategic plan for ICT – Formulation of appropriate policies – Integrated development plan—short and long-term plans – Decentralization improves the participation and representation of marginal groups – Ensure commitment of resources for the long-term
(2) Technologies used • Governments adopted obsolete technology • System incompatibility and problems in use of e-Government apps • Delays in the implementation of new technologies—decrease in organizational flexibility • Limited and conservative/bureaucratic organizational structures	– Build an interagency network of systems, software (free software or open source), hardware and organization – Adopt the performance-oriented strategic planning model Balanced Scorecard (BSC) and new operations routines – Develop a system thinking mindset to deal with the key issues – Conduct strategic planning for a time horizon (3–5 years)
(3) Organizational and management issues • Rigid organizational and management structures—incorrect use of ICT • Incompatibility of systems • No integration of different organizational structure—interoperability	– Implement a common infrastructure – Specialized planners—outside the government – Favour participation and consultation with employees
(4) Technological systems • Technological incompatibility, complexity, newness of technology • Lack of IT technical skills and experience, and security issues	– Hold training courses—national and foreign professionals and academics – Strategy of national policies and programmes for human capital training – Cooperation with international organizations
(5) Leadership and management skills—human resources	

(*continued*)

Table 1.1 (continued)

Challenges and problems	*Initiatives and public policies to face the challenges*
• No assumed leadership of public managers • Resistance among staff to use of ICT—negative attitude • Officials fear that the use of ICT will result in the loss of status and power • Lack of support from the main leaders • Delayed by several unjustified interruptions	– Strong leadership in order to create a team project—good balance of relationships. – An environment where employees are encouraged to use the new technologies – Leadership, planning and management of e-Government implementation – Dispel resistance of civil servants by training and incentives to support reforms – Create and office and designate a senior official as a key point for e-Government
(6) Policies—Programmes • Lack of appropriate government ICT policy formulation • Perceived lack of need to adopt financing of policies • Internet does not reach all zones • No education and skills for the use of ICT	– Property planning for the adoption and diffusion of ICT – Stimulate the improvement of productivity and creativity – Create websites with easy design and navigation – Education and communication programmes—promotion campaigns
(7) Digital divide—Citizens acceptance • Lack of infrastructure in telecommunications implementation • High price of Internet access • Need to reduce the digital divide • Inefficient access to online services • Lack of adequate equipment and computers	– Government must build the telecommunication infrastructure—increase public investment in the ICT infrastructure – Access to services which telecommunications has enabled – Online kiosks and articulated customer relations mamagement (CRM) efforts – Improve the design of websites—reduce the risk of virus attacks and other security breaches

Source: Own elaboration based on Rodríguez et al. (2016)

reporting and monitoring (Sharifi and Manian 2010). In this sense, it is essential to carry on short- and long-terms plans, with expected expenditure, income streams and deadlines.

2. Technologies Used. Along with the above, governments of the developed countries adapted obsolete technology, and skipped some stages or even created their own individual paths (Basu 2004). In this regard, Zhao et al. (2012) argue that development requires building an interagency network of systems, networks, software (free software or open source), hardware and organization, which is important in the early stages of implementing an e-Government element, since the success of e-Government requires a well-defined and well-formulated, forward-looking and system-thinking, strategy and the implementation of that strategy.

All this supposes a delay in the implementation of new technologies, a framework of e-Government, innovation and e-transformation in the public sector and a decrease in organizational flexibility, which hinder access to the advantages offered by e-Government to citizenry. Therefore, it is recommended that Government departments and entities develop a system-thinking mind set to deal with the key issues of e-Government development, such as, e-integration and quality, and conduct strategic planning for a time horizon from three to five years.

3. Institutional and Organizational Issues. Researchers have emphasized that the organizational and management structures do not favour implanted, appropriate, coordination and evolution of e-Government initiatives (Luna-Reyes and Gil-García 2011; Reddick et al. 2011), which could lead to incorrect use ICT (Picazo-Vela et al. 2012). Thus, it would be advisable to implement a common infrastructure so that all of Government could use the services. The implementation of these initiatives should have appropriate agents from the beginning of project implementation, allowing for the definition of the project, consultation with employees to facilitate the careful preparation of the project, and the choice of the best qualified contractors, which will encourage participation by all at various stages of project implementation (Sharifi and Manian 2010).

4. Technological Issues. Technological incompatibility, complexity, newness of technology, lack of ICT technical skills and experience, and security issues are some challenges that can potentially affect e-Government development. So, it is necessary not only to hold training courses, which should be taught by national and foreign professionals and academics

(Sharifi and Manian 2010), but also have a strategy incorporating national policies and programmes for human capital training. Furthermore, cooperation with international organizations (non-governmental agencies (NGOs) and other Government agencies) that have more experience in developing e-Government projects has positive effects on the implementation of these initiatives (Kromidha 2012).

5. Leadership and Management Skills—Human Resources. Regarding human resources, any resistance to new ICT initiatives should be dispelled by training and incentives to support reform. In this sense, managers should provide an environment where employees are encouraged to use the new technology, making clear the benefits of its use and the impact this would have on their work, trying to reduce resistance among staff to the use of ICT, and combatting any negative attitudes (Luna-Reyes and Gil-García 2011).

Similarly, the implementation initiatives of e-Government are blocked by a lack of funding, and lack of support from the main leaders. In this regard, fear that the use of ICT could cause leaders to lose their status and power cause many projects to be delayed by unjustified interruptions (Weerakkody et al. 2009). This is due to ignorance and the unwillingness of top Government officials to adopt new ICT, which provokes a lack of leadership that encourages the creation of teams to undertake such initiatives (Choi et al. 2016).

6. Policies—Programmes. This lack of support from major public leaders may be reflected in the lack of appropriate Government ICT policy formulation to promote the dissemination of information, proper planning for the adoption and diffusion of ICT development network infrastructure, and stimulating the improvement of productivity and creativity (Navarra 2010). These shortcomings and inadequate policies make ICT evolve slowly, but specifically, the Internet does not reach all zones. These circumstances force public administration to continue to provide basic services through multiple channels in the short term to avoid excluding those segments of the population without access to the Internet.

7. Digital Divide—Citizens' Acceptance. Limited access to the Internet is primarily due to a lack of telecommunications infrastructure in developing countries. In addition the population lacks education and illiteracy rates are high (Weerakkody et al. 2009). So, governments must build telecommunications infrastructure in their countries, favour the spread of ICT and reduce the price Internet access and access to services for which the liberalization of telecommunications is relevant (Zhao et al. 2012).

8. Legal and Policy Barriers. Finally, the adoption of e-Government may encounter legal or policy barriers, and privacy and security issues. It is necessary to design applications that integrate privacy protection, and minimize the collection and retention of personal information. Also, trust is a vitally important component of e-Government projects, so a senior official responsible for computer security must be designated, and ongoing training to employees on computer security should be provided. Similarly, information must be backed up regularly and back-ups stored in a separate location.

1.4 Conclusions and Discussions

The main challenge for introducing e-Government in developing countries is the lack of a well-planned strategic plan. In this sense, developing countries' Governments should understand the potential of ICT in introducing changes to domains far beyond structural tools. They are facing huge difficulties in developing technological capacity, allocating sufficient financial resources and adjusting institutional contexts accordingly.

These challenging situations require global measures, not individual ones. To achieve, this aim, the systemic thinking approach could help developing countries to implement ICT successfully. If we want different outcomes from a situation, we have to change the system that underpins it in such a way that it delivers different outputs, for example, employee training in ICT technological skills, the definition of alignment of ICT goals with organization goals, or the positive attitude of personnel in the implementation of ICT. However, the key factor to success is that politicians in developing countries must be aware that an e-Government implementation means an organizational innovation in their Governments.

To achieve this aim, previous studies have highlighted that the Balanced Scorecard is an invaluable tool for public managers in transforming their organizations (Chan 2004). This strategic tool would allow public sector managers and leaders to translate the mission and strategy of the implementation of e-Government into a balanced set of integrated performance measures, which provide a comprehensive view of what is really happening in the organizations.

In addition, it seems clear that e-Government cannot be effective if stakeholders do not have the necessary means to access Government information and services. In this regard, public policies must be driven to improve technological infrastructure and to make the Internet a secure

site with efficient privacy measures, efficiency in public sector services and e-participation. All this could have a positive impact on how citizens trust Governments. Therefore, it would also be interesting for the Government to play a lead role in providing a culture of privacy protection and security. It should provide this leadership through the development of public policies, as an owner and operator of systems and networks, and as a user of such systems and networks (Gil-García and Pardo 2005). This could allow citizens to interact safety, which would increase the use of online public services and applications of e-Government.

Finally, it is also necessary to implement other policies, which should improve the education standards of citizens. It seems clear that it is necessary to initially invest in training programmes for citizen to create a technological culture (Evans and Yen 2006). These training programmes could be addressed to provide: (1) information programmes to spread to use of the Internet and new technologies; (2) training and awareness programmes about the efficient use of ICT; (3) creation of social networks to allow users to share their experiences; and (4) provision of ICT equipment. In other words, it is necessary to promote e-trust and best online practices aimed at citizens, with the aim of increasing trust in ICT among them (Alcaide Muñoz et al. 2014; Smith 2010).

In brief, a systemic thinking approach needs to be applied in developing countries to undertake successful e-Government implementation. Indeed, this can provide valuable practical insights to help developing countriesdefine, evaluate and enhance their e-Government initiatives. This means acting in three different scopes at the same time: (1) organizational structure and processes; (2) investment in ICT infrastructure; and (3) investment in education to make citizens ready to use ICT. In order to apply a systemic thinking approach, strategic planning in the implementation of e-Government applications is essential.

In this regard, financial aid to help developing countries in implementing e-Government initiatives should be driven, at least, by three different, but complementary, actions. First, to analyse the current situation of e-Government development in the country analysed using appropriate methodologies that enable us to measure this issue. Guidelines and best practices codes to evaluate e-services, the disclosure of online information and e-participation development have been issued by relevant international bodies (UN 2012; OECD 2013) and by prior research (Caba et al. 2005).

As the situation stands today, international organizations such as United Nations or the World Bank must play an important role in promoting

technology adoption in developing countries, providing the financial funds to invest in them (UNDESA 2016). These e-Government initiatives would not achieve their full development potential without this financial support and the experience of international agencies in basic services such as healthcare or education (e-literacy).

Second, promoting the development of a project for training both employees and citizens regarding e-Government applications. In this milieu, it would be desirable to finance employee training in IT technical skills and e-Government initiatives in order to make users aware of the need for e-Government implementation to achieve better social, democratic and economic outcomes. In this regard, prior research has shown that professional training courses using foreign and domestic professionals and college professors, as well as cooperating with international organizations that have significant experience in e-Government development projects could help to successfully implement e-Government projects in developing countries.

Finally, international bodies should finance the creation of an observatory of e-Government practices in developing countries in order to monitor and promote best practices in e-Government initiatives. This observatory should undertake timely research regarding e-Government development in developing countries and issue a specific route for developing countries in order to improve their e-Government implementation. In this regard, issuing reports about the reforms of governmental structures could be a relevant outcome of this observatory to help developing countries to implement efficient e-Government initiatives. These projects may have a large impact in developing countries, and they may require assessment before, during, and after the project to avoid failure or partial failure (De' 2006).

In parallel, governments in developing countries should also introduce official mechanisms to monitor e-Government initiatives and to coordinate all systems involved in these initiatives. Coordination plays a key role in this milieu because it can avoid reduced efficiency and erosion of responsibility in e-Government implementation as, for example, in the supply of e-services to citizens, the disclosure of government information or the management of information about citizens in the delivery of public sector services.

In addition, to make e-Government implementation successful, all the bodies involved in e-Government projects must be made perfectly aware of the functions assigned to and executed by each one, and use the information flows among them in order to detect anomalies in the performance of e-Government applications.

In conclusion, we think that this process needs a systemic thinking approach, which suggests the use of strategic planning for e-Government success. In this regard, successful implementation of e-Government is not siply linked to the technologies to be introduced in the public sector entities. Political and social changes are required alongside the implementation of electronic mediums. International bodies should fund activities that allow developing countries to achieve all these changes and should monitor e-Government efficiency in developing countries with the aim of improving their economic, democratic and social development.

Acknowledgments This research was carried out with financial support from the Regional Government of Andalusia (Spain), Department of Innovation, Science and Enterprise (Research project number P11-SEJ-7700).

References

Alcaide Muñoz, L., & Rodríguez Bolívar, M. P. (2015). Understanding e-government research. A perspective from the information and library science field of knowledge. *Internet Research, 25*(4), 633–673.

Alcaide Muñoz, L., Rodríguez Bolívar, M. P., & Garde Sánchez, R. (2014). Estudio cienciométrico de la investigación en trasparencia informativa, participación ciudadana y prestación de servicios públicos mediante la implementación del e-Gobierno. *Revista de Contabilidad – Spanish Accounting Review, 17*(2), 130–142.

Andersen, T. B. (2009). E-government as an anti-corruption. *Information Economics and Policy, 21*(3), 201–210.

Andersen, T. B., Bentzen, J. S., Dalgaard, C. J., & Selaya, P. (2011). Does the internet reduce corruption? Evidence from U.S. states and across countries. *World Bank Economic Review, 25*(3), 387–417.

Arendsen, R., Peters, O., Ter Hedde, M., & Van Dijk, J. (2014). Does e-government reduce the administrative burden of businesses? An assessment of business-to-government systems usage in the Netherlands. *Government Information Quarterly, 31*(1), 160–169.

Atkin, D. J., Lau, T. Y., Aboulhoson, M., & Lin, C. (2008). Adoption of e-government in three Latin American countries: Argentina, Brazil and Mexico. *Telecommunications Policy, 32*, 88–100.

Axelsson, K., Melin, U., & Lindren, I. (2013). Public e-services for agency efficiency and citizen benefit – Findings from a stakeholder centered analysis. *Government Information Quarterly, 30*(1), 10–22.

Basu, S. (2004). E-government and developing countries: An overview. *International Review of Law, Computer & Technology, 18*(1), 109–132.

Brown, D. H., & Thompson, S. (2011). Priorities, policies and practice of e-government in a development country context: ICT infrastructure and diffusion in Jamaica. *European Journal of Information Systems, 20*(3), 329–342.

Caba Pérez, C., López Hernández, A. M., & Rodríguez Bolívar, M. P. (2005). Citizens' access to on-line governmental financial information: Practices in the European Union countries. *Government Information Quarterly, 22*(2), 258–276.

Calista, D. J., & Melitski, J. (2007). E-government and e-governance: Converging constructs of public sector information and communications technologies. *Public Administration Quarterly, 31*(1), 87–120.

Callanan, M. (2005). Institutionalizing participation and governance? New participative structures in local government in Ireland. *Public Administration, 83*(4), 909–929.

Chan, Y. L. (2004). Performance measurement and adoption of balanced scorecards. *International Journal of Public Sector Management, 27*(3), 204–221.

Chan, H. S., & Chow, K. W. (2007). Public management policy and practice in western China: Metapolicy, tacit knowledge, and implications for management innovation transfer. *American Review of Public Administration, 37*(4), 479–497.

Cheng, Y., Liang, J., & Leung, L. (2015). Social network service use on mobile devices: An examination of gratifications, civic attitudes and civic engagement in China. *New Media and Society, 17*(7), 1096–1116.

Choi, H., Park, M. J., Rho, J. J., & Zo, H. (2016). Rethinking the assessment of e-government implementation in developing countries from the perspective of the design-reality gap: Applications in the Indonesia e-procurement system. *Telecommunications Policy, 40*(7), 644–660.

De', R. (2006). Evaluation of e-government systems: Project assessment vs. development assessment. *Electronic Government Proceedings, 4084*, 317–328.

Estevez, E., & Janowski, T. (2013). Electronic governance for sustainable development – Conceptual framework and state of research. *Government Information Quarterly, 30*, S94–S109.

Evans, D., & Yen, D. C. (2006). E-government: Evolving relationship of citizens and government, domestic, and international development. *Government Information Quarterly, 23*(2), 207–235.

Gil-García, J. R., & Pardo, T. A. (2005). E-government success factors: Mapping practical tools to theoretical foundation. *Government Information Quarterly, 22*(2), 187–216.

King, D. A. (2004). The scientific impact of nations: What different countries get for their research spending. *Nature, 430*(6997), 311–316.

Kromidha, E. (2012). Strategic e-government development and the role of benchmarking. *Government Information Quarterly, 29*, 573–581.

Lee, L. C., Lin, P. H., Chuang, Y. W., & Lee, Y. Y. (2011). Research output and economic productivity: A ganger causality test. *Scientometrics, 89*(2), 465–478.

Liu, S. M., & Yuan, Q. (2015). The evolution of information and communication technology in public administration. *Public Administration and Development, 35*, 140–151.

Luna-Reyes, L. F., & Gil-García, J. R. (2011). Using institutional theory and dynamic simulation to understand complex e-government phenomena. *Government Information Quarterly, 28*(3), 329–345.

Navarra, D. (2010). The architecture of global ICT programs: A case study of e-governance in Jordan. *Information Technology for Development, 16*(2), 128–140.

OECD. (2013). *Global forum on transparency 2013.* Global forum on transparency and exchange of information for tax purposes. Retrieved from http://www.oecd.org/tax/transparency

Picazo-Vela, S., Gutiérrez-Martínez, I., & Luna-Reyes, L. F. (2012). Understanding risks, benefits, and strategic alternatives of social media applications in the public sector. *Government Information Quarterly, 29*(4), 504–511.

Reddick, C. G. (2011). Citizen interaction and e-government: Evidence for the managerial, consultative, and participatory models. *Transforming Government: People, Process and Policy, 5*(2), 167–184.

Reddick, C. G., Abdelsalam, H. M., & Elkadi, H. (2011). The influence of e-government on administrative discretion: The case of local governments in Egypt. *Public Administration and Development, 31*(5), 390–407.

Rodríguez Bolívar, M. P., Alcaide Muñoz, L., & López Hernández, A. M. (2016). Scientometric study of the progress and development of e-government research during the period 2000–2012. *Information Technology for Development, 22*(1), 36–74.

Rodríguez Bolívar, M. P., Caba Pérez, C., & López Hernández, A. M. (2006). Cultural contexts and governmental digital reporting. *International Review of Administrative Sciences, 72*(2), 269–290.

Sá, F., Rocha, A., & Pérez Cota, M. (2016). From the quality of traditional services to the quality of local e-government online services: A literature review. *Government Information Quarterly, 33*(1), 149–160.

Schuppan, T. (2009). E-government in developing countries: Experiences from sub-Saharan Africa. *Government Information Quarterly, 26*(1), 118–127.

Schwab, K., & Sala-i-Martin, X. (Eds.). (2015). The Global Competitiveness Report 2014–2015: Full Data Edition, published by the World Economic Forum within the framework of The Global Competitiveness and Benchmarking Network. World Economic Forum, 09/2015.

Serenko, A., Bontis, N., Booker, L., Sadeddin, K., & Hardie, T. (2010). A Scientometric analysis of knowledge management and intellectual capital academic literature (1994–2008). *Journal of Knowledge Management, 14*(1), 3–23.

Sharifi, M., & Manian, A. (2010). The study of the success indicators for pre-implementation activities of Iran's e-government development projects. *Government Information Quarterly, 27*(1), 63–69.

Smith, M. L. (2010). Building institutional trust through e-government trustworthiness cues. *Information Technology & People, 23*(3), 222–246.

Susha, I., & Grönlund, A. (2014). Context clues for the stall of the citizens' initiative: Lessons for opening up e-participation development practice. *Government Information Quarterly, 31*(3), 454–465.

UN General Assembly. (2011). *Programme of action for the least developed countries for the decade 2011–2020, Istanbul, May 2011.* Retrieved from http://documents.wfp.org/stellent/groups/public/documents/eb/wfpdoc061607.pdf?_ga=1.164316415.1927046461.1488306887

UNDESA, UN Department of Economic and Social Affairs. (2016). *United Nations e-government survey 2016: E-government in support of sustainable development*. New York. ISBN 978-92-1-123205-9. Retrieved from https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2016-Survey/Executive%20Summary.pdf

United Nations. (2002). *The e-Government handbook for developing countries.* Information for Development Program (infoDev). Retrieved from http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN007462.pdf

United Nations. (2012). *E-government survey 2012. E-government for the people.* Retrieved from http://unpan1.un.org/intradoc/groups/public/documents/un/unpan048065.pdf

Weerakkody, V., Dwivedi, Y. L., & Kurunananda, A. (2009). Implementing e-government in Sri Lanka: Lessons from the UK. *Information Technology for Development, 15*(3), 171–192.

Zhao, F., Collier, A., & Deng, H. (2014). A multidimensional and integrative approach to study global digital divide and e-government development. *Information Technology and People, 27*(1), 38–62.

Zhao, F., Scavarda, A. J., & Waxin, M. F. (2012). Key issues and challenges in e-government development. An integrative case study of the number one eCity in the Arab world. *Information Technology for Development, 25*(4), 395–422.

Laura Alcaide Muñoz is Associate Professor in Accounting and Finance in the Department of *Financial Economy and Accounting* at the *University of Granada.* She is interested in E-government, E-Participation and Smart Cities. She has been author of numerous articles in leading SSCI journals (Business, Economics, Information Science and Public Administration) and has written book chapters in prestigious publications for IGI Global, Springer and Routledge-Taylor & Francis.

Manuel Pedro Rodríguez Bolívar is Professor in Accounting at the University of Granada. He has authored numerous articles in leading SSCI journals and several book chapters published by Routledge, Kluwer Academic Publishers, Springer, Nova Publishers and IGI Global. He is author of full-length books and editor of books for Springer, Palgrave and IGI Global publishers. In addition, he is a member of the Editorial Board of *Government Information Quarterly* and Associate Editor for other leading international journals.

CHAPTER 2

Comparative Analysis of E-Gov Services: An Ontology-Based Approach

Aurora Sánchez-Ortiz, Arkalgud Ramaprasad, and Thant Syn

2.1 Introduction

Advances in information technology (IT) over the past 20 years have motivated many governments at different levels around the world to use it to improve their services. This initiative to electronify and transform their services has been termed e-Government, e-Governance, and e-Democracy. The use of these terms has become common among researchers in the field; at least 23 journals publish research on them (Madsen et al. 2014). The term e-Government as such can be traced back to a model proposed by Layne and Lee (2001) to assess the stages of its development. Their view of such government focuses on: (a) the importance of the interaction between citizens, businesses, and government; (b) the need to assess the

A. Sánchez-Ortiz (✉)
Universidad Católica del Norte, Antofagasta, Chile

A. Ramaprasad
University of Illinois at Chicago, Chicago, IL, USA

T. Syn
Texas A&M International University, Laredo, TX, USA

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_2

level of development to identify the current state; and (c) how to work towards the implementation of a more efficient government. E-Government as a research field has been analysed by many researchers who have highlighted the interdisciplinarity of the field and the heterogeneity of its literature (Scholl 2006; Heeks and Bailur 2007; Alcaide-Muñoz and Rodríguez Bolívar 2015). Scholl (2006) further argues that e-Government is not a classical discipline, because it (a) spans various disciplines, (b) is a multi-, inter-, and trans-discipline, and (c) also lacks its own theories and accepted methodologies. Rodríguez Bolívar et al. (2016) also add that studies have illustrated debate in the e-Government literature regarding (a) the transformation of the distribution of online services in the public sector, and (b) how e-Government could support the provision of these services. A more detailed discussion of the history of the construct, its definition, and frameworks for its development is provided by Ramaprasad et al. (2015b).

There is often confusion between e-Government as the name of a class of services and also a member of that class. To distinguish the two uses of the term we will refer to the *class* of e-Government, e-Governance, and e-Democracy as e-Gov.

In two earlier papers, Ramaprasad et al. (2015a, b), present an ontological framework for e-Gov. The relationship between research and practice has been a concern for researchers in the e-Gov field. Heeks and Bailur (2007) in this context studied the e-Gov literature and found that less than 50% of the articles analysed, out of 84, had any specific practical recommendation. These authors also concluded that most articles in the field, at that time, did not add to the body of theory or help to improve practice. In Ramaprasad et al. (2015a) the authors use an ontological framework to study gaps in local e-Gov research, practice (in Chile), and between research and practice. They argue that the ontology makes visible the combinatorial complexity of e-Gov and is amenable to systematic and systemic study.

The ontology, the method of mapping the corpus of research, and the insights from the maps will be useful to researchers, policy makers, and practitioners. It can portray the “big picture” of the domain and help understand its strengths and weaknesses. Over time, it can be used to assess the trajectory of the domain. These assessments will help maintain or change the trajectory as necessary. For example, they can be used to direct funding to underemphasized topics and away from overemphasized ones.

The challenge in constructing an ontology of e-Gov is to transform the core logic encapsulated in the linear natural language representation of the domain in the research, policy, and practice documents into a structured natural language representation as a text-matrix. It is to transform the voluminous description of the logic of e-Gov into a parsimonious visualization of the same, while being true to its combinatorial complexity. A second part of the challenge is that the fragments of the core logic of e-Gov may be formalized to different degrees in various locations. The logic may be implicit in many cases and needs to be made explicit. A third part of the challenge is that the logic encapsulated in the corpus of e-Gov research, policy, and practice may be incomplete. The ontology has to make it complete. Fourth, and last, there is the challenge of defining the e-Gov domain itself. Defined too broadly, the ontology may become too complex and unwieldy. Defined too narrowly, the ontology may become simple but also simplistic.

The method of constructing the ontology is iterative, with the objective of making the core logic of the domain and the ontology isomorphic. The logic of the linear natural language text is represented in the structured natural language of the ontology. And, the derivations from the ontology have to be semantically meaningful when represented in the linear natural language as text.

In this chapter we refine and advance the work using the ontology by Ramaprasad et al. (2015a, b) in two ways. First, we revise their ontology by adding the Quality dimension. Second, we map the corpus of research on the subject published in the years 2013–2015 onto the ontology. The mapping emphasises the gaps in the current state of the research. Third, we compare research on the topic by global regions. The comparison will reveal the differences and similarities between e-Gov research focused on different parts of the world. Rodríguez Bolívar et al. (2016) have suggested that the e-Gov field could benefit greatly from the identification of the leading countries and institutions publishing at top level on the topic. In the following we first present the revised ontology of e-Gov. Next, we present details of the search for and creation of the research corpus for the three-year period spanning 2013–2015 (both years inclusive). Third, we describe the method of coding the corpus onto the ontology. Fourth, we present the results of the coding as ontological maps and cluster dendrograms—overall and by region. Fifth, we discuss the results and their implications. Finally, we conclude with the limitations, future extensions, and implications of a comparative analysis of e-Gov using the ontology.

2.2 Ontology of E-Gov Services

We deconstruct e-Government into four dimensions (one with two sub-dimensions), each represented by a taxonomy (Fig. 2.1). They are, from left to right, Medium, Entity, Service, and Outcome. Service has two sub-dimensions: Quality and Type. The dimensions and elements of the taxonomies are defined in the glossary below the ontology and described below. Four illustrative components of e-Government derived from the ontology are listed below the ontology with examples. A more detailed description of an earlier version of the ontology and its application to mapping research and practice is given in Ramaprasad et al. (2015a, b). The methods of ontology construction and ontological meta-analysis and synthesis are given in Ramaprasad and Syn (2014, 2015), respectively. Here we will discuss the use of ontology as a framework or lens for comparative analysis of e-Government development.

The ontology is a systemic and systematic description of e-Gov—including e-Government and its progenies e-Governance and e-Democracy. The ontology is systemic in that it has all the key elements necessary to describe e-Gov. It covers the elements of all the key definitions of e-Gov and extends them (Ramaprasad et al. 2015b). For example, it recognizes the continued importance of People and Paper Media in addition to the e-media and includes them. (Note: References to individual elements in the ontology are capitalized to distinguish them from their natural use.) These elements are defined in the glossary below the ontology. Often, instead of the elements their synonyms, hypernyms, or hyponyms may be used in the discourse about e-Gov. For example, government staff may be used synonymously with People in the Medium dimension. Some of the synonyms, hypernyms, and hyponyms are shown in the glossary. As such, the elements are adequate to describe e-Gov as a system.

Thus:

eGov = Medium + Entity + Service (Quality + Type) + Outcomes
Medium ⊂ (People, Paper, Electronics (PC/Web, Smart phone. Social media))
Entity ⊂ (Governments (Local/Municipal, Provincial/State, Central/Federal), Intermediaries, Citizens. Businesses, NGOs)
Service-Quality ⊂ (Secure, Private, Reliable, Timely)
Service-Type ⊂ (Information, Transaction, Interaction)
Outcomes ⊂ (e-Government, e-Governance, e-Democracy)

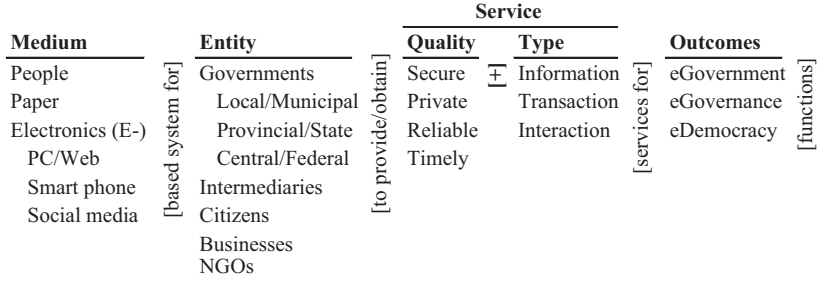

Fig. 2.1 Ontology of e-Gov service, illustrative components, and glossary

The ontology can be used to systematically enumerate all possible components of e-Gov. It encapsulates 5*7*4*3*3 = 1260 components, four of which are illustrated with examples in Fig. 2.1 below the ontology. A component in the ontology may be instantiated as is or as an analog as shown by the examples of each illustrative component. Thus, a component may be instantiated in many ways.

Further, a component may not be instantiated in its entirety but as a fragment with one or two dimensions missing. For example, the Quality element may be missing or not explicitly stated.

A selection of the 1260 components, their analogs, and fragments constitute a system of e-Gov. It is neither possible nor necessary for the system to contain all the possible components. On the other hand, the selection of the components defines the properties of an e-Gov system. Exclusion of Paper-based components from the definition of an e-Gov system may, for example, be idealistic but impractical. Despite all the advances in information technology, paper continues to persist as a medium of information storage, transaction, and interaction. This is true not only of legacy systems but also of new ones. Excluding paper from consideration in design will likely undermine the efficiency and effectiveness of the system.

2.3 Method

We synthesize the focus of e-Gov research by mapping it to the ontology. The mappings are then used to generate ontological maps and dendrograms to visualize the emphases and themes of the domain. The domain corpus was collected from Scopus[1] and Web of Science[2]—two of the largest curated databases of scholarly literature across major disciplines

including e-Government. We searched the articles which contain the following in the title, abstract, and keywords and published in the years 2013–2015 (the latest three full years of publication):

((“electronic government” OR “e-government” OR “egovernment”) OR (“electronic governance” OR “e-governance” OR “egovernence”) OR (“electronic democracy” OR “e-democracy” OR “edemocracy”)) AND (“electronic service” OR “e-service” OR “eservice”)

The search also focused explicitly on e-Gov services not the concept of e-Gov per se. The results were filtered for journal articles written in English which represent only a high-quality collection of peer-reviewed research on e-Government. The details of the search process and results, following the PRISMA guidelines (Liberati et al. 2009) are shown in Fig. 2.2. The selected articles are downloaded and imported into an Excel spreadsheet for mapping.

The corpus of 453 articles was coded onto the ontology by the three authors. Each author coded two-thirds of the articles. Consequently, each article was coded by two authors. Each coder reviewed the title, abstract, and keywords (when available) of each article and mapped the presence/

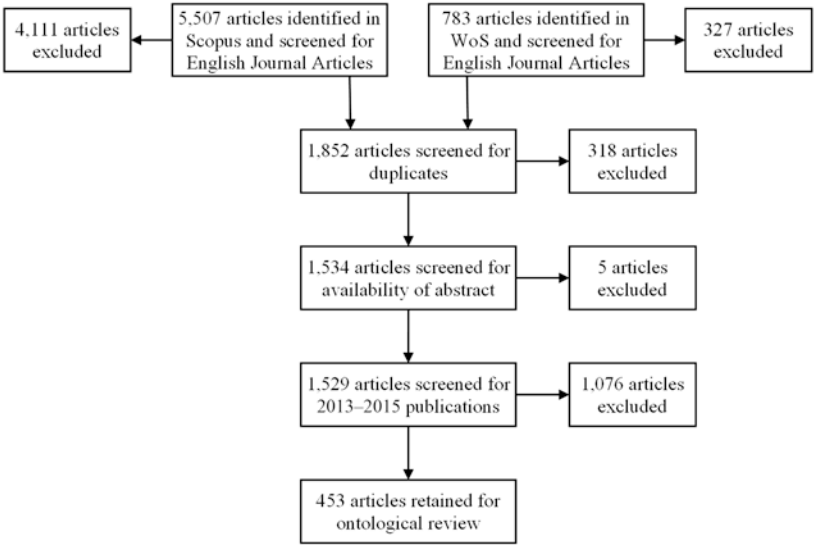

Fig. 2.2 Data collection process and results

absence of reference to each element of the ontology in the article. The coding was binary (1 for present, Blank for absent) and not weighted—each article and each element was assigned an equal weight. The coding was done using the custom-developed Excel spreadsheet. Thus, the final coding for an article was the union of its two coding. Review articles, those tangentially related to e-Gov, and those making a passing mention of e-Gov, were not coded. A total of 438 articles in the corpus of 453 articles were coded.

All articles were not coded on all the dimensions. Only the dimensions and their elements explicitly articulated in the title, abstract, and keywords were coded. The authors sought to minimize imputing their judgement—and consequently overcoding or undercoding—by strictly adhering to the available text. Thus, for example, if a Quality (Secure, Private, Reliable, Timely) was not explicitly mentioned that article was not coded on that dimension. Further, if multiple elements of a dimension were mentioned in an article (for example, Central/Federal and Municipal/Local Entity), it was coded for both. Thus, an article could be coded on one or more dimensions and none or many categories in each dimension.

2.4 Results

The results are presented as the ontological map of monads (overall and comparative) and dendrogram of clusters of ontology elements. In the following, we will discuss them in greater detail. We will analyse the ontological map of e-Gov research in terms of the dominant, less-dominant, and non-dominant categories and components. The analysis is visual and subjective. There are no predetermined frequency bands for the dominant and less-dominant spots—the differences are easy to see. The non-dominant spots by definition have zero or very close to zero frequency. This is a form of gap analysis which is systemic and systematic, and hence more comprehensive than traditional gap analysis. By highlighting all the gaps, both surpluses (possibly more than desired) and deficits (possibly less than desired), this facilitates a synoptic understanding instead of an incremental understanding of e-Gov research. It is a simple, yet practical, representation of a complex phenomenon.

2.4.1 Ontological Map of e-Gov Service Research

The bars in the ontological map of monads (Fig. 2.3) are proportional to the parenthetical numbers and represent the frequency of the respective category in the e-Government research studied. Thus, for example, the

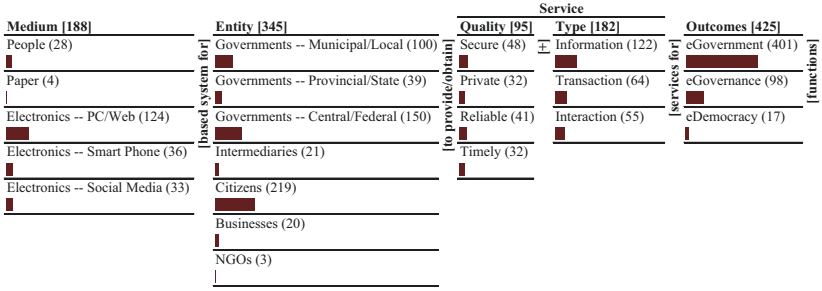

Fig. 2.3 Ontological map of e-Gov monads

Entity dimension is mentioned in 345 of the 438 articles coded. About 20% of the coded articles do not mention a specific entity. Further, among the entities Governments-Municipal/Local are mentioned 100 times, Governments-Provincial/State 39 times, Governments-Central/Federal 150 times. Since an article may mention multiple entities (for example, a type of Government and Citizens), the Entity frequency is less than the sum of the frequencies of its constituent elements. In the following we will discuss each dimension in greater detail.

Explicit reference to a Medium (188) is only in about 43% of the articles. Among the media, the most common reference is to Electronic-PC/Web (124) followed by Electronics-Smart Phone (36), Electronics-Social Media (33), and People (28). There is hardly any mention of Paper (4).

Among the Entities (345) the most frequent reference is to Citizens (219), followed by Governments-Central/Federal (150), and Governments-Municipal/Local (100). There is very little focus on Governments-Provincial/State (39), Intermediaries (21), and Businesses (20). There is hardly any focus on NGOs (3). It is noted that an entity is explicitly identified in about 79% of the articles.

In Service, there is greater focus on Service-Type (182) than on Service-Quality (95). The two are explicitly identified only in about 42% and 22% of the articles respectively. Information (122) is the dominant type of service; Transaction (64) and Interaction (55) are less dominant. In Service-Quality, Security (48) and Reliability (41) are emphasized a little more than Privacy (32) and Timeliness (32).

Outcomes (425) are explicitly mentioned in about 97% of the articles. The dominant outcome is eGovernment (401) followed substantively behind by eGovernance (98); eDemocracy (17) is non-dominant.

Based on the ontological map of monads one may infer the dominant theme of the corpus from the most frequently occurring elements to be:

> Electronics-PC/Web based system for citizens and governments-central/federal to provide/obtain information services for eGovernment.

Similarly, one may infer the following theme to be a non-dominant theme of the corpus based on the less frequently occurring elements:

> Electronics-Smart Phone based system for businesses to provide/obtain timely interaction services for eGovernance.

While one may infer the probability of co-occurrence of elements in the ontological map by their relative frequencies, as in the above themes, it has to be confirmed based on the co-occurrence data. (There is a greater probability of high-frequency elements co-occurring than low-frequency elements.) These results are presented in the dendrogram from the cluster analysis in Fig. 2.5.

2.4.2 Geographical Comparison of e-Gov Service Ontological Maps

We compared the ontological maps of eGov monads by five continental regions: Africa, America, Asia, Australia, and Europe. From the 438 articles coded from the corpus of 453, we could geographically code 366. The others were either geographically independent (for example, about cloud-based e-Gov) or did not have geographical data. The maps for the five regions are shown in Fig. 2.4.

The largest number of articles is about Asia and Europe; the fewest are from Africa and Australia; the Americas are in the middle. All the regions' dominant focus is on e-Government; relatively Asia and Europe focus more on e-Governance; none of the regions focus much on e-Democracy. It could be noted that even though America is in the middle, the USA itself has 36 articles accounting for almost 65.5% of all articles in the Americas Region and it is the single country with the most papers. In the second place is China with 22 articles that account for 14.3% of all articles in Asia. Clearly in the Americas, the USA is the country that is doing most of the research in the region but it is not the same in Asia and Europe where the contribution is more dispersed.

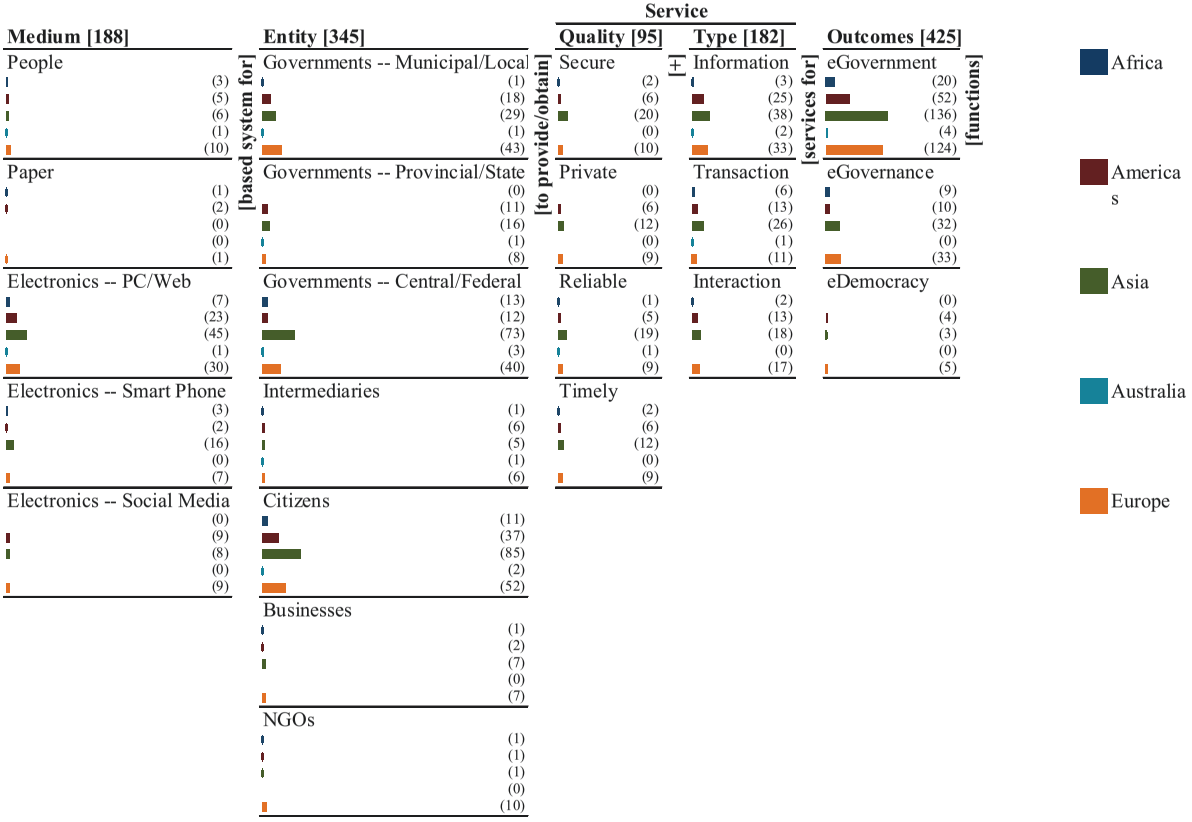

Fig. 2.4 Ontological map of e-Gov monads by region

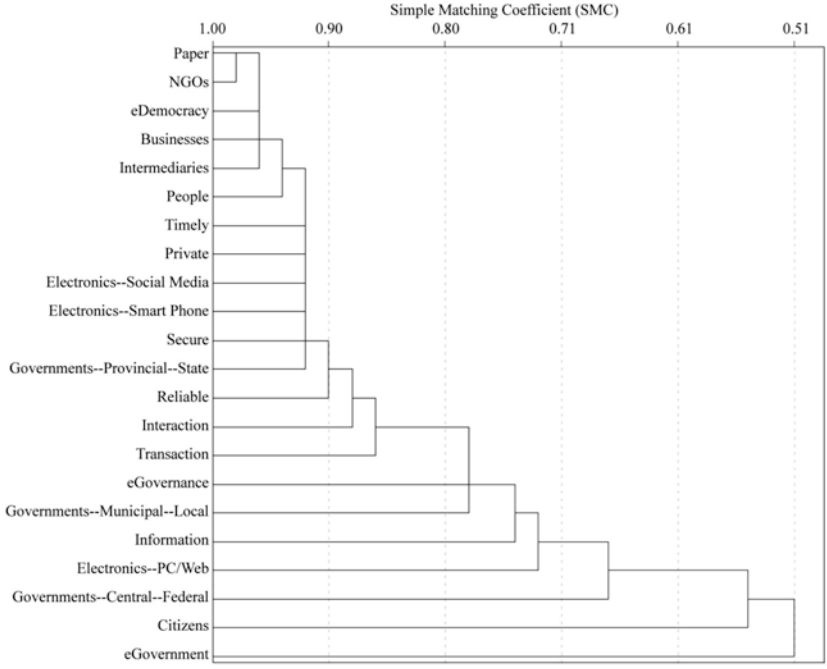

Fig. 2.5 Dendrogram of e-Gov elements

In the same vein, the dominant focus of all regions except Africa is on Information; Asia focuses relatively more on Transaction than do Europe and the Americas. Asia, Europe, and the Americas focus significantly on Interaction. Africa focuses more on Transaction than it does on Information and Interaction.

The profile of the regions with respect to Quality (Security, Privacy, Reliability, and Timeliness) is similar. Asian articles emphasize these attributes the most, European next, the Americas third, followed by Africa and Australia.

The profile of emphasis on the Entities is similar across all the regions and similar to the overall profile. The dominant emphasis is on Citizens, Governments-Central/Federal, and Governments-Municipal/Local, in that order. There is very little focus on Governments-Provincial/State, Intermediaries, Businesses, and NGOs. Relatively, Europe appears to focus on NGOs and Businesses more than the other regions. Africa is basically

researching at the Central/Federal level of Government and it has very little research at Local level. In this sense, Europe is the country that is researching most at the Local level.

Last, the profile of emphasis on the Medium is also similar across regions. The dominant emphasis is on Electronics-PC/Web. Asia has relatively more emphasis on Electronics-Smart Phone compared to the other regions; Europe, the Americas, and Asia focus on Electronics-Social Media.

2.4.3 Dendrogram of e-Gov Service Research

The clusters of ontology elements are shown in Fig. 2.5. The clusters are formed based on the coding similarity between pairs of ontology elements in the corpus measured by the simple matching coefficient (SMC) (Sokal and Michener 1958). SMC is a symmetric similarity measure which considers presence (coded as '1') and absence (coded as '0' or Blank) of elements in the articles equally, in contrast to other binary similarity/distance measures such as Jaccard (Jaccard 1912) and Sørensen-Dice (Dice 1945) which only consider the presence of elements (Cheetham and Hazel 1969; Gower 1971). In ontological analysis both presence and absence of elements in articles convey equally important information. Hence, we have used a symmetric measure. SMC will thus provide a more consistent comparison across pairs of elements. Further, the cluster analysis is used to descriptively summarize the data about the population of articles and not to make astatistical inference about the population from a sample of articles. In sum, SMC satisfies all criteria required to measure similarity of mappings between two articles.

The clustering was conducted in SPSS based on the nearest single-linkage distance between the clusters. The agglomerative hierarchical clustering is preferred to K-means clustering and its variants because the primary purpose of the cluster analysis is to descriptively summarize the mappings of articles without any preconceptions about the clusters. It provides an isomorphic visualization of the association between the ontology elements which can be interpreted in conjunction with the frequencies of the elements in the ontological map (Fig. 2.3).

The clusters in Fig. 2.5 highlight groups of elements dominantly and lightly emphasized in e-Gov research. The clusters are discussed in greater detail below. Broadly, the bottom clusters contain the most frequent elements in the ontological map (Fig. 2.3) and the top clusters the elements

that occur least frequently. While this pattern may be predicted from the ontological map, with some uncertainty, the clusters validate it.

By using the five equidistant divisions of SMC we can infer the following five themes in descending order of dominance in the e-Gov corpus. Considering more divisions will result in finer-grained themes; fewer divisions will result in coarser-grained themes. We will focus on these clusters and summarize them as themes by concatenating the elements within. They indicate the co-presence and co-absence of ontology elements in the research corpus.

The bottom cluster (actually dyad) of elements (e-Government and Citizens) may be summarized as follows:

> System for citizens to provide/obtain services for e-Government functions.

This is the primary theme of e-Gov research. In a sense, it captures the definition of e-Government.

The second cluster has only one element—Governments-Central/Federal. In combination with the first cluster the theme may be summarized as follows:

> System for government—central/federal and citizens to provide/obtain services for e-Government functions.

This is the secondary theme of the e-Gov research corpus. It highlights the dominant focus on central/federal in the e-Gov research.

The third cluster of elements is Electronics-PC/Web, Information, Government-Municipal/Local, and e-Governance. In combination with the first two clusters the overall theme may be summarized as follows:

> Electronics-PC/Web based system for governments-central/federal, governments-municipal/local, and citizens to provide/obtain information services for e-Government and e-Governance functions.

This is the tertiary theme of the e-Gov research corpus. In a sense, it represents the traditional focus of e-Gov.

The fourth cluster of elements includes Transaction, Interaction, Reliable, and Secure. It includes two Types of Service and two Quality of Service elements. In combination with the first three clusters the overall theme may be summarized as follows:

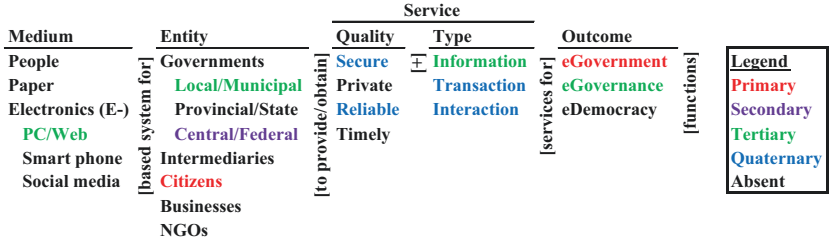

Fig. 2.6 Ontological map of e-Gov element clusters

> Electronics-PC/Web based system for governments-central/federal, governments-municipal/local, and citizens to provide/obtain reliable and secure information, transaction, and interaction services for e-Government and e-Governance functions.

This is the most general, quaternary, characterization of the e-Gov corpus. We note the exclusion of the elements in the fifth cluster which occur infrequently in the ontological map.

The fifth cluster of elements includes Government-Provincial/State, Secure, Electronics-Smart Phone, Electronics-Social Media, Private, Timely, People, Intermediaries, Businesses, e-Democracy, NGOs, and Paper. These elements are seldom or never mentioned in the e-Gov corpus. It includes four Media (People, Electronics-Smart Phone, Electronics-Social Media, and Paper); four Entities (Government-Provincial/State, Intermediaries, Businesses, e-Democracy, and NGOs); two Qualities (Private, and Timely); no Type; and one Outcome (e-Democracy). These elements represent the absent theme of the e-Gov corpus.

The five clusters mapped onto the ontology is shown in Fig. 2.6. In the following section, we discuss the implications of the above analysis and results. Finally, we conclude with a suggestion for a roadmap for e-Government research.

2.5 Discussion

The state of the research on e-Gov appears to be neither systematic nor systemic. It may be characterized as being selective and scattered, where the value of the corpus as a whole may be less than the sum of its parts due to very significant gaps. Overall, the trajectory of e-Gov research appears to lag the trajectory of e-Gov evolution. This conclusion is in accordance

with Heeks and Bailur (2007) who stated that e-Gov research is in a poor state and there are some constraints to the development of e-Gov. We discuss these attributes and their consequences below.

Even in 2015, e-Gov research is still very much stuck on e-Government and has not moved on to the subsequent phases of e-Governance and e-Democracy. By the same token, it is stuck on basic information services and has not moved on to the more advanced transaction and interaction services. And the research providing these services pays limited attention to security, privacy, reliability, and timeliness. Such a profile can hardly be expected to set the agenda for e-Gov research and practice; it follows the historical agenda and may at best extend it. One may also argue in this context (partly from personal experience and partly from the study of practices in Chile's local governments) that e-Gov practice has probably moved ahead of research and may be setting the agenda in the future. The research corpus is not proactive with reference to practice; one may hope that that it will at least be reactive to developments in the present and in the future. The second and third clusters in the dendrogram, which highlight the emphasis on the new media and qualities of service, suggest this possibility.

If e-Gov is to be effective it has to systematically include all the entities. The governmental entities and citizens are central to e-Gov; the other entities—intermediaries, businesses, and NGOs—will be critical to advancing e-Gov from e-Government to e-Governance to e-Democracy. Further, for e-Gov to be effective it has to integrate the three levels of government entities. The present profile of emphasis in Fig. 2.3 does not augur well for the advancement of e-Gov—it is low and very uneven. Even the government entities are explicitly addressed only in about a third of the articles in the corpus. Last, the limited emphasis on the provincial/state governments and its separation from the other two levels of government (third and fourth clusters respectively in Fig. 2.5) highlight the disconnection. These too may be a reflection of the past agenda and research and the lack of movement to a proactive attitude.

Among the Entities mentioned in the articles the most frequent is Citizens; they account for a total of 219 articles. Among these 219 the most frequent research topic is the acceptance/adoption of information technology (IT). About one third of the 219 (73, 33.3%) focus on this topic. However, there are significant differences between regions. Of the 73, more than half (37, 50.7%) are Asia based. The rest are allocated as Europe (12, 16.4%), the Americas (7, 9.6%), Africa (6, 8.2%), and

Australia/New Zealand (1, 1.4%) in that order. Thus, Asia-based research appears to be more concerned about acceptance/adoption of IT than other regions. They primarily apply theories of technology acceptance and adoption. They scarcely apply other theories of management information systems or management in e-Gov research.

The 'e' in e-Gov represents electronification in all the three forms—PC/Web, Smart Phone, and Social Media. Of the three, the PC/Web is the traditional medium, the other two are current. Interestingly only about 35% of the articles explicitly discuss an electronic medium, and among them the dominant focus is on the PC/Web. It represents continuity with the past but not proactivity about the future. Yet, paradoxically, where continuity is needed there is very little. Despite electronification, paper and people continue to be critical to the success of e-Gov as a system. Their functions, role, and importance may change, but they are unlikely to be eliminated in any integrated e-Gov system which harmoniously co-ordinates all the media. Contrary to intuition, it will be proactive to explicitly include people and paper in the design of e-Gov systems and research on the design of these systems. Heeks and Bailur (2007) considered e-Gov research's recognition of humans and other contextual factors that influence or mediate its impact a "good practice" (p. 260).

Among the regions, Asia and Europe appear to be slightly ahead, with the Americas a little behind, in the e-Gov trajectory in their research focus, with their relatively greater focus on e-Governance, Transactions, and Interaction. The first two regions also appear to have broadened their focus on Entities more than the other regions. One cannot infer whether the slightly more advanced state of the research with regard to Asia and Europe corresponds to the state of the practice in these regions. At least they highlight concern for emerging issues in e-Gov.

In summary, there are significant gaps in e-Gov research and the emphases on the different elements are unbalanced. These shortcomings will not only hinder the advancement of meaningful e-Gov research but also its translation into practice. An effective research agenda has to be systematic and systemic. In the conclusion, we will discuss how the ontological framework, the method of mapping the corpus, and the insights from the analysis can be used to redirect the trajectory of e-Gov research.

The gaps in and the uneven topography of e-Gov service research may be partly due to errors in selection of the articles and in coding them. While the authors have exercised due diligence in minimizing them, the limited formalization of the language of the domain make

errors likely. For example, e-Government is sometimes used generically to connote all three elements of what we have called e-Gov—namely e-Government, e-Governance, and e-Democracy. Similarly, the discussion of media may focus exclusively on the salient "e" media to the exclusion of the others.

However, these possible errors should not distract from the main findings discussed earlier. The signals from the data are very strong compared to the potential noise due to the errors. The researchers in the domain have to heed them.

2.6 Conclusion

e-Gov is too important a topic to be muddled through. The best practices in e-Gov have to be informed by research, and the critical questions have to be researched systematically. The analysis of e-Gov research through the lens of the ontological framework has brought to light the gaps in research showing the need for studies that assess good practices in e-Governance and e-Democracy. Many countries could benefit from research in e-Governance that could share results about the implementation of initiatives in areas like Infrastructure in local governments, politics to develop citizens' participation, interoperability of web platforms, project management in central government, etc., There is also a need for research oriented to improve or create suitable environments for the delivery of better services to all entities. Research that address issues in e-Democracy need to be developed in order to support countries in topics like the critical success factors in achieving e-Democracy, experiences of dealing with the role of citizens, businesses, political culture, and how to separate e-Gov from e-Democracy policies.

Since this study showed that most e-Gov research seems disconnected at the entity level, we need to know about the experiences in various countries regarding how to improve their e-Gov performance by integrating those entities. Experiences that could focus on achieving interoperability of platforms and data among the different levels of government, security and privacy issues that need convergence at central and local levels, transaction services that could be supported at all government level are required.

The gap in e-Gov research among the continents shows the need to support more collaborative research between researchers in developed and less developed countries and also among different continents in order to share their experiences and replicate the best practices.

The ontology-based approach to comparative analysis of e-Gov could be the anchor for an ongoing programme of generating and managing knowledge about the domain. The ontology can be extended and refined, if necessary. The method can be used to analyse and synthesize large volumes of text data on global research and policies on, and practices of, e-Gov. It can portray the "big picture" longitudinally at different levels of granularity.

The ontology provides a lens to map not only the state of the research (as we have done for a three-year period in this paper) but also the state of the practice (as illustrated by the study of local e-Gov by Ramaprasad et al. 2015a). The maps can be used to highlight gaps in the research, in practice, and between research and practice. They can also be used for a comparative study of different regions (as discussed earlier) and different periods.

Analysis of these gaps, their antecedents, and their consequences will help develop a systematic roadmap for e-Gov research (and practice). The research maps can be used to inform practice; and the practice maps can be used to inform research. Thus, innovative advances in research can be translated into innovative practice, and innovative practices can be translated into innovative research to formalize their understanding and to generalize them. The comparative maps can also be used to cross-pollinate research and practice across geographical domains, keeping in mind the similarities and differences between them.

Notes

1. https://www.elsevier.com/solutions/scopus/content.
2. http://thomsonreuters.com/en/products-services/scholarly-scientific-research/scholarly-search-and-discovery/web-of-science.html.

References

Alcaide-Muñoz, L., & Rodríguez Bolívar, M. P. (2015). Understanding e-Government research: A perspective from the information and library science field of knowledge. *Internet Research, 25*(4), 633–673.

Cheetham, A. H., & Hazel, J. E. (1969). Binary (presence-absence) similarity coefficients. *Journal of Paleontology, 43*(5), 1130–1136.

Dice, L. R. (1945). Measures of the amount of ecologic association between species. *Ecology, 26*(3), 297–302.

Gower, J. C. (1971). A general coefficient of similarity and some of its properties. *Biometrics, 27*(4), 857–871.

Heeks, R., & Bailur, S. (2007). Analyzing e-Government research: Perspectives, philosophies, theories, methods, and practice. *Government Information Quarterly, 24*(2), 243–265.

Jaccard, P. (1912). The distribution of the flora in the alpine zone. *New Phytologist, 11*(2), 37–50.

Layne, K., & Lee, J. (2001). Developing fully functional e-Government: A four stage model. *Government Information Quarterly, 18*(2), 122–136.

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, J., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and Elaboration. *PLoS Medice, 6*(7), 339 :b2700.

Madsen, C. O., Berger, J. B., & Phythian, M. (2014). The development in leading e-government articles 2001-2010: Definitions, perspectives, scope, research philosophies, methods and recommendations: An update of Heeks and Bailur. In M. Janssen, H. J. Scholl, M. A. Wimmer, & F. Bannister (Eds.), *Electronic government* (pp. 17–34). Berlin: Springer.

Ramaprasad, A., Sánchez-Ortiz, A., & Syn, T. (2015a). Gaps in local eGovernment research: An ontological analysis. In *Proceedings of the 21st Americas Conference on Information Systems (AMCIS 2015)*. Puerto Rico, USA.

Ramaprasad, A., Sánchez-Ortiz, A., & Syn, T. (2015b). An ontology of eGovernment. In E. Tambouris, M. Janssen, H. J. Scholl, M. A. Wimmer, K. Tarabanis, M. Gascó, B. Klievink, I. Lindgren, & P. Parycek (Eds.), *Electronic government* (pp. 258–269). Berlin: Springer.

Ramaprasad, A., & Syn, T. (2014). Design thinking and evaluation using an ontology. In M. Helfert, B. Donnellan, & J. Kenneally (Eds.), *Design science: Perspectives from Europe* (pp. 63–74). Cham, Switzerland: Springer International Publishing.

Ramaprasad, A., & Syn, T. (2015). Ontological meta-analysis and synthesis. *Communications of the Association for Information Systems, 37*, 138–153.

Rodríguez Bolívar, M. P., Alcaide Muñoz, L., & López Hernández, A. M. (2016). Scientometric study of the progress and development of e-Government research during the period 2000-2012. *Information Technology for Development, 22*(1), 36–74.

Scholl, H. J. (2006). Is e-Government research a flash in the pan or here for the long shot? In M. A. Wimmer, H. J. Scholl, A. Grönlund, & K. V. Andersen (Eds.), *Electronic government: Proceeding of the 5th international conference (EGOV 2006)* (pp. 13–24). Berlin: Springer.

Sokal, R. R., & Michener, C. D. (1958). A statistical method for evaluation systematic relationships. *The University of Kansas Science Bulletin, 38*, 1409–1438.

Arkalgud Ramaprasad is Professor Emeritus of Information and Decision Sciences at the University of Illinois at Chicago (UIC). He has a Ph.D. from the University of Pittsburgh, Pittsburgh, PA, 1980; an MBA from the Indian Institute of Management, Ahmedabad, India, 1972; and a B.E. (Electrical), from the University of Mysore, Karnataka, India, 1970. His current research is focused on (a) ontologies to conceptualize a problem domain systematically and systemically, (b) ontological meta-analysis of research, policies and practices in the domain, and (c) ontological roadmaps for research, policies and practices in the domain.

Aurora Sánchez-Ortiz is Associate Professor of Management Information Systems and Director of the Information Technology Management Research Center at the Business School of the Universidad Católica del Norte, Chile. Her current research includes Electronic Government, Smart City, e-Participation and Ontologies. She has published her work in various academic journals, books chapters and conferences such as *Journal of Theoretical and Applied Electronic Commerce Research*, *Journal of Technology Management & Innovation*, *Interciencia*, *Polis*, etc.

Thant Syn is Assistant Professor of Management Information Systems at the Texas A&M International University. He received his Ph.D. from the Florida International University, M.B.A. from the International University of Japan, and B.E. in Aeronautical Engineering from the Yangon Technological University. His current research focuses on the development and application of ontological frameworks in many areas of research such as healthcare informatics, healthcare policy, and project management.

CHAPTER 3

E-Justice in Europe: From National Experiences to EU Cross-Border Service Provision

Marco Velicogna

3.1 Introduction

Information and Communication Technologies (ICTs) are increasingly affecting the core elements of the justice systems (Contini and Lanzara 2009, 2014; Fabri 2009; Reiling 2009; Velicogna 2008). The changes that are taking place range from the modalities in which access to justice is granted to the reshaping of judicial actions and the outcomes of judicial proceedings, and to the reconfiguration of justice institutions (Contini and Cordella 2016). At the same time, the development, implementation and deployment of ICTs, and the complex intertwining between law, technology and organizations, which characterize e-Justice experiences, remains poorly understood (Contini and Lanzara 2009, 2014; Carnevali 2009). The aim of this chapter is therefore to shed some light on this phenomenon and to provide a glance at its key elements, building on the European Union e-Justice experience at national and Community level. The analysis of concrete e-Justice cases allows us to clarify some of the practical implications of different experiences,

M. Velicogna (✉)
Research Institute on Judicial Systems of the National Research Council of Italy (IRSIG-CNR), Bologna, Italy

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_3

providing useful indications of the elements which have made feasible the development of effective e-Justice systems.

These e-Justice experiences need to be observed, keeping in mind the broader judicial reform context but also the judicial system's specificities when compared to other public sectors. In recent years, justice administrations throughout Europe have embarked upon a wave of innovation initiatives that draw upon new public management (NPM) principles and the use of ICTs. Within this wave of initiatives, ICTs have been seen initially as a way to automate court activities and then, more and more, as a way to re-engineer business processes and to reshape the relation between the courts and their users. While this experience has many elements in common with other domains such as health, welfare, procurement, taxation and education, where technology is seen as a means for the "reorganisation of the public sector, broadly stating that ICTs could impact on the four classical 'pillars' of the NPM agenda: efficiency, accountability, decentralisation and marketization" (Cordella 2007, p. 265), the justice domain has some peculiarities. An element of this can be seen in the fact that the EU e-Government assessment framework did not include any specific justice-related benchmarks until 2012–2013, when "starting a small claims procedure" was introduced (Lourenço et al. 2017; European Commission 2014).

Indeed, justice administrations are—and are part of—"highly structured and regulated systems, characterized by high level of formality, where standardized procedures and practices are designed to support and uphold the Law (and its liturgy) through the justice service provision" (Velicogna and Steigenga 2016, p. 7). Furthermore, values such as independence and impartiality of the judiciary and of the judges are strongly rooted in the fabric of democratic societies and are typically constitutionally guaranteed. NPM values such as efficiency and accountability and innovation initiatives need therefore to be balanced against them (Contini and Mohr 2007). This has resulted in complex processes of negotiation, mediation or conflict between law, technology and organizational and professional actors (e.g. CEPEJ 2010; Velicogna 2008; Contini and Fabri 2003).

Quantitative data collected on the diffusion of ICT in Europe by the CEPEJ (the European Commission for the Efficiency of Justice) through its 2016 evaluation exercise lead "to a confirmation of the trend outlined in previous reports: most States have invested significantly in IT for the functioning of their courts" (CEPEJ 2016, p. 5). At the same time, the

same report clearly states that the diffusion "of IT tools cannot be systematically linked to a good level of court performance" (CEPEJ 2016, p. 5).

The focus of this chapter is on e-Justice, which should be distinguished from two other groups of ICT initiatives that are affecting the justice domain: e-Legislation and e-Law. To e-Legislation pertains all those initiatives "that offer digital support for the process to draft legislation. Most of the initiatives in this field are within the Member States, as for example in Slovakia, Estonia and The Netherlands" (Steigenga and Velicogna 2016). e-Law, on the other hand, refers to access to national and EU legislation and jurisprudence. e-Justice at national level includes all those ICT tools and infrastructures developed to translate into digital format the justice service provision, including the creation of electronic databases and court records, case management systems and electronic communication with the parties in a case. At the EU level, e-Justice refers to all those ICTs that enable cross-border cooperation, including digital processing of cross-border legal procedures and the use of digital tools for cooperation between justice professionals (judges, public prosecutors, lawyers) located in different Member States. A number of such tools have been developed and implemented over time including video conferencing, Find a Lawyer, the Court Database and the e-CODEX infrastructure for the digital processing of cross-border legal procedures (Steigenga and Velicogna 2016).

e-Justice has been the object of increasing attention from researchers and practitioners. Investigations have focused on different levels of analysis: a broad comparison of e-Justice national experiences (e.g.: Velicogna 2007, 2008; CEPEJ 2010, 2012, 2014, 2016), an assessment of national experiences (e.g.: Fabri 2007; Oskamp et al. 2004; Contini and Fabri 2003; Fabri and Contini 2001) and analysis of case studies (e.g.: van Dijk et al. 2016; Velicogna et al. 2011, 2013). Furthermore, the initiatives to introduce e-Justice at the national level have been grouped into several categories depending on the level of the analysis and on the organizational level being involved in the adoption of the technology (e.g. individual, court office, justice administration and overall public administration) and the type of technology being introduced (e.g. basic infrastructure, basic tools for the direct assistance of court administrative staff and judges, case tracking and management, administration and management of the court, national databases—interorganizational interoperability between justice and e-services) (Contini and Fabri 2003; Velicogna 2007, 2008; CEPEJ 2016).

An emerging element increasingly highlighted by the research is that "the introduction of ICT in the judiciary is not neutral and leads to pro-

found transformations in this branch of the administration" (Contini and Cordella 2016, p. 2), and that "technology cannot be grafted into well established and normatively regulated procedures without unpredictable consequences" (Velicogna 2011). It should not come as a surprise therefore that "the development and introduction of ICT in the justice sector is proving more complex than expected, especially when moving outside the traditional borders of the court"[1] (Velicogna 2011). "New actors, such as technological partners and network providers make their appearance. Power and organizational borders alter, as 'who-does-what' changes in the translation of procedures from paper to digital and from one form of digital to another" (Velicogna 2011).

To discuss the complex interaction between ICTs, justice systems and justice service provision, this chapter focuses on key elements of concrete e-Justice cases from national and EU experiences. National experiences are taken from MCOL (England and Wales), ERV (Austria), eBarreau (France) and the PCT (Italy), while EU experiences are derived from the EU e-Justice portal and from e-CODEX.

The experiences have been selected in relation to their ability to represent and clarify aspects of a more general discourse on the dynamics of ICT development, implementation and deployment. These experiences are taken from the more complex cases in which the ICTs adopted breach the traditional organizational and institutional borders of the court, linking it to its actual and potential users and to its constituency. As we will see, in some cases, while smoothly functioning, e-Justice instead of disintermediation, easiness of and openness, may even complicate access to justice, while in other cases may reduce it only in relation to specific procedures.

3.2 National Experiences

ICT innovation in national justice systems is quite a complex phenomenon, which has evolved over time through different but sometimes interconnected paths as experiences, standards and approaches have been shared. It is characterized by histories of tensions between different forces which have led to different results in different national contexts but with some frequent, if not common, elements: the struggle between the local and ad-hoc solutions and low standardization, versus centralized, standardized systems for the electronic tracking and management of cases; the development of tools answering specific needs versus systems that provide

more general—and generic—answers; ownership and control over the process and the data versus sharing; and security of the data versus allowing access to users and citizens who have the right to have it (Velicogna 2010). Depending on national specificities such as the organization of the judiciary and on other context-related factors, the institutional settings that emerged to manage ICT governance differ widely. The choice, for example, fell on the Ministry of Justice in Austria and France; on the Court Service in Ireland, Sweden and England and Wales; has been alternating between the Judicial Council and the Ministry of Justice in the Netherlands; and is shared by the Ministry of Justice and the Judicial Council in Italy (Velicogna 2010).

What follows are three experiences that highlight some of the many complexities of what has been shown to be the most challenging aspect of e-Justice development at national level: the communications with legal validity between the various actors involved in the justice procedures. In particular, the English and Welsh case, Money Claim On Line, shows the advantages and limits of developing a system dedicated to a single simplified judicial procedure. The Austrian ERV case shows the growth and evolution of a complex e-Justice infrastructure involving a plurality of private and public organizations over time, as scope, technological standards and legal framework have changed. Finally, the French e-Barreau case shows the complex development of e-Justice systems which take place outside the borders of the justice administration but are still within the justice domain, and which constitute key components of the e-Justice service.

3.2.1 England and Wales Single Judicial Procedure Application: Money Claim On Line

Money Claim On Line (MCOL) provides a good example of how a dedicated e-Justice service can be implemented by building on existing technologies and organizations and allowing for delocalization. The case shows how rapid development and uptake was achieved by building on an existing installed base (organizations, software components, etc.) and leaving some space for incremental development (UK Government Gateway, etc.). The choice of having a single national jurisdiction for this online procedure has reduced the complexity (Lupo 2014a) of organizational adoption (compared to cases in which the technology must be adopted in a plurality of courts) creating a loosely coupled and relatively independent subsystem, easing problem solving and improving overall

evolvability. Functional simplification of the technological requirements, limiting the scope of application of the procedure and moving it offline when complexity increased, has also reduced the complexity of the system.

MCOL was "designed to be a relatively simple way to commence a county court claim for a fixed amount of money".[2] It was set up in 2001 as part of the Northampton County Court Bulk Centre, which already provided a service for "bulk users" such as credit card companies and utility providers to electronically file large volumes of county court claims for money.[3] Northampton County Court Bulk Centre handles the repetitive, staff intensive administrative part of county court cases. If a court hearing is required, then the case is heard by a Judge in one of the England and Wales county courts who has jurisdiction to decide on the case (Lupo 2011).

The development of MCOL was undertaken by the Department of Constitutional Affairs (now Her Majesty's Courts and Tribunals Service—HMCTS) in cooperation with the private company, EDS (Lupo 2014b). This was not a development from scratch, but the system was the result of the assembly, integration and adaptation "of antecedent technologies and institutional initiatives that formed the necessary, as it were, conditions for the development and setting up of the service" (Kallinikos 2009). Indeed, it was conceived as the front-end of the Northampton County Court Bulk Centre system, which provided its technological and organizational back-end (Kallinikos 2009). Furthermore, to expedite the implementation of the project, EDS subcontracted EzGov, a firm specializing in web products for government offices, to create the end website. In order to identify the user and allow payments it was also decided to adopt the functionalities inbuilt in *FlexFoundation* and not to use the UK Government Gateway as the payment engine as the latter, at the time, was not ready. The system uses a user's credit card as a means of payment but also to identify the claimant (Kallinikos 2009). At present though, MCOL has been moved onto the e-Government Interoperability Framework platform (e-GIF). In order to begin using the system, the claimant (or defendant) is required to register for an account with the UK Government Gateway.[4] Once the registration process is complete, the user is given a GG User ID and password and a unique MCOL Customer number.[5] In this way, MCOL can be accessed directly through DirectGov, the government's citizen portal website. As a result of this integration, all existing MCOL users were required to re-register to continue to use the MCOL service (Velicogna 2011).

Another element that supported the quick and successful implementation of MCOL was that development took place "against a background of procedural and administrative simplification which shaped the functionalities of the service to a large extent and combined with the installed base to determine the pattern of its implementation" (Kallinikos 2009). The development of the technology has taken place in parallel with the simplification of the legal procedure, including an attempt to draft it in a "plain text" understandable to lay users (Lupo 2014a).

A number of restrictions have been introduced to limit the complexity to be managed by the system. In order to be processed, the claim must meet the MCOL claim criteria.[6] These criteria are indeed a way to simplify the characteristics of the claims that are processed through MCOL. So, for example, the claim must concern a fixed amount of money less than £100,000, it must be against no more than two defendants and the defendant or defendant(s) must have an address in England or Wales where the claim can be served. The claimant must have a valid credit or debit card to pay the court fees, an address in the United Kingdom and an email address, be over 18 years old, etc. There are also limitations to the categories of defendants against whom a claim cannot be made, such as a person under 18 years old, someone who lacks "mental capacity", the Crown or Government departments etc.[7] It is up to the claimant to ensure that such criteria are met. If a claim that does not meet them is filed online, it may be struck out or dismissed and the claimant will not be allowed to take any further action on it. Furthermore, a refund is not granted if the claim does not satisfy the criteria.[8] Another simplification is related to the jurisdiction as all MCOL claims are issued in the name of Northampton County Court. In other words, there is no "obligatory court competence: The users themselves can decide whether to use the Northampton court or not because the relative competence of courts (where to go to with one's case) is not obligatory" (Reiling 2009, p. 129). Also, "In England and Wales, no formal summons is needed to start a civil claim. The claimant sends his or her claim to the court, and the court notifies the defender by mail" (Reiling 2009, p. 129). In other countries, such as in the Netherlands or in Italy, a formal summons is required, increasing the complexity of the system.

In addition to the simplification introduced to reduce the complexity of the procedure to be made electronic, "MCOL has been essentially supported by an elaborate system of offline arrangements that supplements what can be done through the online service, acting at the same time as a

mechanism for offloading complexity onto the traditional system and as a buffer to the reintroduction of complexities into MCOL" (Kallinikos 2009). Thanks to all these procedural simplifications and the effective assembly of existing technologies, procedures and organizational arrangements, "the project went from defining the user requirement to live running in 17 weeks" (Fraser 2004).

What follows is a description of the MCOL procedure from the user perspective. The description puts into perspective the technical and procedural solutions that have been devised to simplify the tasks that can be carried out online, and to observe the examples of switching from online to offline when the complexity of providing the online solution increases over a certain level. At the same time it also provides an idea of the incentives for users to use the tool properly.

In order to begin, the claimant needs to possess certain information to proceed with a claim online. If the claimant makes any error in filling in the details of the claim he/she may have to pay a further fee at a later stage if they need to be amended. When the claim has been submitted, the claimant receives a claim number, which must be quoted in any future correspondence. The claimant must pay a fee to start a claim. The amount to pay depends on the amount of the claim (including interest). The claimant can then check the status of the claim and, where appropriate, request entry of judgment and enforce a judgment by way of warrant of execution. In an MCOL claim, judgment can be requested in the absence of a response (default judgment) or where the claim is admitted (judgment by admission). The plaintiff does not have to pay a fee to request judgment.

The service of the document is then carried out offline through the postal service. The defendant has a specified period after service of the claim to respond. Defendants can reply to and check the status of their claims online. If the defendant fails to respond within the time allowed the plaintiff may request a default judgment be entered through MCOL. MCOL only processes default judgment requests at the end of each day. If a response is received from the defendant (acknowledgment of service, defence, part admission) on the same day as a judgment request is made, the defendant's response takes priority, even if it is filed late. If judgment is not requested within six months of the period for filing a defence, the claim will automatically be stayed and no further action may be taken on it unless the stay is lifted. If the plaintiff receives a signed admission from the defendant, a judgment by admission can be entered. The court

can ask the plaintiff to submit proof of the admission at any stage. If proof is not provided on request, the claim and judgment are automatically dismissed and the plaintiff may be ordered to pay costs. If the defendant admits only part of the claim, the court sends to the plaintiff a copy of the part admission to decide whether to accept it or not. If the plaintiff accepts, he/she can request a judgment against the defendant. If the claimant does not accept, the procedure goes offline and is transferred to a local court, and no further action can be taken online.

Over time, the procedure has changed to allow for more flexibility. So for example, in the past,if initially the claim could not be described within the allowed 1080 characters of the form, the claimant had to proceed offline. At present, if the claimant needs more text he/she can provide a brief summary of the claim within the particulars section of the form and send detailed particulars directly to the defendant. At the same time, in this case the claimant is then required to serve the detailed particulars on the defendant. Also it is possible here to see how greater complexity has been managed through offline means. Furthermore, the complexity increase is shifted mainly to the claimant, who not only has to serve the additional information, but must also provide confirmation to the court of the additional service details.

As a consequence of the system's simplicity from the user perspective and of the incentives, both in terms of monetary costs and in terms of the advantage of being able to deal with the case online, MCOL is now issuing more claims than any local county court.[9] While there is limited judicial involvement in money claims, the centralization of all online claims in a single electronic jurisdiction has resulted in less work for local court administrators and a speedy service provision.

3.2.2 Austrian E-Justice System: ERV and ERV-Web

The Austrian e-Justice experience is characterized by a steady incremental approach over a very long period of time. It shows how a system initially built to support a single simplified procedure for a limited group of professional users and on a given technological infrastructure has been increasingly extended to include new procedures and users and has evolved over time as technological standards have changed. It also shows the role law needs to play in authorizing and supporting the use of technology, and the role of economic incentives in attracting users but also intermediaries and developers needed for the smooth functioning of the system.

The experimentation of the possibility of electronically exchanging structured data between courts, parties and their representatives began in Austria in 1989, with the development of a system called Elektronischer Rechtsverkehr (ERV). The system was initially introduced in 1990 to support filing requests for injunction (*Mahnklagen*), a simplified money claim procedure (Bauer and Graf 2003). The system was developed by the Austrian Federal Ministry of Justice in collaboration with the Bundesrechenzentrum (the Federal Computing Centre) which developed the software, Radio Austria (now Telekom Austria AG) acting as clearing house, and the Bar Association. "Interestingly, the costs were mostly borne by Radio Austria […], which refinanced these through the volume of transactions later on" (Koch and Bernoider 2009).

In order to allow the use of technological means in place of the traditional ones for the exchange of data and information[10] between lawyers and courts, a number of legislative changes were required. In particular, the possibility of formally communicating between courts and parties was introduced in 1990 with an important change in the Court Organization Statute, including, among other things, the e-filing regulation framework, providing rules for contents, relevant dates and warranty (§ 89a Abs 1 & 2, § 89b–e). Within this procedure, the possibility of e-filing legal actions which result in an order of payment was subject to the condition that no objections were made by the other parties involved (Koch and Bernoider 2009).

After its introduction, the system was gradually extended both in terms of potential users and in terms of available procedures. At the same time, the technological component has evolved. As far as users are concerned, ERV was initially open only to lawyers, notaries and the Federal Law Office of the Republic of Austria acting as a representative for the regional authorities. Starting from 1994, the system was then gradually opened to other users including public law bodies and certain organizations subject to government supervision such as banks and insurance companies (Koch and Bernoider 2009). The restriction to authorized ERV-users (lawyers, notaries, banks, insurance companies etc.) was finally cancelled in 2000 so in principle every citizen can now use the system.[11] Since 1999 the system has also been open to the communication from courts to parties. While initially receiving such communication from the court was voluntary, since mid-2000 it became compulsory for the legal professionals using the system (Koch and Bernoider 2009).

In addition, the matters for which electronic communication is available have gradually extended. So, while initially the system allowed only

the filing of requests for injunction, in 1995 ERV functionalities were extended to include requests for enforcement (*Exekutionsanträge*), in 1996 the informal motions and complaints in labour court proceedings (*formlose Anträge und Klagen in arbeitsgerichtlichen Verfahren*) and in 2003 court complaints (*Klagen an Gerichtshöfe*). In order to allow data exchange in these new areas, changes were required to several decrees dealing with forms to be used in the judiciary system (ADV-Formverordnung AFV 2002, 3. Formblat-Verordnung Formblatt-V).

At the same time, in order to incentivize the use of the system, changes were introduced to the law governing court fees, reducing them in cases of e-filing. Also, the fee requested by the clearing house for managing the procedure is half that of the postal fee. While initially economic incentives were introduced to attract potential users, from 1999, all law firms are "required to have the necessary technical facilities to support the system, and, in accordance with the new budget law, their agreement to be able to receive documents from courts is not solicited" (Koch and Bernoider 2009).

From a technological perspective, ERV has been developed as a closed system. It was based on a dial-up connection using a modem and a proprietary communications protocol. Since 2007 the data exchange takes place via Web Service—SOAP[12] or XML—but the new version of ERV (webERV) is not based on the WWW service. Transmissions are encrypted using an SSL protocol. On 31 December 2008, Telekom Austria closed the ERV dial-up service and at present the transmission takes place only via Web Service. In order to allow the use of webERV, regulations on electronic legal transactions (Verordnung der Bundesministerin für Justiz über den elektronischen Rechtsverkehr - ERV 2006, BGBl II 481/2005) had to be introduced. Details both on the technical and security features and on the types of pleadings that can be transmitted through webERV are provided (Velicogna 2011). Among other things, the introduction of Internet technology has provided the opportunity to include attachments to the structured messages.[13]

The **overall architecture** (see Fig. 3.1) enabling the electronic communication is quite complex and includes several components managed by different actors, which are placed between the end user and the court. Apart from an Internet connection and a PC, an **end user** (e.g. lawyer) must have an Austrian bank account and ERV client software provided by an authorized software company (and supported by a "clearing house"). Furthermore, each user needs a unique identification code. The code is provided by the Bar Association to lawyers, by the Chamber of Notaries to Notaries, and by the Ministry of Justice to the other users (Koch and Bernoider 2009).

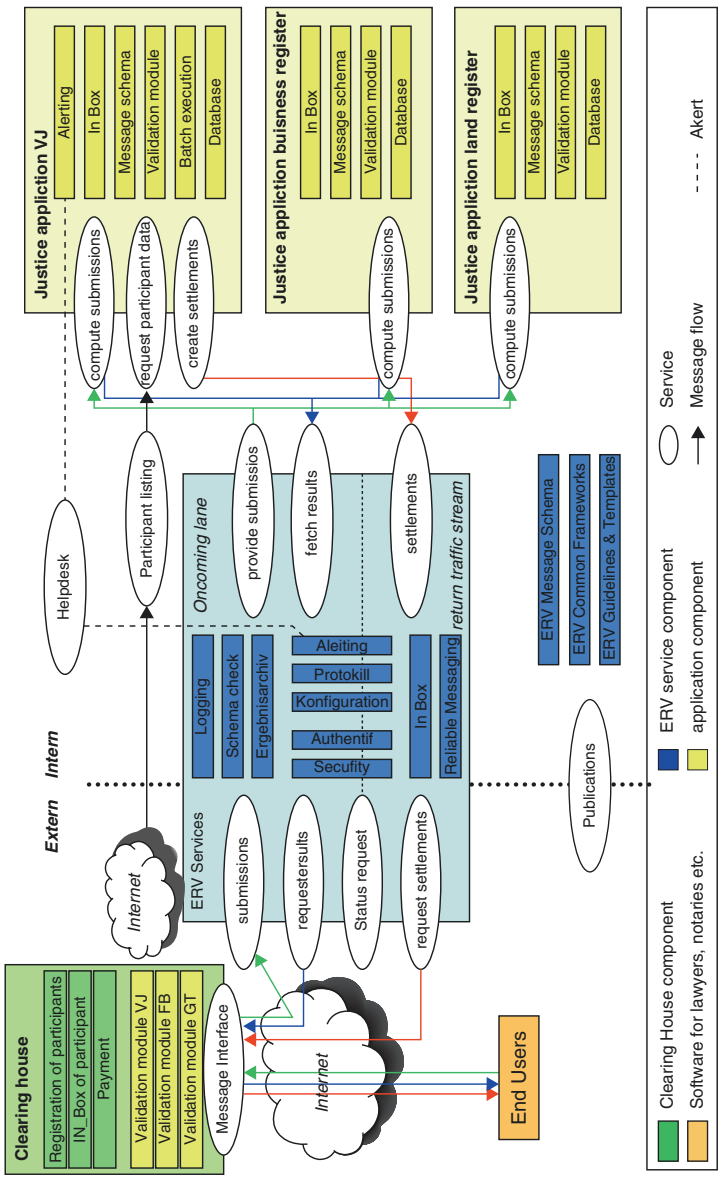

Fig. 3.1 ERV architecture. Source: Own elaboration

Using the **ERV client software**, the end user sends its applications or submissions to a "Clearing House". The **Clearing Houses** provide an intermediation service between the ERV service and end users. The Clearing Houses are responsible for the registration of end users, for the payment procedure and for the validation of documents sent by end users. Furthermore, they are responsible for delivering messages received by the courts to end users. The messages received by end users are therefore validated and forwarded once a day to Bundesrechenzentrum, which manages **ERV Services** for the Federal Ministry of Justice. ERV Services includes a central access point responsible for retrieving applications or submissions from the Clearing Houses and delivering them to the corresponding **automated court procedures** and for sending court documents to the Clearing Houses. The messages from end users are therefore delivered to the **courts** through the dedicated automated court procedure. Once received by the courts, the messages are catalogued and given to the judges in electronic or printed form. An acknowledgment is then sent to the petitioner with data, including case number, through the ERV infrastructure (see Fig. 3.1) (Koch and Bernoider 2009).

In 2015, through ERV a total of 15.4 million electronic transactions took place, including 4.7 million communications and 7.8 million transmissions sent via the "return traffic stream". In the same year, 94 per cent of all civil suits and 91 per cent of the applications for enforcement were filed electronically.[14]

3.2.3 E-Barreau, the French e-Justice Infrastructure for Lawyers

The French e-Barreau experience shows how in the development of large information infrastructures such as e-Justice systems, users and user organizations may become relevant players. It also shows how e-Justice development, when looked at from a diachronic perspective, shows nonlinear and emergent dynamics that get lost when looking at the system once it has been implemented. It also shows how the choice of the standards and systems to be implemented may be more the result of political decisions than technical or cost/efficiency choices.

In France, official electronic communication between the courts of ordinary jurisdiction and lawyers began in 2003 with the deployment of a system called E-Greffe. This electronic communication system was introduced in the Paris *tribunal de grande instance*. E-Greffe went into service

in Paris from 2003 to early 2009. Following the initial E-Greffe experience, in 2004, the National Bar Council (CNB) proposed to the Ministry of Justice a nationwide electronic communication project called e-Barreau, to exchange official judicial data and documents between lawyers and the courts (Velicogna et al. 2011). One of the CNB objectives with e-Barreau was the development of an electronic communication system in compliance "with the rules regarding attorney-client privilege and confidentiality" (Velicogna et al. 2011, p. 172). On the other hand, the Ministry of Justice was interested in extending the E-Greffe experience at the national level as it was seen as a means to reduce court workload and improve the efficiency of the justice service delivery.

On 4 May 2005, the National Bar Council and the Ministry of Justice signed a convention providing a national framework defining the rules to be followed by official electronic communication between courts and lawyers. These covered lawyers' access to relevant information available on the court CMS in relation to their cases, two-way official communication between courts and lawyers, and the exchange of legally valid documents. Within the framework of the convention, the National Bar Council "had to provide lawyers with a solution allowing them to connect to the courts' registers" (Velicogna et al. 2011, p. 174). Accordingly, the National Bar Council invested in the development of a "lawyers' e-Barreau package that included broadband internet access, a secured mail inbox, a digital certificate stored on a USB key, and a digital signature tool" (Velicogna et al. 2011, p. 174).

Also according to the framework, the Ministry of Justice was to develop a communication add-on to allow access to the Justice VPN (virtual private network) and to connect to the court Case Management Systems. The trialling of such add-ons began in 2006 in three *tribunaux de grande instance*. At the same time, the National Bar Council ICT chose to introduce an Internet provider monopoly and high fees (€55 per month), and this coupled with a lack of concrete advantages in the use of the lawyers' VPN, resulted in a very low number of subscribers between 2005 and 2007 (Velicogna et al. 2011, p. 175). Furthermore, criticisms were directed at the CNB for being not transparent in the methods used for selecting software providers and for the resulting ICT choices.

In 2007 though, a strong impetus for the development of e-Barreau came from the new Ministry of Justice. On the Ministry of Justice side, the deployment of the *tribunaux de grande instance* add-on was speeded up. A new framework agreement was also signed between the Ministry of

Justice and the CNB[15] to reinforce the commitment of both institutions and further define roles and organizations in the official electronic data exchange (Velicogna et al. 2011).

In particular, the Ministry of Justice agreed to determine the terms of the interconnection between the justice network and the lawyers' network, in consultation with the CNB, and authorized a single national access between the two independent private networks. At the same time, according to the agreement, the CNB is responsible for the implementation of the technical infrastructure allowing the connection of lawyers (e-Barreau), and for maintaining the software responsible for connecting lawyers to the courts.[16]

In parallel, the National Bar Council worked to reduce the drawbacks of the lawyers' e-Barreau infrastructure. First of all, with the introduction of a data encryption box, mandatory Internet access subscription was no longer required. Secondly, the fee was reduced to €32 per month. Furthermore, the Paris Bar was allowed to use an ad-hoc solution to access the system which went through the existing E-Greffe at much cheaper rates (Velicogna et al. 2011). While this solved some of the problems, allowing a faster diffusion of e-Barreau, it left other problems on the table, such as the concern about the CNB methods used to select software providers and ICT choices (an encryption box monopoly was introduced). It also introduced a new problem, relating to the exception made for the Paris Bar Association and for none other.

These problems, in time, caused a reaction in the unsatisfied lawyers and some of their local bar associations. The situation became critical in Marseille, where the Bar Association developed an ad-hoc system that allowed the use of a single encryption box for all its lawyers. As the encryption box provider cut the service to Marseille, the problem became a legal and political one. While in the end the Marseille lawyers did not win their legal battle, the reports drafted discussing the alternative technical solutions showed that the e-Barreau was not "better" from a technical perspective.

Also, while the system started to be diffused on a national scale, courts were unable to recognize and proof the digital signatures on documents submitted by lawyers. A temporary solution was provided under Décret no 2010-434 du 29 avril 2010 which stated that until 2014 submission thorough e-Barreau was equivalent to signature. Conventions ratified between the local bar associations and courts allowed sending electronic documents in place of paper originals. At the same time, for all cases in

which the handwritten signature was mandatory, the signed paper original had to be scanned and then sent as an attachment.

As of 2016, all this complexity seems to be in the past as e-Barreau allows its lawyers to communicate not only with the ordinary jurisdiction courts but also with the administrative ones. A free application for iPhone and Android for registered lawyers has been launched to allow access to all e-Barreau information in real time[17] and it has become possible to move to the Cloud, and to access all e-Barreau services and functionalities through the Cloud Privé des Avocats.[18]

3.3 E-Justice in the EU

EU e-Justice is an umbrella term under which a variety of initiatives and policies coexist at different levels. According to Kramer, "the overriding aim of e-justice at the EU level is to improve access to justice, in particular for cross-border cases in civil and commercial matters, and, more recently, to enhance administration and collaboration in criminal matters" (Kramer 2015, p. 1).

"While the first European research seminar on information and communication technology in the European judicial systems was held in Bologna in September 2000,[19] the political discussion on EU e-Justice started back in 2006 when the Austrian Presidency organized the first e-Justice conference. The central theme was how Justice could benefit from digital support and what approach would be fruitful" (Steigenga and Velicogna 2016). An year later, in June 2007, the Justice and Home Affairs (JHA) Council conclusions indicated "that work should be carried out with a view to developing at European level the use of information and communication technologies in the field of justice, particularly by creating a European portal to facilitate access to justice in cross-border situations".[20] Since then, EU Member States, the EU Council, the EU Commission and the EU Parliament have worked to foster an overall e-Justice strategy and to create synergies between efforts at European and national levels.

Following the indications provided by the European Council, the Commission presented a communication 'Towards a European e-Justice Strategy' in June 2008.[21] According to the Strategy, while the "development of e-Justice depends primarily on the will of the Member States"[22] at national level, the Commission has financed the development, operation and translations of the European e-Justice Portal and provided funding

opportunities for e-Justice projects through a number of means, including DG Justice, the Connecting Europe Facility, the Interoperability Solutions for European public administrations, and the Competitiveness and Innovation Framework programmes.

At the same time, "the European Parliament has demonstrated its interest in the work carried out in the area of e-justice. On 18 December 2008, it adopted a Resolution on e-justice[23], in which it stated, inter alia, that a suitable machinery should be set up to ensure that future legislation is designed in such a way that it can be used in online applications".[24]

In March 2009, the Council adopted the first Multiannual European e-Justice Action Plan (2009–2013), prepared in cooperation with the Commission and the European Parliament.[25] According to the Action Plan, European e-Justice must be designed respecting the principle of the independence of the judiciary. At the same time, "from a technical viewpoint, e-Justice must take into account the more general framework of [EU] e-Government",[26] and in particular of the body of expertise already developed in fields such as secure infrastructure and the authentication of documents, e-Signature and e-Identity. Furthermore, the European interoperability framework (EIF) developed within the IDABC programme should be promoted in cooperation with the European Commission.[27] In conjunction with the adoption of the first action plan the Council endorsed the setting up of a new working structure, the Working Party on e-Law.

The current Strategy on European e-Justice (2014–2018) builds on the work done so far emphasizing "the key role of the European e-Justice Portal, and outlines the key objectives and the modes and measures of implementation" (Kramer 2015, p. 1). Figure 3.2, elaborated within the API for Justice project, provides a map of some of the key e-Justice projects ongoing at the EU level, dividing them by user group, channel (e-Justice portal, closed or open public national application or third party application) and kind of service provided).

While these initiatives are laudable, so far e-Justice and its governance have been typically characterized by an instrumental stance, according to which technology is seen as a passive tool that may support the justice service provision. As an example, in its communication to the Council, the European Parliament and the European Economic and Social Committee, 'Towards a European e-Justice Strategy', and the European Commission, e-Justice represents a means of "placing information and communication technologies (ICT) at the service of judicial systems creates possible

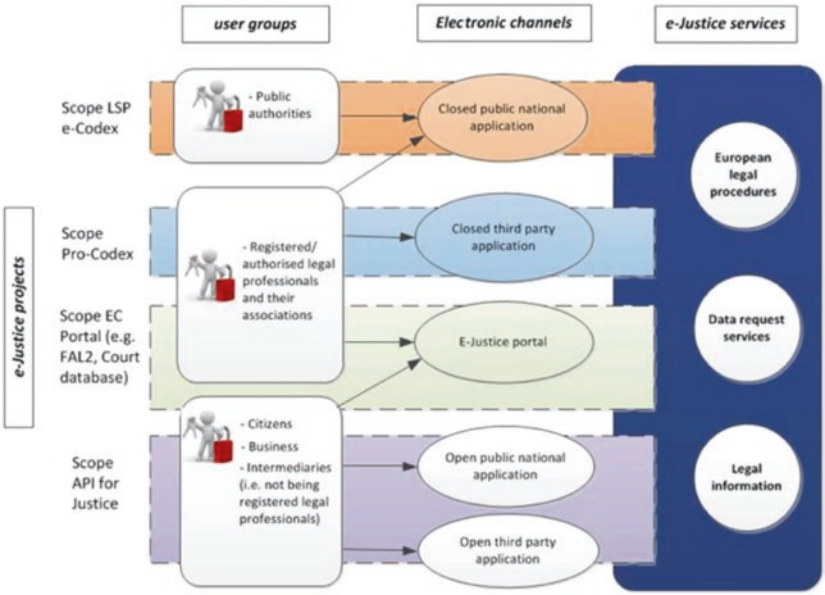

Fig. 3.2 Representation of European e-Justice landscape. Source: Own elaboration

solutions by improving their functioning and contributing to a streamlining of procedures and reduction in costs".[28] The theme of the latest e-Justice conference organized under the Dutch presidency of the EU "e-Justice: it's not about technology!" though, seems to indicate that a shift in perspective is starting to take place.

The following sub-sections describe the two most relevant developments in EU e-Justice: the EU e-Justice portal and the e-CODEX.

3.3.1 The EU E-Justice Portal

As previously mentioned, in June 2007, the JHA Council decided that a "European portal to facilitate access to justice in cross-border situations"[29] should be created. On the basis of this decision, the EU Commission drafted a first overall strategy for the development of e-Justice at the European level in synergy with the Member States (Xanthoulis 2010). In June 2008, "the Council welcomed the initiative to 'progressively estab-

lish a uniform EU e-Justice portal by the end of 2009'".[30] The aim of the portal was identified as to "provide a single, multilingual, user-friendly access point ('one-stop shop') to the whole European e-Justice system, i.e. to European and national information websites and/or services".[31] The European e-Justice Portal has been defined as "one of the most challenging and innovative initiatives recently taken by the European Union to promote the harmonization of rules in several fields, in order to improve access to justice" (Carboni 2014).

The portal was launched on 16 July 2010 to "make life easier for citizens, businesses and practitioners in Europe",[32] and as a means to improve access to justice and its delivery. In her inauguration speech, Viviane Reding (Member of the European Parliament) portrayed its function as that of increasing knowledge of EU legal systems, to increase trust and "the confidence that your rights will be protected no matter where you are in Europe",[33] and as a "one-stop cyber shop for justice information"[34] for EU citizens, businesses and lawyers. More than just information, it was intended to be a means of quickly providing citizens with legal information and advice.[35] The EU e-Justice Portal is hosted and operated by the European Commission in line with the indications provided by the Council.[36]

When the e-Justice Portal began operating in 2010, it built upon previous EU e-Justice experiences. In particular, since 2003 the Commission had sustained "the creation of a web-portal for the European Judicial Network in civil and commercial matters, to support the exchange of information and experience and boost cooperation between the Member States as regards civil and commercial law" (Velicogna 2010). It had also supported the set-up of legal "atlases" for criminal and civil matters. The European Judicial Atlas in Criminal Matters was established to facilitate the work of legal practitioners in the practical implementation of requests for mutual legal assistance between the Member States, supporting the identification of the local competent authority and the direct transmission of requests.[37] At the same time, the European Judicial Atlas in Civil Matters was set up to provide legal professionals, EU citizens and businesses' with access to information relevant for cross-border judicial procedures in civil matters. This includes the information needed to identify the competent courts or contact authorities using online forms. As the European e-Justice Portal came online, the European Judicial Atlases were phased out and their contents were moved to the Portal.[38]

The e-Justice Portal supports access to judicial information and to functionalities designed to support access to justice. It is a source of infor-

mation for specific categories of justice users, including citizens, businesses, legal practitioners and judiciary. As an example, it provides European citizens with information ranging from victims' and citizens' rights in criminal proceedings to guidelines to initiate different kinds of civil proceeding in another Member State. Different information is provided for each of the 28 Member States by the national competent authorities. The pages are then translated over time into all EU official languages. Increasingly, though the e-Justice Portal also offers access to a number of tools, such as the EU legislation database, Eur-lex, which can be searched by legal professionals who needed to access justice services; and the ECLI search engine, designed to facilitate access to jurisprudence in the EU cross-border context by allowing EU citizens and legal practitioners to easily locate case law and featuring an European Case Law Identifier.

Online multilingual dynamic forms that support the direct use of cross-border judicial procedures, such as the European Order for Payment procedure providing electronic forms that can be filled in online, printed and then sent to the competent court. User guides to cross-border procedures have recently been made available and are being constantly improved, to provide help to the more or less expert users to select the right legal tool and identify the actions that need to be carried out. At the same time, these guides seem to fail to convey the practical knowledge needed to deal with concrete cases, as the level of harmonization of EU procedures is often quite low for key steps, and the national implementations are characterized by "divergent practices and interpretations" (Ontanu 2016). A wizard has been introduced to support the selection of one of the cross-border civil procedures by answering a tree of questions, but its usefulness has been also questioned (Velicogna and Lupo 2016).

Users can register and log in to the portal through the European Commission Authentication Service (ECAS), although this is not required by the general public for accessing the above-mentioned services. Nevertheless, services which will be made available in the near future make use of this feature of the Portal.

Additional functionalities are also provided in cooperation with third parties and additional tools are being connected. As an example, a "finding a competent court" function is available to "help you identify the competent court for a specific case", although the tool does not help understanding if a court is actually competent for a given case but provides just a number of courts that have competence in a given area, telephone numbers and other contact information.[39] Another functionality is a search

engine called Find-A-Lawyer,[40] which help portal users to find lawyers on the base of different criteria such as country, practice area or language. This functionality is provided by the European Commission in collaboration with the participating national bar registers and with the support of the Council of Bars and Law Societies of Europe (CCBE). The next step, Find-A-Lawyer 2 (FAL 2) provides a tool to verify lawyers' e-identity and status in cross-border legal transactions.[41] The system has already been developed and should be made available in 2017. A similar tool is Find-A-Notary, which is provided to the general public by the European Commission, the Council of Notaries of the European Union and the national chambers of notaries participating in the project. The Interconnection of Insolvency Registers service supports the search of information on insolvency proceedings in the participating Member States' national registers. The portal is also in the process of being interconnected with the e-CODEX infrastructure, to support the electronic communication and transmission of legal documents in EU cross-border judicial procedures. The services should be accessible through ECAS credentials and require the user to be the owner of a digital signature issued by a provider on the EU Trusted list.[42] By the end of 2016 the service was still in the technical testing phase.

3.3.2 E-CODEX Project: Enabling Electronic Judicial Communication in Cross-Border EU Procedures

As pointed out by Velicogna and Steigenga in their attempt to tackle e-CODEX complexity, "the first problem that presents itself in describing e-CODEX is its definition. Depending on the focus of the attention and on the objective of the analysis, e-CODEX has been defined as a project,[43] a technology,[44] a cross border infrastructure developed and implemented in the EU justice domain,[45] a governance player in the EU justice domain,[46] an assemblage of heterogeneous components, a method.[47]" (Velicogna and Steigenga 2016, p. 9) and a Complex Adaptive System (ibidem).

Defined as a **project,** e-CODEX is a EU cofunded Large Scale Project (LSP) in the domain of e-Justice.[48] It started in December 2010 as a 36-month project involving 19 partners and 15 European States, mainly through their Ministries of Justice or their representatives, but also three other institutions: the Council of Bars and Law Societies of Europe, the Council of the Notaries of the European Union and the National Research Council of Italy. The project was then extended twice to last 66 months.

The extension also had a budget rise from €15 million to €24 million (EU contribution: €12 million). It lasted 66 months running from December 2010 to May 2016 with a €24 million budget (EU contribution: €12 million).[49] The number of participants increased to 27 and the number of countries actively involved to 22 (20 EU Member States plus Norway and Turkey). e-CODEX features in the Strategy on European e-Justice 2014–2018, which has been endorsed by the Council of the European Union and the European Parliament. The e-CODEX Project aims to improve interoperability between legal authorities within the EU with a minimum impact on existing national ICT solutions. In this context transport of data and documents is a key element of the solution. Any functionality to be developed for a cross-border e-Justice service necessarily means transport of information from one country to another (Velicogna et al. 2016; Lupo and Velicogna 2017).

In terms of **technology**, the e-CODEX project developed a content agnostic e-delivery solution that uses building blocks from previous EU Large Scale Projects[50] and national projects, to allow electronic communication in cross-border justice procedures. The e-CODEX "solution is content agnostic, in the sense that the transport of data is independent from the format of the files being exchanged and from the business processes being supported" (Velicogna and Steigenga 2016, p. 12). As a key requirement of electronic communication in judicial procedures is its legal effectiveness, the e-CODEX solution also supports the validation and cross-border recognition of e-identities and e-signatures (Velicogna 2014, 2015).

As several Member States participating in the project had already made consistent investments in national e-Justice systems,[51] in light of the indications of the Multiannual European e-Justice Action Plan (2009–2013),[52] and of the subsidiarity principle, a centralized approach was rejected and a multilateral gateway-based architecture was selected. As a result, no central technical component is involved in the communication, as the interconnection is provided through national gateways (Hommik and Klar 2016; Velicogna and Steigenga 2016). The function of the gateways is to separate national solutions from e-CODEX allowing them to exist independently. It converts messages from the national standards to common standards supported by e-CODEX and vice versa (Borsari et al. 2012, p. 9). The system is therefore based on common standards agreed upon by the partners and not on bilateral arrangements which would create the need for the development and maintenance of a high number of solutions and agreements (Borsari et al. 2011).

The resulting e-CODEX architecture enables the interconnection of national systems by using the ebMS (3.0) standard for this electronic communication. The e-CODEX e-Delivery solution maps the (proprietary) national formats to an ebMS-based standard transport format used between the gateways. Through this, e-CODEX limits the impact of the interconnection of national systems (e-CODEX 2015).

At the same time, the function of the e-CODEX technical infrastructure is not limited to the e-delivery of data and documents. "To enable meaningful exchange of information between national systems, it also supports semantic interoperability" (Velicogna and Steigenga 2016, p. 12). As previously mentioned, Member States have developed national e-Justice solutions. Such solutions are based on semantic structures developed domestically and therefore the direct exchange of structured data between them is not possible, as semantic information does not match. To support the exchange of semantic information, e-CODEX developed common document standards and semantics. "Specific coding schemas used by national systems need to be transformed in order to be interpreted by other systems using different schemas. This transformation is better known as mapping" (Velicogna and Steigenga 2016, p. 12). As a result, e-CODEX provides the "means to connect rightfully and meaningfully that data that is presented in a different format and may carry different interpretations within the Member States" (Francesconi et al. 2011). The common document standards and semantics are created following a use-case centric modelling approach developed by the project which, with the support of national experts, define and update the specifications which ensure "mutually equal interpretation of data exchanged between national electronic systems in cross border legal procedures" (Velicogna and Steigenga 2016, p. 12). In practice, when processed through e-CODEX, the national communication semantic concepts are transformed into "European" semantic concepts. Member States are responsible for *when*, *if* and *how* the messages are transformed from European to national standards and vice versa. The result is that the data being exchanged "is clearly and uniformly understood when exchanged through the e-CODEX infrastructure" (Francesconi et al. 2011).

In addition to the e-Delivery and semantic transformation functions, cross-border e-Justice communication also requires the development of means to ensure e-Identification and Expression of Will solutions. From a technical perspective, identity management systems, systems supporting the indication of intention by identified users and signature verification

solutions were already in place in the different Member States but were not interoperable across national borders. To solve this problem, e-CODEX developed a mechanism to validate the signature/identification that works at the level of the sender's e-CODEX gateway, which creates a certification signed by the sending authority (i.e. the Ministry of Justice of the sending Member State). This certification is called Trust-Ok-Token (e-CODEX 2015). At the time of the e-CODEX system's development the legal framework on e-Identification and Expression of Will was not sufficient to support the legal validity of e-signed documents or to perform legal steps in the cross-border judicial context. So, the e-CODEX partners drafted an agreement called the **Circle of Trust**, signed by all piloting Member Stat competent authorities (i.e. the Ministries of Justice). This established a firm basis to recognize exchanged electronic information with a minimum level of organizational requirements needed for operational and technical matters related to, or in connection with, the functioning of the e-CODEX system. One of the key concepts supported by the Circle of Trust is that if the information is trusted by the Member State where it originates from, then it may also be trusted by the receiving State/s, subject to certain conditions. A Circle of Trust is understood as the mutual recognition between Member States of electronic data, documents and signatures within the existing legal framework (Velicogna et al. 2014, pp. 32–33).

During the project, the system was tested through piloting with "live cases", which refers to the use of the system by real people involved with real cases. By the end of the project in May 2016, the project had five services in the live phase: the European order for Payment, live since August 2013 with seven Member States connected;[53] the EU Small Claims, live since June 2015 with four Member States connected;[54] the Synchronous Communication applied to Business Registers, live since September 2015 and providing services in three Member States;[55] the Secure Exchange of Sensitive Data (which includes Mutual Legal Assistance for criminal law, civil justice Taking of Evidence, EURegio and the Mutual Recognition of Custodial Sentences), live since November 2015 and providing services in three Member States;[56] and finally, the Financial Penalties, live since May 2016 and providing services in two Member States.[57] Overall, 13 Member States are involved in the piloting (Hvillum et al. 2016, pp. 17–26).

After the end of the project, a viable solution for e-CODEX sustainability "taking into account the principles of voluntary action, decentrali-

sation, interoperability and independence of the judiciary, and the need to take into account the interests of those Member States not currently participating in the e-CODEX project" is being implemented.[58] The sustainability of the technical generic components is being ensured by the "Connecting Europe Facility" (CEF). At the same time, the "e-CODEX system was recognized as more than just the sum of the technical parts, and as an essential element in the future of European Justice". To that end the e-CODEX partners, the Member States, the EU Council and the EU Commission devised a multi-step approach to ensure the long-term sustainability of e-CODEX. In the short term, a EU cofunded project called Me-CODEX (Maintenance of e-CODEX) will cover the maintenance of the e-CODEX assets specifically related to the e-Justice service provision. Me-CODEX should ensure a swift and sustainable transition of the e-CODEX project towards long-term sustainability. In the long term, e-CODEX e-Justice assets should be handed over to an EU agency that will take responsibility for the daily maintenance of the solutions, ongoing development and support to EU Member States and associated countries (Velicogna and Steigenga 2016).

While e-CODEX core system sustainability has been ensured after the end of the project, a constellation of activities in the e-Justice domain was also triggered from e-CODEX's achievements. To cite four initiatives that started in the first half of 2016:

1. The CCBE, within an EU cofunded project, is planning to connect Find a Lawyer 2 (a tool that allows lawyers to verify e-ID in cross-border procedures) to e-CODEX. "Within the framework of e-CODEX, FAL 2 will provide the necessary solution to ensure that the person claiming to be a lawyer is indeed a qualified lawyer in his/her home jurisdiction and is, thus, able to fill in claims on behalf of the client through e-Justice procedures available, for instance, under e-CODEX".[59] More concretely, a use case on Lawyer2Court communication consisting of testing the participation of lawyers in EPO via the European e-Justice Portal using the outcome of the projects FAL2 and FAL3 has been initiated and will be finalized in the context of the expected Me-CODEX project.[60]
2. Pro-CODEX (Connecting legal practitioners' national applications with the e-CODEX infrastructure), a EU cofunded project that investigates the conditions to make e-CODEX and the applications used by legal professionals (lawyers and notaries) interoperable. e-CODEX

provides general solutions and is well tailored to meet national courts' needs, while the e-Justice Portal should provide a solution for non-repetitive players. At the same time, software houses providing systems for legal professionals do not seem interested in developing e-CODEX interfaces due to the limited number of users. Thus, Pro-CODEX will provide the means to extend the user bases of e-CODEX, investigating the issues related to the connection of legal professionals' applications to the e-CODEX infrastructure and develop running pilots in a limited number of countries.

3. The "API for Justice" EU cofunded project, coordinated by the Dutch Ministry of Justice, aims to open up the infrastructure for cross-border legal services provided by e-CODEX and the European e-Justice portal, by means of an API (Application Programming Interface). This would make it possible for third parties to build applications which use the e-CODEX services.
4. e-CODEX 2.0, a research initiative funded by the Research Institute on Judicial Systems of the National Research Council of Italy (IRSIG-CNR), which participated in the e-CODEX project, to investigate through a multidisciplinary approach e-CODEX project developments and to follow its long-term sustainability path.

3.4 Concluding Remarks

This chapter has shown many of the different elements that are part of e-Justice's complexity at national and EU levels. The use of case studies has allowed us to highlight the complex intertwining of technological, legal, organizational and political elements which combine over time in the building of e-Justice systems, which is lost in the quantitative representations provided by tools such as overall e-Justice development or global level of IT equipment indices.

Several lessons can be learnt to help policy makers and practitioners involved in the planning or implementation of e-Justice systems. The first lesson is that, as just mentioned, e-Justice is not just about the development of a technological layer to improve the efficiency of the system. Technology needs to be authorized and regulated at the normative level to produce "legal" effects. At the same time, while single, simple, legal procedures may be "quickly" redesigned to "accommodate" the new technologies, such as in the MCOL case, the development of complex e-Justice systems, such as the Austrian infrastructure system, can only take

place over time and through mutual adaptation at the legal and technological level. Furthermore, even in the case of MCOL, the system is assembled by building on the existing legal, technological and organizational framework and from its components.

Furthermore, the examples provided show how e-Justice has clear implications as far as traditional organizational borders and logics of action are concerned. Political, legal and operational consequences of the institutional reconfigurations that take place as offline procedures go online need to be not only carefully considered, but also monitored, as many of the consequences are emergent and not easily predictable. As the ERV case shows, for example, in the digital world the offline space, which is occupied by the court counter that stays between the lawyer filing a document and the court clerk, becomes populated by a number of technological systems and organizations (the Clearing Houses, the Federal Computing Centre, the ERV, the justice applications). The borders between private and public, between party, law firm and court become more blurred. To the French lawyer accessing his court hearing calendar it is not obvious where the information he or she is consulting is located. Is it in his or her computer, in a server in the court, in a centralized database of the ICT department or in some private data warehouse? Is it updated? At the same time, if everything is working properly there is no need to know. The problem is that as some of the case examples show, the practice is full of moments in which the techno-legal systems do not work seamlessly. In those moments, the understanding of the online architecture becomes relevant again.

Another important element, which emerged from the cases, is the partial nature of the online systems. While MCOL shows how this on/offline nature can be used to simplify the provision of e-Justice services, the offline component is part of all systems described. Forms for cross-border procedures can be filled and printed from the EU e-Justice portal, paper originals are scanned and attached to structured messages by the Austrian lawyers, and so on. This on/offline possibility allows limiting the complexity of the e-Justice systems to a manageable level.

Finally, the cases show how e-Justice cannot be understood if it is conceived as a static object once implemented. All cases show that apart from the non-linear path that characterizes the e-Justice systems' development, not just their technical, legal and organizational components, but also their objectives, keep evolving over time. This is the clear case of the Austrian ERV in its over 25 years of life. From a system developed to

support the e-filing of a single simplified procedure for selected groups of users it has evolved to provide two-way communications to a much broader number of users and cases. Technological standards and legal norms authorizing and regulating its use have changed over time, while the number of actors involved in the service provision has also changed. The story of e-Barreau shows some similar features, both from the technological and normative sides. It has also shown the political nature of the choices involved in the evolution of an e-Justice system. The political dimension has also been clearly shown in the EU cases, where political commitment and decisions have been part of the shaping of the EU justice portal and of e-CODEX.

Notes

1. See for example Contini F., G.F. Lanzara (Eds) (2009), ICT and Innovation in the Public Sector. European Perspectives in the making of e-government, Palgrave, London; A. Cerrillo and P. Fabra (Eds) (2009), Information and Communication Technologies in the Court System, IGI Global, Hershey PA, USA; Velicogna, M. (2008) Use of information and communication technologies (ICT) in European judicial systems—CEPEJ Studies No. 7; Fabri M. (Ed) (2007), Information and Communication Technologies for the Public Prosecutor's Office, Clueb, Bologna.
2. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/520203/money-claim-online-user-guide.pdf. Accessed on 10/10/2016.
3. https://www.gov.uk/courts-tribunals/northampton-county-court-business-centre. Accessed on 10/10/2016.
4. http://www.gateway.gov.uk. Accessed on 10/10/2016.
5. http://www.hmcourts-service.gov.uk/onlineservices2/mcol_system/conditions.htm.
6. For the full list of criteria see: http://www.hmcourts-service.gov.uk/onlineservices2/important_info/claim_criteria.htm. Accessed on 10/10/2016.
7. HMCTS Money Claim Online (MCOL)—User Guide for Claimants.
8. HMCTS Money Claim Online (MCOL)—User Guide for Claimants.
9. http://www.hmcourts-service.gov.uk/cms/mcol.htm. Accessed on 10/10/2016.
10. Electronic transmission of original documents and attachments to submissions to the courts in electronic legal communication was not possible. In fact, only from "January 1st 2007 the electronic signature of justice has been applied in practice. Since then the electronic signature of justice confirms the authenticity of commercial register excerpts and documents

stored in the electronic archives of land and commercial register" http://www.epractice.eu/files/documents/cases/1449-1179822942.pdf. Accessed on 10/10/2016.
11. https://www.justiz.gv.at/web2013/home/e-government/elektronischer_rechtsverkehr_erv ~2c9484852308c2a60123708554d203e7.de.html. Accessed on 10/10/2016.
12. The Simple Object Access Protocol, is a protocol specification for exchanging structured information on the implementation of Web Services.
13. https://www.justiz.gv.at/web2013/home/e-government/elektronischer_rechtsverkehr_erv ~2c9484852308c2a60123708554d203e7.de.html. Accessed on 10/10/2016.
14. https://www.justiz.gv.at/web2013/home/e-government/elektronischer_rechtsverkehr_erv ~2c9484852308c2a60123708554d203e7.de.html. Accessed on 10/10/2016.
15. http://archives.cnb.avocat.fr/lettre_conseil/LDC_09-2007/fichiers/convention-nouvelles-technologies.pdf. Accessed on 10/10/2016.
16. http://archives.cnb.avocat.fr/lettre_conseil/LDC_09-2007/fichiers/convention-nouvelles-technologies.pdf. Last accessed on 10/10/2016.
17. http://www.ebarreau.fr/actus.php. Accessed on 10/10/2016.
18. https://faq.avocat.fr/index.php?action=artikel&cat=24&id=123&artlang=fr. Accessed on 10/10/2016.
19. M.Fabri, and Contini, F. (eds.) (2001) Justice and Technology in Europe: How ICT is Changing the Judicial Business, Kluwer Law International.
20. Draft strategy on European e-Justice<!--e-Justice--> 2014-2018, OJ C 376, 21.12.2013, p. 7–11.
21. COM(2008) 329 final.
22. COM(2008)329 final p. 4.
23. (2008/2125 (INI)).
24. Draft strategy on European e-Justice 2014-2018 OJ C 376, 21.12.2013, p. 7.
25. Multi-annual European e-Justice action plan 2009-2013 OJ C 75, 31.3.2009, pp. 1–12.
26. Ibidem p. 2.
27. Ibidem. IDABC stands for Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens.
28. COM(2008)329 final p. 2.
29. Draft Strategy on European e-Justice<!--e-Justice--> 2014-2018 (2013/C 376/06).
30. Ibidem.
31. Ibidem.
32. http://europa.eu/rapid/press-release_IP-10-956_en.htm. Accessed on 10/10/2016.

33. Reding V. quoted at http://europa.eu/rapid/press-release_IP-10-956_en.htm. Accessed on 10/10/2016.
34. Ibidem.
35. Ibidem.
36. Draft Strategy on European e-Justice 2014-2018 (2013/C 376/06).
37. https://www.ejn-crimjust.europa.eu/ejn/AtlasChooseMeasure.aspx?MP=0&Cou=295. Accessed on 10/10/2016.
38. http://ec.europa.eu/justice_home/judicialatlascivil/html/index_en.htm. Accessed on 10/10/2016.
39. http://ec.europa.eu/justice_home/judicialatlascivil/html/cc_searchmunicipality_en.jsp#statePage0. Accessed on 07/10/2016.
40. https://e-justice.europa.eu/content_find_a_lawyer-334-en.do. Accessed on 10/10/2016.
41. http://www.ccbe.eu/fileadmin/user_upload/NTCdocument/FAL2_page_EN_webpdf1_1366020243.pdf. Accessed on 10/10/2016.
42. https://ec.europa.eu/digital-single-market/en/eu-trusted-lists-trust-service-providers. Accessed on 10/10/2016.
43. e-CODEX Technical Annex, website etc.
44. e-CODEX technical Deliverables, e-CODEX D7.6.
45. Velicogna, M. (2014). Coming to Terms with Complexity Overload in Transborder e-Justice: The e-CODEX Platform. In The Circulation of Agency in E-Justice (pp. 309–330). Springer Netherlands.
46. Velicogna, M., & and Lupo, G. (2016). From drafting common rules to implementing electronic European Civil Procedures: the rise of e-CODEX. Presented at the "From common rules to best practices in European Civil Procedure" conference, 25 and 26 February 2016, Rotterdam.
47. Steigenga E. & M. Velicogna (2016), Envisioning the next step in e-justice: In search of the key to provide easy access to cross border Justice for all users.
48. e-CODEX is funded through the ICT Policy Support Programme (ICT PSP) under the Competitiveness and Innovation Framework Programme (CIP). Within the Competitiveness and Innovation Framework Programme (CIP), the ICT PSP is part of the European Union effort to exploit the potential of the new information and communication technologies.
49. e-CODEX is funded through the ICT Policy Support Programme under the Competitiveness and Innovation Framework Programme (CIP).
50. PEPPOL: e-procurement, epSOS: e-health, STORK: e-identity and SPOCS: e-business services. More information can be found here:http://ec.europa.eu/information_society/newsroom/cf/document.cfm?action=display&doc_id=1250. Accessed on 10/10/2016.
51. e-CODEX Technical Annex V.1.1 p. 11.

52. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:075:0001:0012:EN:PDF. Accessed on 10/10/2016.
53. Austria, Germany, Estonia, Greece, Italy, Malta and Poland, while France and the EU Commission were in the testing phase.
54. Austria, Czech Republic, Malta and Poland, while France and the EU Commission were in the testing phase.
55. Austria, Ireland, Italy.
56. Germany, Spain and the Netherlands, while Greece is in the testing phase.
57. France and the Netherlands, while Germany and Hungary are in the testing phase.
58. http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%2015774%202014%20INIT, p. 6. Accessed on 10/10/2016.
59. http://www.ccbe.eu/fileadmin/user_upload/NTCdocument/FAL2_page_EN_webpdf1_1366020243.pdf. Accessed on 10/10/2016.
60. As the work to link FAL2 with e-CODEX will take more time than first expected, the work on FAL3 needs to be postponed. This means that the testing of the Lawyer2Court use case will be done after the end of e-CODEX Source: e-CODEX Deliverable D3.13 Update of D3.4 Test Findings of Tests.

References

Bauer, P., & Graf, C. (2003). Judicial electronic data interchange in Austria. In M. Fabri & F. Contini (Eds.), *Judicial electronic data interchange in Europe* (pp. 103–123). Bologna: Lo Scarabeo.

Borsari, G., et al. (2011). *D7.1 Governance and guidelines definition*. e-CODEX Deliverable.

Borsari, G., et al. (2012). *D7.3 High level architecture definition*. e-CODEX Deliverable.

Carboni, N. (2014). From quality to access to justice: Improving the functioning of European judicial systems. *Journal of Civil & Legal Sciences, 3*(131).

Carnevali, D. (2009). e-Justice and policies on risk management. In A. Cerrillo & P. Fabra (Eds.), *e-Justice. Using information communication technologies in the court system* (pp. 20–37). Hershey, PA: IGI Global.

CEPEJ. (2010). *European judicial systems – Edition 2010 (2008 data): Efficiency and quality of justice*. CEPEJ Studies No. 12.

CEPEJ. (2012). *Report evaluating European judicial systems – 2012 edition (2010 data)*. CEPEJ Studies No. 18.

CEPEJ. (2014). *Report evaluating European judicial systems – 2014 edition (2012 data)*. CEPEJ Studies No. 20.

CEPEJ. (2016). *Thematic report: Use of information technology in European courts*. CEPEJ Studies No. 24.

e-CODEX. (2015). *e-CODEX achievements, use cases and technical building blocks.* e-CODEX Deliverable.

Contini, F., & Cordella, A. (2016). Law and technology in civil judicial procedures. In Brownsword et al. (Eds.), *The Oxford handbook of the law and regulation of technology* (pp. 246–268). Oxford:Oxford University Press.

Contini, F., & Fabri, M. (Eds.). (2003). *Judicial electronic data interchange in Europe: Applications, policies and trends.* Bologna: Scarabeo.

Contini, F., & Lanzara, G. F. (Eds.). (2009). *ICT and innovation in the public sector: European studies in the making of e-government.* New York: Palgrave Macmillan.

Contini, F., & Lanzara, G. F. (Eds.). (2014). *The circulation of agency in e-Justice: Interoperability and infrastructures for European transborder judicial proceedings.* Dordrecht: Springer.

Contini, F., & Mohr, R. (2007). Reconciling independence and accountability in judicial systems. *Utrecht Law Review, 3*, 26.

Cordella, A. (2007). E-government: Towards the e-bureaucratic form? *Journal of Information Technology, 22*(3), 265–274.

van Dijk, J., Kalidien, S., & Choenni, S. (2016). *Smart monitoring of the criminal justice system.* Government Information Quarterly.

European Commission. (2014). *Delivering the European advantage? How European governments can and should benefit from innovative public services.* eGovernment Benchmark Final Background Report, May 2014.

Fabri, M. (Ed.). (2007). *Information and communication technology for the public prosecutor's office*. Bologna: Clueb.

Fabri, M. (2009). The Italian style of e-Justice in a comparative perspective. In A. Cerrillo & P. Fabra (Eds.), *e-Justice. Using information communication technologies in the court system* (pp. 1–19). Hershey, PA: IGI Global.

Fabri, M., & Contini, F. (Eds.). (2001). *Justice and technology in Europe: How ICT is changing the judicial business.* The Hague: Kluwer Law International.

Francesconi, E., et al. (2011). *D6.3 concept for implementation of WP6.* e-CODEX Deliverable.

Fraser, K. (2004). Money claim online. cit. in Velicogna, M. 2011. Electronic access to justice: From theory to practice and back. *Droit et cultures, 61.*

Hommik, L., & Klar, A. (2016). D4.11 WP4 Final Report. e-CODEX Deliverable.

Hvillum, D. B., et al. (2016). *D3.8 WP3 final report.* e-CODEX Deliverable.

Kallinikos, J. (2009). Institutional complexities and functional simplification. The case of money claims online. In F. Contini & G. F. Lanzara (Eds.), *ICT and innovation in the public sector* (pp. 66–87). New York: Palgrave Macmillan.

Koch, S., & Bernoider, E. (2009). Aligning ICT and legal frameworks in a Austria's e-bureaucracy: From mainframe to the Internet. In F. Contini & G. F. Lanzara (Eds.), *ICT and innovation in the public sector* (pp. 147–173). New York: Palgrave Macmillan.

Kramer, X. E. (2015). *A European perspective on E-justice and new procedural models: Transforming the face of cross-border civil litigation and adjudication in the EU*. Available at SSRN 2696978.

Lourenço, R. P., Fernando, P., & Gomes, C. (2017). From e-Justice to open judiciary: An analysis of the Portuguese experience. In C. E. Jiménez-Gómez & M. Gascó-Hernández (Eds.), *Achieving open justice through citizen participation and transparency*. Hershey, PA: IGI Global.

Lupo, G. (2011). *The case of money claim online in England and Wales*. Research Report IRSIG-CNR, Bologna.

Lupo, G. (2014a). The case of money claim online and possession claim online in England and Wales. In F. Contini & G. F. Lanzara (Eds.), *Building interoperability in European proceedings online*. Bologna: Clueb.

Lupo, G. (2014b). Law, technology and system architectures: Critical design factors for money claim and possession claim online in England and Wales. In F. Contini & G. F. Lanzara (Eds.), *The circulation of agency in e-Justice* (pp. 83–107). Dordrecht, Netherlands: Springer.

Lupo, G., & Velicogna, M. (2017). Making EU justice smart? Looking into the implementation of new technologies to improve the efficiency of cross border justice services delivery. In M. P. R. Bolívar (Ed.), *Smart technologies for smart governments. Transparency, efficiency and organizational issues* (pp. 95–121). Netherlands: Springer.

Ontanu, A. (2016). *How can the best practices of legal practitioners with judicial cooperation be operationalised to improve mutual trust?*. From Common Rules to Best Practices in European Civil Procedure Conference, 25–26 February, Rotterdam.

Oskamp, A., Lodder, A., & Apistola, M. (Eds.). (2004). *IT Support of the Judiciary*. The Hague: Asser Press.

Reiling, D. (2009). *Technology for justice: How information technology can support judicial reform*. Leiden: Leiden University Press.

Steigenga, E., & Velicogna, M. (2016). *Envisioning the next step in e-Justice: In search of the key to provide easy access to cross border justice for all users*. From common rules to best practices in European Civil Procedure Conference, 25 and 26 February 2016, Rotterdam.

Velicogna, M. (2007). Justice systems and ICT, what can be learned from Europe? *Utrecht Law Review, 3*(1), 129–147.

Velicogna, M. (2008). *Use of information and communication technologies (ICT) in European judicial systems* – CEPEJ Studies No. 7.

Velicogna, M. (2010). ICTs in the justice sector. In R. Coman & C. Dallara (Eds.), *Handbook of judicial politics* (pp. 195–236). Romania, Iasi: Institutul European.

Velicogna, M. (2011). Electronic access to justice: From theory to practice and back. *Droit et cultures*, 61, 71–117.

Velicogna, M. (2014). The making of Pan-European infrastructure: From the Schengen information system to the European arrest warrant. In F. Contini & G. F. Lanzara (Eds.), *The circulation of agency in e-Justice: Interoperability and infrastructures for European transborder judicial proceedings.* Dordrecht: Springer.

Velicogna, M. (2015). *e-CODEX and the Italian piloting experience*. IRSIG-CNR Working Paper V. 1.0 Available at SSRN 2726515.

Velicogna, M., & Lupo, G. (2016). *From drafting common rules to implementing electronic European civil procedures: The rise of e-CODEX*. From common rules to best practices in European Civil Procedure conference, 25 and 26 February 2016, Rotterdam.

Velicogna, M., & Steigenga E. (2016). *Can complexity theory help understanding tomorrow e-justice?*. Conference on Complex Systems, Law and Complexity session, 20 September 2016, Amsterdam.

Velicogna, M., Errera, A., & Derlange, S. (2011). e-Justice in France: The e-Barreau experience. *Utrecht Law Review, 7*(1), 163–187.

Velicogna, M., Errera, A., & Derlange, S. (2013). Building e-Justice in continental Europe: The TéléRecours experience in France. *Utrecht Law Review, 9*(1), 38–59.

Velicogna, M., et al. (2014). *D7.4 architectural hands on material.* e-CODEX Deliverables.

Velicogna, M., et al. (2016). *D7.6 architectural hands on material (Update of D7.4)*. e-CODEX Deliverable.

Xanthoulis, N. (2010). *Introducing the concept of 'E-justice' in Europe: How adding an 'E' becomes a modern challenge for Greece and the EU.* Effectius Communication.

Marco Velicogna is a researcher at the Research Institute on Judicial Systems of the National Research Council of Italy. His interests are in the areas of judicial administration, comparative judicial systems, court technology, information infrastructures, evaluation, organizational change and the management of innovation. He has participated in a number of national and international research projects, and had a key role in the e-CODEX EU Large Scale Pilot project. He is currently the principal investigator of the Pro-CODEX project (co-funded by the EU JUST/2014/JCOO/AG/CIVI programme). He served as consultant and collaborated with the Italian Ministry of Justice and several international institutions (including the CoE, OSCE, UN and World Bank) and has worked as an advisor in judicial reform initiatives in several countries.

CHAPTER 4

Democratizing Government: What We Know About E-Government and Civic Engagement

Nina David

4.1 Introduction

Civic engagement is the cornerstone of any democratic society. Rightly so, such engagement is seen as essential for the creation of a just society where citizens have better access to government and government is in turn transparent, accountable to its citizens, more responsive, and provides more efficient services. Although much sought after, civic participation is difficult to attain and the quest to achieve more of it means that reforms and new tools are constantly pursued. Because information and communication technologies provide opportunities to liberalize government (Norris 2001; Kang and Gearhart 2010), e-government, defined as, "the use by government agencies of information technologies that have the ability to transform relations with citizens, businesses, and other arms of government" has the potential to lead to better civic participation and engagement (Evans-Cowley and Conroy 2004, 16; Scott 2006). In fact, civic engagement should be central to most e-government initiatives (Nijkamp and Cohen-Blankshtain 2009). But is it?

The universe of e-government includes systems that link governments and citizens; governments and businesses; governments and other

N. David (✉)
University of Delaware, Newark, DE, USA

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_4

governments; and intra-government or governments and employees (Evans-Cowley and Conroy 2004). Within e-government systems that link governments to citizens at large, scholars assert that governments emphasize their entrepreneurial function (e.g., service delivery) over their civic functions (e.g., democratic participation) (Musso et al. 2000). Further, within the context of civic functions, it is important to deconstruct whether communication is unidirectional, two-way, interactive, and whether citizens have the ability to influence public policy decisions through e-government systems (see Arnstein 1969; Greitens and Strachan 2011; Reece 2006).

In this chapter, I explore the literature (both theoretical and empirical) on civic engagement, in the context of e-government. In the process, I identify key debates surrounding civic engagement through e-government, reveal some of the nuances associated with it, and highlight the tools and techniques that are used to achieve it. The chapter is organized as follows. First, I start with a brief review of the literature on citizen engagement and e-government to illustrate the breadth of this topical area. Second, I provide a brief review of the theoretical and empirical literature on the connection between e-governance and civic engagement. Finally, I provide best practices from the literature and recommendations on how e-governance systems could be maximized so that civic engagement opportunities can be enhanced and fully realized.

4.2 What Is Civic Engagement?

First and foremost, civic engagement is about citizenship (Dalton 2008). Its protagonists are ordinary citizens and not the political elite. Civic engagement may be "formal or informal, direct or indirect, electoral or extra-electoral" (Johnson 2015, 767). Civic engagement is a multifaceted concept that is encompassing of and often interchangeably referred to as public participation, citizen participation, public involvement, community involvement, community participation, political participation, or political behaviour (Gearhart and Kang 2010). It can therefore be broadly defined as "membership in collective activities for establishment and nourishment of the community through active citizenry" (Gearhart and Kang 2010, 444). This chapter focuses particularly on one component of civic engagement—the intersection of civil society and democratic polity by focusing on civic engagement in governmental activities.

4.3 Why Civic Engagement?

In recent years, we have seen many calls for greater civic engagement both practically and theoretically—that is, including the public in the practice of policy making, and improving decision-making models to allow for this incorporation. These calls have resulted in responses to what is perceived as a "democracy deficit" in governing (Norris 2011). From a theoretical perspective, paradigm shifts have moved us from elitist approaches where experts play key roles in public policy to more deliberative approaches where the public at large is not only included in decision making but plays a fundamental role in it. This evolution from the rational comprehensive planning model of decision making to communicative planning, which invokes Habermasian ideals of communicative rationality, supposes that rationality does not depend on objectivity alone but can also be attained through deliberation and dialogue. The reasons for including civic participation in the practice of democracy are many. They can be broadly divided into the following categories of procedural and substantive benefits accruing to citizens on one the hand and government on the other (see Irvin and Stansbury 2004).

4.3.1 Procedural Benefits to Citizens

Social capital can be defined as the "connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them," (Putnam 2000, 19) and as what results when neighbours talk to each other (Berry et al. 1993). Civic engagement allows individuals to connect, deliberate together, form networks, and reap some of the intellectual and social capital that might accrue from such interactions. The exchange of information and mutual understanding that result the accumulation of social capital (Wondolleck and Yaffee 2000) through civic engagement will allow participants to learn. Learning might allow participants to optimize or might result in fundamental changes to participants' values, beliefs, and preferences (Argyris and Schön 1978; Jordan and Maloney 1996).

4.3.2 Procedural Benefits to Government

Civic participation promotes greater trust in government by providing access to citizens, increasing the transparency of decision-making processes,

improving procedural justice, and consequently greater support for governmental institutions (see Levi and Sacks 2009; Tyler 2006). All of these characteristics enhance the legitimacy of decision-making processes and governmental action. That is, democratic legitimacy arises from process—particularly from deliberation (Dryzek 1999; Manin 1987) that arises from civic engagement. Finally, "the networks of political engagement" (Syed and Whiteley 1997, 128), legitimacy, and trustworthiness of governmental institutions that arise from civic engagement provide decision makers with the political capital needed for policy making.

4.3.3 Substantive Benefits to Citizens

Pateman (1970) and Sabatier (1988) believe that the primary role of civic engagement in democracy is educative. That is, civic engagement allows the accumulation of knowledge. This knowledge might be about governmental institutions and how government works, the policy process, substantive, technical, or the values and preferences of others. Innes and Booher (1999) argue that this kind of knowledge is emancipatory and essential for change. This knowledge, in turn, allows citizens to better leverage their access to government by exerting influence. The power to influence action results in empowerment and allows citizens to gain some control over decision making.

4.3.4 Substantive Benefits to Government

Including citizens in policy processes will allow decision makers to better understand citizen preferences and therefore, develop a more comprehensive assessment of wicked problems. In this manner, civic participation can lead to better quality decisions (see Thomas 1995) that are not one size fits all but tailored to and context sensitive to the community at hand. Further, as citizens get more educated through participation, the quality of their feedback will increase, thus impacting decisions positively. Also, policies are no good if they only exist on paper and their implementation is stymied and "more often than not, the impetus for public involvement comes from a need to obtain acceptance as a prerequisite to successful implementation" (Thomas 1995, 113). Civic engagement can lead to greater buy-in and lesser opposition during policy implementation. This could in turn lead to greater efficiencies in the decision-making process.

4.4 E-Government

Broadly speaking, "e-government includes the use of all information and communication technologies, from fax machines to wireless palm pilots [and web 2.0 technologies] (see Aladalah et al. 2015), to facilitate the daily administration of government [in a way] that improves citizen access to government information, services and expertise to ensure citizen participation in, and satisfaction with the government process…it is a permanent commitment by government to improving the relationship between the private citizen and the public sector through enhanced, cost-effective and efficient delivery of services, information and knowledge. It is the practical realization of the best that government has to offer" (Moon 2002, 425). Similarly, e-government can be narrowly defined as any way of using information and communication technology (ICT) to improve the relationship between governments and constituents, businesses, and other governmental agencies (Moon 2002).

The benefits of e-government are many and scholars continue to assess its impacts across a range of areas that would be meaningful to public administration and policy. E-government has the potential to expand democracy (Reece 2006) by bolstering democratic processes. It has the potential to increase transparency and governmental accountability (Caba Pérez et al. 2010; David et al. 2015). Other benefits include greater administrative efficiencies, governmental responsiveness, increased trust in government, and reduced corruption (Jun et al. 2014). Although there is the fear that it might reinforce existing structural inequalities, e-government also has the potential to mobilize and provide a voice to those who are typically under-represented in decision-making processes (Firmstone and Coleman 2015). E-government has the potential to involve citizens in the solving of wicked problems and in doing so creating partnerships between citizens and their government (Linders 2012). That is, no longer is e-government primarily focused on using ICT to provide information with the anticipation that access to information would enable a more active citizenry. Finally, today, because the evolution of ICT has allowed for more interaction and dialogue, citizens' role in e-government (Firmstone and Coleman 2015) has changed from consumers of information to co-producers of knowledge resulting in what Linders (2012) calls we-government.

Hiller and Bélanger (2001) deconstruct e-government into several constituent categories. Government to individuals (service delivery)

where government directly interacts with citizens to deliver services. This is not always unidirectional and could also include responses to citizen queries about services from government. Government to individuals (political) where citizens are part of the political process by voting and commenting online. Government to business as a citizen where businesses pay taxes online. Government to business in the marketplace where government interacts with business for procurement (e.g., hiring contractors). Government to employees where employees are able to manage health care, receive a paycheque, etc. through the intranet. Government to government where governmental agencies are able to review and comment on policies, apply for funding, and collaborate. One can also think of the citizen-government interaction in the following ways: citizen to government (e.g., citizen sourcing) where citizens serve as co-producers of information; government to citizen (e.g., governmental platforms) where government produces resources to develop citizens' capacity; and citizen to citizen (e.g., do-it-yourself government) where government provides the framework to citizens to act individually or collectively (see Linders 2012). Finally, in terms of the interaction of citizens and government, particularly, scholars identify two broad e-governance categories: the entrepreneurial or enterprise function of government (e.g., service delivery) and the civic function of government (e.g., participation) (Musso et al. 2000).

4.5 E-Government and Civic Engagement

Layne and Lee (2001) see the primary purpose of investment in e-government as the enhancement of the interaction between citizens and their government. Through the use of ICTs for this purpose, e-participation can be defined as the process of engaging citizens through ICTs in policy, decision-making, and service design and delivery in order to make it participatory, collaborative, inclusive, and deliberative (UNDESA 2016). In fact, the EU defines e-government as "the use of information and communication technologies in public administration combined with organizational change and new skills in order to improve public services and democratic processes" (Macintosh and Tambouris 2009, 16). This definition highlights that civic engagement is an integral part of e-government and the use of ICT is not only to ensure efficient service provision but also promote an engaged citizenry. That is, e-government improves citizen-government interaction (Reece 2006). This conceptualization also

includes both of Held's (1987) models of democracy, namely protective democracy where the rights and interests of citizens as consumers of governmental services are protected and developmental democracy where the primary focus is on an informed, committed, and developing citizenry. In this manner, current conceptualizations of e-government integrate both the entrepreneurial and civic functions of government.

Citizen engagement[1] in governance can be categorized in at least the following ways: government provides general information to citizens. This information might be about the activities of government, governmental actors, events, and upcoming avenues for participation (e.g., hearings). Government provides resources to citizens. These resources might be used to educate citizens, and help build their skills (e.g., workshops, fact sheets, how-to reports). Government engages in transparency and provides accountability to citizens. Transparency includes at a minimum, making available meeting minutes, ordinances, plans, updates on implementation of plans and ordinances, governmental investments (e.g., streetscape improvements), governmental activity at large (e.g., upcoming land development permits and projects), and data (e.g., socio-economic, housing, property, tax, etc.). Accountability is related to transparency. For example, it includes aspects of fiscal transparency where government provides budgets and justifications for how money was spent, by whom, for whom, and the expected impacts of those investments. Government engages in a transactional interaction with citizens. These transactions are primarily economic in nature (e.g., parking tickets, parking passes, taxes etc.). Government provides a diverse array of opportunities for all citizens to be involved (see Kennedy 2007) and institutionalizes mechanisms through which citizens can participate even when their involvement is not directly solicited (e.g., protest petitions). Citizens participate in governance by providing information to government. They might play a role in problem definition, visioning solutions, provide feedback on policy proposals, and explicate preferences. Citizens play a direct role in decision making (e.g., planning commissions, advisory boards). Government responds to citizen feedback and requests. Government collaborates with citizens in the policy-making process and engages in deliberation with citizens. Finally, citizens play a role in creating their government and its institutions (e.g., elections).[2]

Note that the above categorization includes both active and passive participation and is broadly encompassing of the provision of information by governments to citizens (e-information), interaction with stakeholders

(e-consultation), and engagement in decision-making processes (e-decision making) (UNDESA 2016). Similarly, it can be deconstructed using the framework offered by McMillan (2002) to characterize cyber-interaction: monologue where interaction is unidirectional; feedback, which is one-way communication but allows limited responses (e.g., e-mail); responsive dialogue, which is a two-way communication channel but the power to communicate is asymmetric (e.g., e-commerce and customer support websites); and mutual discourse, which resembles a conversation and provides equal standing to all participants. This is also encompassing of all the roles a citizen might play—a customer, a tax payer, a guardian of the democratic process, a casual observer, and an active participant. As (Richard 1999, 102 cited in Reece 2006) describes, "the Internet blends tools for public participation and representation in a unique way. The medium is like a library, a news wire, a deliberation room and a voting booth, all meshed together in a dynamic process at the tip of the citizen's fingers."

To make the argument that ICT can offer positive benefits to governance and civic engagement, it would be useful to ask a two-part question. First, how does one conceptualize the intersection of good governance and meaningful citizen participation? Second, how can ICT help in this regard?

To answer the first question, Dalton (2008) argues that in their participation in governance, citizens should be able to interact with others and engage in collective deliberation. Innes and Booher (1999) extend this to explain that participation should be inclusive of those with a variety of preferences, interests, and backgrounds so that citizens are exposed to a variety of viewpoints on policy matters and for the deliberation to be meaningful. Autonomy, that is, the idea that citizens are informed about government and its activities, is also important for meaningful participation (Dalton 2008). Like Arnstein's (1969) conceptualization of a ladder of participation and advocacy that citizens should be involved in, in ways that give them greater control over decision-making processes, King et al. (1998, 320) argue for "deep continuous involvement" of citizens in government. Citizen involvement from the outset is essential (Innes and Booher 1999) and this involvement should be more than tokenism, placation, or symbolic (Arnstein 1969). Further, this involvement that begins at the outset should be carried throughout the policy process. That is, a democratic system also assumes that the preferences of citizens serve not only as policy inputs but are also reflected in the outputs of the policy process. Also, the relationship between governmental actors and citizens

should be more than a practitioner-client hierarchy. It should be collaborative, and citizens should be empowered to believe that their engagement has a discernible impact on decisions (King et al. 1998). Finally, full transparency and accountability of all aspects of government (fiscal, policy, process, outcome, impact) to citizens is important (see King et al. 1998; Rodríguez Bolívar et al. 2013). This discussion suggests that there are several aspects of good governance and authentic civic engagement that must be considered for ICT (through e-government) to play a role in optimizing civic engagement. These are, allowing citizens to truly deliberate and interact, involving citizens from the first to the last step of the policy process, governmental accountability and transparency, governmental response, and access to information. But can it?

In response to the second question, there is tremendous optimism for the role of ICT in not just facilitating engagement but also better connecting individuals as part of a greater collective—community. The use of ICT, opens the door for the creation of a virtual community of engaged citizens (Norris 2001) by making it easier for citizens to gain knowledge, stay connected, and engage in joint action (Shah et al. 2001). By better enabling deliberations, ICT creates a virtual public sphere where Malina (1999) suggests it might be possible to foster Habermasian ideal speech conditions.

Scholars routinely emphasize the importance of representation in civic engagement (see Innes and Booher 1999). ICT has the ability to be transformative in this regard by bringing under its umbrella youth who are typically disengaged from civic life and the political process (Bachen et al. 2008). Research shows that about 94% of youth are online by grade 12 and they use the Internet for more than entertainment—for news and political information. They also use the Internet as a platform to share their views and ideas and engage in discussions with their peers. Research also shows that there are discernible impacts on youths' political knowledge, civic attitudes and behaviours, and interest in politics and government when they use the Internet to follow news and politics (Bachen et al. 2008).

In terms of accountability, ICT can make it more convenient for citizens to access information from the comforts of their home or workplace. They no longer have to interrupt their work schedule and physically visit city hall to access information or participate in government. They do not have to be physically present at legislative meetings to be updated on policy decisions. These can be streamed live or watched later. In addition, meeting minutes can be accessed online. Through online platforms, others

who are present at the meeting will be able to share their views of the proceedings. Because there are opportunities to connect with others virtually, citizens can also share the information they find and become networked communal watchdogs. Similarly, much like citizen response to government, Manza and Cook (2002, 630) write that "the capacity of a political system to respond to the preferences of its citizens is central to democratic theory and practice." It is conceivable that ICT makes governmental responsiveness easier, more efficient, and expedient.

In terms of the all-important access to information (Dalton 2008), ICT makes it easier and more efficient to produce, gather, and disseminate information to citizens. It also makes it easier to make available a greater volume of information, allows greater choice to citizens, and decentralizes the production and dissemination of knowledge (Abramson et al. 1988 as cited in Reece 2006). By decentralizing the creation of knowledge, ICT makes it easier for citizens to consume information, digest it, and contribute. ICT promotes both inwards and outwards transparency. Inwards transparency refers to citizens' knowledge of decision makers' actions and outwards transparency refers to decision makers' knowledge of citizens' needs, and preferences (David et al. 2015). Therefore, ICT facilitates mutual learning and the co-production of knowledge. Finally, Layne and Lee (2001) assert that it is possible for citizens' interaction with government to be streamlined such that this interaction is a one-stop shop and all governmental systems are fully integrated within and without.

Using the above discussion, I frame, identify, and operationalize the opportunities for civic engagement through e-government (see Table 4.1). This table is divided into three main functions: information provision; transaction; and citizen engagement. Within citizen engagement, the opportunities for engagement that are listed cover the breadth of McMillan's (2002) conceptualization. For example, monologue where interaction is unidirectional includes an interactive geographic information system; feedback, which is one-way communication but allows limited responses includes e-mail communication and comments; responsive dialogue, which is asymmetric communication includes transactional interactions. Finally, although Evans-Cowley and Conroy (2006) report that 0% of the governmental websites they surveyed provided opportunities for mutual discourse, this nonetheless is important and characterizes two-way communication and interaction. The list of participation mechanisms provided include several opportunities that allow decision makers and citizens to engage in mutual discourse (e.g., chats, blogs).

Table 4.1 Operationalizing opportunities for civic engagement in e-government

Information provision. Adapted from (Kang and Gearhart 2010)	Information about city residential services (housing programmes, garbage collection/environment)
	Information about city recreation and health programmes
	Information about city transportation programmes
	Information about and direct links to growth land development plans (e.g., master plans), neighbourhood plans, recreation plans, housing plans, citizen participation plans, zoning ordinances, and other city codes
	Information about taxes and access to property tax assessments
	Open data about all governmental affairs (e.g., budgets)
	Archival data about all governmental affairs (e.g., budgets dating back several years; plans; maps; old ordinances and documents digitized)
	Information about activities for tourists (e.g., lodging, attractions, virtual tour, photo gallery)
	Up-to-date news stories about the community
	Promotional videos of the community
	Links to local media (television, newspapers, radio)
	Links to other civic organizations (charities and religious organizations)
	Links to neighbourhood websites.
	Community history
	City council meetings and meetings of the numerous agencies and commissions associated with government
Transactions	Paying fines
	Paying fees
	Paying taxes
	Enrolling in programmes (e.g., housing assistance)
	Applying for jobs
	Applying for permits
	Applying to volunteer for street clean-ups and other local events

(*continued*)

Table 4.1 (continued)

Citizen Engagement	Reporting problems (e.g., Boston 311, also see Aladalah et al. 2015) The ability to upload photographic evidence of reported problems Tracking reported problems and consequent governmental action on reported problems Ability to see if others have reported the same problem E-mail and social media updates and alerts on municipal affairs (e.g., upcoming permits in your neighbourhood, upcoming legislative actions) Ability to tailor updates and alerts according to users' preferences Interactive Geographic Information System (GIS) that allows citizens to acquire different types of information as a one-stop shop (e.g., the ability to look at property, site plan, property tax assessments, property tax records, zoning, storm water assessment, tree canopy cover, proximity to fresh food, proximity to other amenities, school districts, school district performance metrics, voting locations, all governmental policies that affect your property, elected representatives, the ability to contact elected representatives) from a map Feedback link for contacting chief elected officials online, other elected representatives, commissioners, other decision makers, and administrators Ability to view meeting minutes (archival and current) from all committees, councils, and commissions conducting governmental affairs Opportunities for citizens to request information and data easily Opportunities for citizens to receive the requested information in a variety of forms (e.g., soft versions, Excel, SPSS, GIS) Ability to view all approvals (e.g., on permits and development proposals) performed by government Ability to view all government business (e.g., staff reports that accompany governmental approvals) Ability to comment on all current matters before government through online platforms Governments' efforts to connect to citizens in a wide variety of ways to increase participation • Forums • Surveys (e.g., textual, visual preference) • Simulations

(*continued*)

Table 4.1 (continued)

	• Games • Virtual meetings • Stream public hearings, town halls and other in-person meetings • Recordings of public hearings, town halls and other in-person meetings • Web 2.0/Gov 2.0 (see Aladalah et al. 2015) – Social media (e.g., Facebook) – Blogs – Microblogs (twitter) – Wikis – Multimedia sharing (YouTube and Flickr) – Mashups • Discussion boards • Chat rooms • Online voting • E-mail access to all administrators and decision makers • Incorporation of neighbourhood groups' websites and social media pages into the governmental ICT system • Decision makers' participation and response to citizen comments in social media • Community policing and opportunities for citizens to contact police officers informally • Virtual government (e.g., second life) (Laris 2009) • Results of surveys and participation mechanisms • Report on how citizens' feedback was incorporated in policy decisions • Opportunities to track a policy issue from beginning to end, participate in all stages virtually, and the ability to gain entry to participate at any time in the process • Opportunities to participate in multiple languages and view governmental documents in multiple languages • Opportunities for those who are disabled to participate
Government provides opportunities for citizens to learn to enable better participation	

Source: Own elaboration

4.6 Best Practices and Lessons Learned

The literature surveyed offers several lessons for optimizing citizen engagement in e-government. Bachen et al. (2008) argue that to truly engage, citizens ought to have facility with ICT. They emphasize the importance of developing the capacity of citizens to use ICT for both learning and doing. This means that citizens should be trained and educated not just on ICT but also on government, civics, the policy process, and "how to work within and with the system" (King et al. 1998, 324). Administrators should also be trained on the effective use of ICT, how to interact with citizens, and the use of a variety of participation techniques (also see King et al. 1998). "The rapid development of new technologies makes it difficult for agencies to maintain currency with technological developments" (Reece 2006, 94). This means that government should be nimble and should engage in a pulse-taking function. An organizational culture that can adapt and change is important. King et al. (1998) argue for a constant re-education of administrators. Also, it is important to institutionalize policies and procedures that will promote greater civic engagement to create institutional memory.

Atkinson and Leigh (2003) advocate putting citizens first in the design of e-governance and civic engagement systems so that all features (e.g., businesses; non-profits; vertical layers of government like local, state and federal; horizontal layers of government like the myriad of governmental agencies and departments) are seamlessly integrated such that a citizen can participate and engage in information gathering, surveillance, transactions, and participation alike with efficiency. Layne and Lee (2001) offer a four-stage model that will allow governments to do exactly this. Operationally, Layne and Lee (2001) identify four stages for the seamless development of e-government systems: catalogue, transaction, vertical integration, and horizontal integration with the aim of allowing easy access, convenience, and efficiency for users. Others argue that two types of interactivity are important from an engagement standpoint. First, content interactivity allows the users an automatic personalization of site content and allows the user to navigate easily through linked pages and documents, and participate in polls and surveys without much effort. Second, interpersonal interactivity involves person-to-person interaction via the Internet, including e-mail, instant messaging, chat, message boards, listservs, and multiplayer games. While both types of interactivity are equally important, the indictment is that "most civic websites make

minimal use if any of games, quizzes, simulations, collaborative-learning projects, and other activities that tap the internet's capacity for interaction" (Montgomery et al. 2004, 294 cited in Bachen et al. 2008).

Similarly, while it is equally important for citizens to transact with government through ICT (e.g., pay fees online) and engage in the policy process (e.g., vote), Musso et al. (2000) observe that governments are quicker to adopt ICT for their entrepreneurial functions as opposed to their civic functions (also see Greitens and Strachan 2011). They report that while information about economic development or service provision was easily accessible, information related to democratic participation is more likely to be completely omitted from municipal websites. Similarly, in a review of US state government websites, Greitens and Strachan (2011) found that on average state governments do not focus much on citizen engagement in their websites and even when they do, the information provided is simplistic in the form of a billboard. This is especially discouraging given Li and Gregor's (2011) conclusion that more sophisticated explanations on e-government systems led to greater citizen satisfaction, greater perception of transparency, greater sense of control and power, and more empowerment. In terms of practice, therefore, it should be noted that the quality of participation and the ability to participate will depend on the quality and sophistication of the ICT mechanisms that allow this participation.

In their study of youth engagement in government, Bachen et al. (2008) found that government sites are weaker than non-profit sites at allowing youth to actively learn from participation. Further, the best sites in terms of pedagogy and active learning were ones that were co-produced by youth participants. This suggests that involving users as part of the design of ICT focused civic engagement will strengthen the means through which this engagement is offered. In a similar vein, although scholars argue that the communication component of ICT is most effective when it is provided through innovative multiple channels, Conroy and Evans-Cowley (2004) found that governments are quicker to provide information (e.g., plans and ordinances) to citizens through their websites than opportunities to interact (e.g., e-mails, forums). This is much like the token participation outlined by Arnstein (1969). They argue that the governmental websites that offer better opportunities for participation have been designed from a citizen centric standpoint of "what does the citizen need to know" versus "what information do we have to provide"(Conroy and Evans-Cowley 2004, 90).

Planning is part of the policy process. Planning is what governments do—they plan budgets, they plan economic investments, they plan for growth and land development. Why not plan for participation? It has become increasingly common for citizen participation toolkits to recommend "participation plans" and governments in the United States are slowly starting to develop participation plans where they outline how they plan to include citizens in the policy-making process. It is not inconceivable to push for these participation plans to include strategies for electronic participation.

Finally, Atkinson and Leigh (2003) caution that transitioning to effective ICT infrastructure for civic engagement and e-governance will require aggressive marketing of such engagement opportunities by governmental units. Having a blasé attitude about the use of innovative participation approaches using ICT will not move us effectively in that direction. They make the case that effective integration of ICT systems will not only provide savings in terms of time for the citizen but also cost savings (e.g., reduction in paper and physical storage space) and personnel capacity savings (e.g., mailing out tickets to citizens) for the unit of government.

Table 4.2[3] provides examples of governmental and non-governmental websites that serve as innovative platforms of engagement, interaction, and transparency. Although these websites are not individually comprehensive, together they are transformational in presenting a window into the possibilities of e-governance and citizen engagement. Globally, however, studies have found that even governments that are innovative—for example, active on social media, appear to use social media primarily to push information as opposed to using social media as a platform for interaction. Governments, it seems, fear that they will lose control if they allow for full civic-governmental interaction (Aladalah et al. 2015). Therefore, those evaluating e-government for civic engagement should develop criteria for evaluation that are derived from multiple frameworks to ensure comprehensiveness of the criteria.

A good starting point might be Arnstein's (1969) ladder of participation. The lowest rungs of the ladder (e.g., manipulation and therapy) are governmental efforts to give citizens a sense of participation without allowing them to participate and the top of the ladder (e.g., citizen control and delegated power) allow citizens control in decision-making processes. While this framework is useful for addressing the quality of participation and distribution of power, citizen engagement and governmental relinquishing of power need not be seen as a zero sum game (Aladalah et al. 2015) and building capacity to participate might be just as important as

Table 4.2 Innovative civic engagement examples

Websites	*Notable features*
We the People (United States) https://petitions.whitehouse.gov/	Petitions for government to consider that are offered by ordinary citizens and endorsed by others through voting Offers opportunities to learn about policy issues, agenda setting, and how the community at large responds
The National Archive's Citizen Archivist Dashboard (United States) http://www.archives.gov/citizen-archivist/	Uses the collective muscle of the public to enhance governmental capacity by recruiting the public to play a role in liberalizing governmental documents by transcribing and translating them
Neighbourhood Planner (United Kingdom) http://neighbourhoodplanner.org.uk/	Allows citizens to play an active role in planning their neighbourhoods
Edinburgh Living Lab (United Kingdom) http://edinburghlivinglab.org/	Collaboration between businesses, academia, and government to mobilize access to data, participatory design processes, and innovation
Amsterdam Smart City (Netherlands) https://amsterdamsmartcity.com/	Marketing of Amsterdam's smart city innovations, events, and projects
Monitoring Marathon (Italy) http://www.monithon.it/	A platform that allows citizens to monitor public projects
Citizen Investor (United States) http://www.citizinvestor.com/	Allows citizens to directly invest in public projects
Fix my Street (United Kingdom) https://www.fixmystreet.com/	Allows citizens to report problems (e.g. graffiti, paving issues, potholes)
Next stop design (United States) http://second.nextstopdesign.com/about	Collaboration between multiple levels of government, a transit authority, and a university. Crowdsourcing public participation where the public submits ideas and designs and plays a role in voting
Participatory Budgeting New York (United States) http://labs.council.nyc/pb/	Collaboration between government (the New York City Council), other organizations (e.g., Community Voices Heard which represents low income residents) and the public Engaged citizens in municipal budgeting
Open budget (United States) http://openbudget.ny.gov/	Fiscal transparency and accountability

Source: Own elaboration

participation itself (Macintosh and Tambouris 2009). Similarly, Fung's (2015) democracy cube allows scholars to conceptualize how to design civic participation. Some scholars have suggested that governmental websites can be evaluated based on four stages: billboards, partial service-deliveries, portals, and interactive democracy (West 2005 as cited in Greitens and Strachan 2011).

Other frameworks for assessing participation opportunities and participation tools include e-informing, e-consulting, e-involving, e-collaborating, and e-empowerment (see Panopoulou et al. 2008 as cited in Macintosh and Tambouris 2009). In order to lead to the highest level of empowerment, e-government should allow citizens to: feel a sense of impact (i.e., the belief that they are able to influence action); feel competent (i.e., self-efficacy); feel their engagement is meaningful; and feel a sense of control (Aladalah et al. 2015). Macintosh (2004, 2) argues that "democratic political participation must involve the means to be informed [information], the mechanisms to take part in the decision-making [consultation] and the ability to contribute and influence the policy agenda [active participation]." Using this basic premise she defines three levels of participation namely e-enabling, e-engaging, and e-empowering. These conceptualizations, in addition to others already provided in the previous sections of this chapter (e.g., McMillan's (2002) monologue, feedback, responsive dialogue, and mutual discourse) will allow those interested to develop a comprehensive framework with which to evaluate the examples provided here and any other cases selected for analysis.

4.7 Conclusion

Citizen engagement through e-government has the same shortcomings and caveats of citizen participation generally. For example, citizens might not be interested; they might be NIMBYist (Not In My Back Yard); citizens who participate are often a self-selected group of those who are able to participate and participate often; citizen participation often leaves behind those whose voices are most needed; certain populations are typically under-represented (e.g., minorities, those with disabilities, elderly, youth); some voices are louder than others; it takes time, patience, and resources; administrators and decision makers need training to deal with citizens; and citizens' feedback might be solicited but not incorporated. ICT may not offer immediate and natural advantages for reconciling each of these common participation issues. To this extent, government will have to strive to minimize these issues (for all types of civic engagement) as much as possible.

However, the use of ICT itself brings with it additional challenges. In the United States alone, about 16% of the population reported "no internet connectivity" at all. These individuals with no-connectivity were disproportionately old (36% of individuals 65 years and older), Black (25%) and/or Hispanic (25%), low income (36% of those making less than $25,000 in annual income), and poorly educated (44.9% of individuals with less than a high school degree) (U.S. Census Bureau and File 2013). One of the arguments in favour of citizen engagement through e-government is that it makes such engagement convenient as citizens will be able to engage at their preferred location (e.g., home), and at a convenient time or times. However, data shows that only 58.3% of Hispanic households and 56.9% of Black households have internet use at home compared to 76.2% of non-Hispanic White households and 82.7% of Asian households. Internet use varies by geography as well (U.S. Census Bureau and File 2013). Internet use also varies globally with 98.5% of households using the Internet in Korea, 65.6% in Greece, and 34.4% in Mexico in 2014 (OECD 2016).

In the global context, Heeks (2005) suggests that the same ICT could have differential impacts, especially in developing and transitioning economies. Moon (2002, 431) suggests that community size is a significant institutional factor in the implementation and development of e-government with larger governments being more proactive and strategic in advancing e-government. Also, technical, personnel, and fiscal capacity have tremendous impacts on the development of e-government initiatives broadly. Further, the success of the use of ICTs to encourage citizen engagement will depend on the extent to which such technologies are fully embraced by administrators and decision makers (Bertot et al. 2010). Also, some citizens might be averse to the idea of using ICT preferring instead to engage in face-to-face or phone conversations with government employees.

"ICT-enabled services are often limited by problems with usability, searchability, language, government and technological literacy, sufficiency of technological infrastructure, trust of social institutions providing access, and availability of computers and internet access for many segments of the general population, among other issues" (Bertot et al. 2010, 266). Further, the extent to which governments are incorporating social networking, and other web 2.0 technologies matters. Paying close attention to user evaluation of participation mechanisms and nuances of what techniques are preferred by whom and for what purposes is also important. It also matters that citizens trust that their feedback is welcomed and that the information they share will not negatively impact them in any way.

While the convenience of ICT means that social services, health services, and financial services can be accessed online, the "privacy, anonymity, and security of information of citizens' personal information will be of significant concern to most users" (Jaeger and Bertot 2010, 6). That is, some scholars highlight the "dark side" of ICT implementation by arguing that technology might not always be used for democratic ends, and that the Internet can enhance isolation, threaten privacy, raise the public dialogue to cacophonous levels, and extend the possibility of a "big brother" effect (Reece 2006, 73).

Finally, despite the challenges, there is tremendous optimism for the convergence of civic engagement and e-governance. If quality control measures are followed there is the possibility that the use of ICT for civic engagement will produce all the benefits that are commonly attributed to communication, consensus building, and collaboration in addition to ICT specific benefits: high-quality policies; the prevention of a stalemate; innovative and creative ideas; diversity of ideas; single and double loop learning; social, intellectual, and political capital; co-production of knowledge and therefore greater governmental capacity; buy-in; better responses to change and conflict; and spin-off partnerships and collaborations.

Notes

1. See (Bachen et al. 2008) for a conceptualization of youth civic engagement.
2. See (Kennedy 2007) for a list of public participation techniques and see (Coleman 1999) for a different version of this conceptualization.
3. One source for scholars interested in evaluating cases of participation in e-Governance is "Participedia,"which serves as a portal for decentralized collaborative decision making. It contains a roster of participatory governance cases from around the world. Please see: http://participedia.net/en. For a peer reviewed assessment of the Participedia project, see Fung and Warren (2011).

References

Abramson, J. B., Arterton, F. C., & Orren, G. R. (1988). *The electronic commonwealth: The impact of new media technologies on democratic politics.* New York: Basic Books.

Aladalah, M., Cheung, Y., & Lee, V. (2015). Enabling citizen participation in Gov. 2.0: An empowerment perspective. *The Electronic Journal of e-Government, 13*(2), 77–93.

Argyris, C., & Schön, D. A. (1978). *Organizational learning.* Reading, MA: Addison-Wesley Pub. Co.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners, 35*(4), 216–224.

Atkinson, R., & Leigh, A. (2003). Customer-oriented e-Government: Can we ever get there. *Journal of Political Marketing, 2*(3/4), 159–181.

Bachen, C. R., Raphael, C., Lynn, K. M., McKee, C., & Philippi, J. (2008). Civic engagement, pedagogy, and information technology on web sites for youth. *Political Communication, 25*(3), 290–310.

Berry, J. M., Kent, E. P., & Thomson, K. (1993). *The rebirth of urban democracy.* Washington, DC: Brookings Institution.

Bertot, J. C., Jaeger, P., & Grimes, J. M. (2010). Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Government Information Quarterly, 27*(3), 264–271.

Caba Pérez, M. C., Rodríguez Bolívar, M. P., & López Hernández, A. M. (2010). Transparency and egovernment in developing countries: The case of Latin-American municipalities. In C. G. Reddick (Ed.), *Citizens and e-government: Evaluating policy and management.* Hershey, PA: Information Science Reference (IGI Global).

Coleman, S. (1999). Cutting out the middleman: From virtual representation to direct deliberation. In B. N. Hague & B. Loader (Eds.), *Digital democracy: Discourse and decision making in the information age.* London; New York: Routledge.

Conroy, M., & Evans-Cowley, J. (2004). Informing and interacting: The use of e-Government for citizen participation in planning. *Journal of E-Government, 1*(3), 73–92.

Dalton, R. (2008). Citizenship norms and the expansion of political participation. *Political Studies, 56*(1), 76–98.

David, N., Justice, J., & McNutt, J. (2015). Smart cities are transparent cities: The role of fiscal transparency in smart city governance. In M. P. Rodríguez Bolívar (Ed.), *Transforming city governments for successful smart cities.* Berlin: Springer.

Dryzek, J. (1999). Transnational democracy. *Journal of Political Philosophy, 7*(1), 30–51.

Evans-Cowley, J., & Conroy, M. (2004). *E-government and planning: Key citizen participation issues and applications.* Columbus, OH: John Glenn Institute for Public Service and Public Policy.

Evans-Cowley, J., & Conroy, M. (2006). The growth of e-government in municipal planning. *Journal of Urban Technology, 13*(1), 81–107.

Firmstone, J., & Coleman, S. (2015). Public engagement in local government: The voice and influence of citizens in online communicative spaces. *Information, Communication & Society, 18*(6), 680–695.

Fung, A. (2015). Putting the public back into governance: The challenges of citizen participation and its future. *Public Administration Review, 75*(4), 513–522.

Fung, A., & Warren, M. E. (2011). The participedia project: An introduction. *International Public Management Journal, 14*(3), 341–362.
Gearhart, S., & Kang, S. (2010). E-government and civic engagement: How is citizens' use of city web sites related with civic involvement and political behaviors? *Journal of Broadcasting & Electronic Media, 54*(3).
Greitens, T., & Strachan, J. C. (2011). E-government and citizen engagement: An overview of US states' government websites. *International Journal of Public Administration, 34*(1-2), 54–58. doi:10.1080/01900692.2010.524083.
Heeks, R. (2005). e-Government as a carrier of context. *Journal of Public Policy, 25*(1), 51–74.
Held, D. (1987). *Models of democracy*. Cambridge: Polity in Association with Blackwell.
Hiller, J. S., & Bélanger, F. (2001). *Privacy strategies for electronic government*. Washington, DC: IBM Center for the Business of Government.
Innes, J. E., & Booher, D. E. (1999). Consensus building and complex adaptive systems. *Journal of the American Planning Association, 65*(4), 412–423.
Irvin, R. A., & Stansbury, J. (2004). Citizen participation in decision making: Is it worth the effort? *Public Administration Review, 64*(1), 55–65.
Jaeger, P. T., & Bertot, J. C. (2010). Designing, implementing, and evaluating user-centered and citizen-centered e-government. *International Journal of Electronic Government Research, 6*(2), 1–17.
Johnson, C. (2015). Local civic participation and democratic legitimacy: Evidence from England and Wales. *Political Studies, 63*(4), 765–792.
Jordan, G., & Maloney, W. A. (1996). How bumble-bees fly: Accounting for public interest participation. *Political Studies, 44*(4), 668.
Jun, K. N., Wang, F., & Wang, D. (2014). E-Government use and perceived government transparency and service capacity. *Public Performance & Management Review, 38*(1), 125–151.
Kang, S., & Gearhart, S. (2010). E-government and civic engagement: How is citizens' use of city web sites related with civic involvement and political behaviors? *Journal of Broadcasting & Electronic Media, 54*(3), 443–462.
Kennedy, S. (2007). Write the rules and win: Understanding citizen participation game dynamics. *Public Administration Review, 67*(6), 1067–1076.
King, C. S., Feltey, K. M., & O'Neil, B. S. (1998). The question of participation: Toward authentic public participation in public administration. *Public Administration Review, 58*(4), 317–326.
Laris, M. (2009). O brave new world that has such avatars in it! Arlington among governments establishing a virtual presence. *The Washington Post*.
Layne, K., & Lee, J. (2001). Developing fully functional E-government: A four stage model. *Government Information Quarterly, 18*(2), 122–136.
Levi, M., & Sacks, A. (2009). Legitimating beliefs: Sources and indicators. *Regulation & Governance, 3*(4), 311–333.

Li, M., & Gregor, S. (2011). Outcomes of effective explanations: Empowering citizens through online advice. *Decision Support Systems, 52*(1), 119–132.

Linders, D. (2012). From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Government Information Quarterly, 29*(4), 446–454.

Macintosh, A. (2004). *Characterizing e-participation in policy-making*. Paper read at 37th Hawaii International Conference on System Sciences, at Hawaii.

Macintosh, A., & Tambouris, E. (2009). Ele*ctronic participation: First international conference, ePart 2009, Linz, Austria, September 1–3, 2009: Proceedings*. Springer.

Malina, A. (1999). Perspectives on citizen democratization and alienation in the public sphere. In B. N. Hague & B. Loader (Eds.), *Digital democracy: Discourse and decision making in the information age*. London; New York: Routledge.

Manin, B. (1987). On legitimacy and political deliberation: A sketch of a theory of political deliberation. *Political Theory, 15*(3), 338–368.

Manza, J., & Cook, F. L. (2002). A democratic polity? Three views of policy responsiveness to public opinion in the United States. *American Politics Research, 30*(6), 630–667.

McMillan, S. J. (2002). A four-part model of cyber-interactivity: Some cyber-places are more interactive than others. *New Media and Society, 4*(2), 271–292.

Montgomery, K. C., Gottlieb-Robles, B., & Larson, G. P. (2004). *Youth as E-citizens: Engaging the digital generation*. American University, Center for Social Media, and American University, School of Communication. Washington, DC: Center for Social Media.

Moon, M. J. (2002). The evolution of e-government among municipalities: Rhetoric or reality? *Public Administration Review, 62*(4), 424–433.

Musso, J., Weare, C., & Hale, M. (2000). Designing web technologies for local governance reform: Good management or good democracy? *Political Communication, 17*(1), 1–19. doi:10.1080/105846000198486.

Nijkamp, P., & Cohen-Blankshtain, G. (2009). *The importance of ICT for cities: E-governance and cyber perceptions*. Amsterdam: Vrije Universiteit, Faculty of Economics and Business Administration.

Norris, P. (2001). *Digital divide: Civic engagement, information poverty, and the Internet worldwide*. Cambridge; New York: Cambridge University Press.

Norris, P. (2011). *Democratic deficit: Critical citizens revisited*. New York: Cambridge University Press.

OECD. (2016). *Internet use as a percentage of all households* 2014 [cited 7/31/2016 2016]. Retrieved from https://data.oecd.org/ict/internet-access.htm#indicator-chart

Pateman, C. (1970). *Participation and democratic theory*. Cambridge: Cambridge University Press.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.
Reece, B. (2006). E-government literature review. *Journal of E-Government, 3*(1), 69–110.
Richard, E. (1999). Tools of governance. In B. N. Hague & B. Loader (Eds.), *Digital democracy: Discourse and decision making in the information age*. London; New York: Routledge.
Rodríguez Bolívar, M. P., Alcaide Muñoz, L., & López Hernández, M. P. (2013). Determinants of financial transparency in government. *International Public Management Journal, 16*(4), 557–602.
Sabatier, P. A. (1988). An advocacy coalition framework of policy change and the role of policy-oriented learning therein. *Policy Sciences: Integrating Knowledge and Practice to Advance Human Dignity, 21*(2-3), 129–168.
Scott, J. K. (2006). "E" the people: Do US municipal government web sites support public involvement? *Public Administration Review, 66*(3), 341–353.
Shah, D. V., McLeod, J. M., & Yoon, S. H. (2001). Communication, context, and community: An exploration of print, broadcast, and Internet influences. *Communication Research, 28*(4), 464–506.
Syed, P., & Whiteley, P. (1997). Political capital formation among British party members. In J. W. van Deth (Ed.), *Private groups and public life: Social participation, voluntary associations and political involvement in representative democracies*. New York: Routledge.
Thomas, J. C. (1995). *Public participation in public decisions: New skills and strategies for public managers*. San Francisco: Jossey-Bass Publishers.
Tyler, T. R. (2006). Psychological perspectives on legitimacy and legitimation. *Annual Review of Psychology, 57*(1), 375–400.
U.S. Census Bureau, & File, T. (2013). *Computer and Internet use in the United States*. Washington, DC: United States Census Bureau.
UNDESA. (2016). *Citizen engagement*. United Nations 2015 [cited 7/30/2016 2016]. Retrieved from https://publicadministration.un.org/en/eparticipation
Wondolleck, J. M., & Yaffee, S. L. (2000). *Making collaboration work: Lessons from innovation in natural resource management*. Washington, DC: Island Press.

Nina David is an Assistant Professor in the School of Public Policy and Administration at the University of Delaware. Dr. David teaches and conducts research in the areas of regional planning, collaborative governance, growth management, smart cities, and land use planning. She specifically focuses on the factors that impact regional co-operation on land use issues; the efficacy of growth management techniques like planned unit developments; and the collaborative governance aspects of smart cities including innovative approaches to citizen engagement.

PART II

Actions Plans in Specific Countries: Case Studies

CHAPTER 5

Online Privacy Protection in Chinese City Governments: An Analysis of Privacy Statements

Christopher G. Reddick and Yueping Zheng

5.1 Introduction

E-government in China has made great progress in the past two decades with the rise of the web. Governments at various levels provide convenient services to citizens through digital channels. However, many challenges still persist, among which privacy protection is a serious concern for citizens. With the greater collection and use of data because of advances in information technology this has made privacy protection an increased concern. The numbers of cases and reports of privacy breaches in public and private sectors reflects the serious threats to personal privacy. All of these bring privacy protection to the forefront as a big issue attracting attention from both academics and practitioners.

A website privacy statement can be viewed as the contract between citizens and governments indicating how to protect citizens' personal privacy

C.G. Reddick (✉)
The University of Texas at San Antonio, San Antonio, TX, USA

Y. Zheng
Sun Yat-sen University, Guangzhou, China

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_5

when they use e-government services, an important component and primary step of privacy protection. Privacy can only be well protected if citizens are clearly informed how their private information and data is collected, stored, and used by government. However, there is a lack of study on government performance in privacy statements (Beldad et al. 2010; Al-Jamal and Abu-Shanab 2015a). As a result, in this chapter we designed an index with 16 questions in eight categories examining the availability of privacy policy, data collection, data security, data usage, users' rights, privacy protection of minors, exemption, inquiry, and feedback. We examined 100 cities in China and their performance in privacy statements with an index created from the data collected from our survey.

Governments' protection of citizens' privacy has two dimensions. The first one involves the privacy statements on local government websites, clearly informing public users how their personal information is collected, stored, and used. The second dimension relates to how governments adopt laws and technologies to protect the safety of public users' personal information and data after governments collect this information. Although privacy statements are not the whole of privacy protection, they are the primary and foundational step, as it is the "contract" between government and public users. Privacy can only be well protected when users clearly understand how their data is collected, stored, and used. Although studies related to privacy statements have been conducted in developed countries like the United States and Europe, there is a lack of study in developing countries such as China (Al-Jamal and Abu-Shanab 2015a). In addition, there is a little empirical research that explains what factors promote the adoption of privacy statements. As a result, this study poses the following two research questions:

RQ1: *What is the performance, as measured in benchmarking, in privacy statements for city governments in China?*

RQ2: *What are the economic, budget, and location factors that explain privacy statement adoption in Chinese city governments?*

In order to examine privacy protection in Chinese city governments this chapter is divided into several sections. Section 2 provides a literature review, which discusses the major research on privacy protection and privacy statements. Section 3 provides brief background information

on the current state of privacy protection and threats in China. Section 4 describes the research methods, explaining how we built our index to examine government performance in privacy statements. Section 5 discusses the major findings from our survey. Section 6 provides a conclusion, discussing the findings and limitations, and presenting future research possibilities.

5.2 Literature Review

5.2.1 Privacy Policies

There are many different definitions of privacy but at its core the central element is the ability of individuals to choose if, when, and to what extent they interact and reveal information about themselves to others (Wu 2014). Information privacy is the desire of individuals to control, or at least have some influence over, data about themselves (Bélanger and Crossler 2011). Advances in e-government have created more concerns about information privacy and its impact on individuals. Bannister (2005) argues that information privacy is the right to privacy of one's personal information. He believes that there has been a tension between the right of individual's to privacy and the right of the state to protect itself for security purposes.

In regards to privacy and e-government there has been a loss of privacy and security of users' personal information because of the increased centralization and collection of data (Al-Jamal and Abu-Shanab 2015b). There has been a move for governments to be more transparent, which has increased the amount of collected information and created concerns over privacy. The privacy calculus is whereby citizens weigh the anticipated benefits and consequences before disclosing personal information. Research suggests that citizens are more likely to disclose personal information after they have been informed about the agency's privacy policies (Carter and McBride 2010).

Dawes (2010) argues that for information policy and government agencies there should be two guiding principles of stewardship and usefulness. Stewardship is the careful and responsible management of information entrusted to government. Under stewardship public officials are responsible for handling government information with care and integrity. While usefulness entails government information being a valuable resource

that can be used to promote innovation and governments are encouraged to create policies that promote public access to government information. Essentially, stewardship is concerned with responsibility, validity, and legitimacy; and usefulness is associated with application, exploration, and innovation (Dawes 2010). Both concepts should be taken into account when governments consider privacy policies.

Examining the application of privacy and e-government development Hiller and Bélanger (2001) state that as e-government moves from cataloguing information, two-way communication, e-services, and political participation then more advancement in e-government brings about greater concerns over privacy through greater data collection. Consumers often agree to give up personal information on the web if this means that they will be able to get more convenience, better customer service, or other particularized benefits (Bélanger and Hiller 2006).

There are two important standards that have been used to create principles for privacy policies (Al-Jamal and Abu-Shanab 2015b). The U.S. Federal Trade Commission (FTC) is one example and the Organization for Economic Cooperation and Development (OECD) provides another example. Privacy concerns about computers have led to the development in 1980 of the OECD guidelines which included eight basic fair information practices (Dutton et al. 2005). The OECD privacy principles are: safeguard, collection limitation, data quality, purpose specification, use limitation, openness, individual participation, and accountability. These guidelines have contributed to the EU Directive on Privacy of July 2002. The FTC has five main privacy principles, which are notice, choice, access, security, and enforcement. The FTC's standards are believed to be more flexible and provide a more realistic framework to guide privacy policies (Al-Jamal and Abu-Shanab 2015a).

Privacy protection in China is relatively new with the constitution providing explicit protection for communication privacy through *Article 40*, but the legal system has treated privacy as a low priority issue. As a result government regulation of e-government privacy in China lags behind many other developed countries (Wu 2014). For instance, China and the United States traditionally rely more on the private sector handling of personal data and on self-regulatory certification schemes and voluntary codes of conduct for business (Wu 2014).

5.2.2 Privacy Policy Statements

A privacy policy is a legal document that defines how the website will gather information from the user and how it uses this information, and provides details about access to this information. The use of a privacy policy is said to be one method of increasing user confidence in the website and provides assurances to users before they disclose information (Alhomod and Shafi 2012). Typically privacy statements explicitly state what personal information such as email addresses and users' names is collected and whether this information is shared or sold to third parties and for how long it is retained (Drogkaris et al. 2013). Beldad et al. (2010, 242) argues that "ensuring that privacy statements are available on websites should not only be seen as an exercise of compliance with existing laws on personal data protection, but should also be regarded as an ethical act of adequately informing users how their personal data will be handled."

Privacy statements are simply documents posted on organizational websites that describe how organizations collect, use, and disclose their client's information (Beldad et al. 2010). Privacy statements are typically placed on websites to relieve the concerns of the public on how their personal information will be used. Research shows that privacy statements are not typically read or consulted, but their presence is enough to give users some assurance that the website can be trusted (Beldad et al. 2010). Essentially, research shows that privacy statements are vital for establishing the credibility of websites, with research showing that for Dutch municipal governments the presence and ease of finding an online privacy statement was sufficient for users to disclose requested personal information (Beldad et al. 2010). Research also shows that the presence of an online privacy statement is one criterion that is used by the individual in assessing the trustworthiness of the government agency (Beldad et al. 2009). Essentially, with the use of privacy statement's public organizations can more easily convince the public to disclose personal information necessary to complete an online transaction.

What is the prevalence of privacy policy statements in governments? In an analysis of privacy and security policies in state governments in the United States, most state e-government websites posted privacy policies at 88% (Zhao and Zhao 2010); with these statements describing how to handle and protect personally identifiable information and demonstrating

a commitment to ensuring a secure environment for data. Research on Portugal's municipalities indicated that privacy was not a priority for these governments, since only 26% of them had publicly available privacy statements (Dias et al. 2013). However, even with their availability there was important information missing. Other research showed that Dutch privacy statements were found in 77% of governments, and 55% of the most populated European cities had privacy statements. In an analysis of privacy policy statements on Saudi Arabian e-government websites, only 28% of them had a privacy statement (Alhomod and Shafi 2012). Of the 28% that had a privacy statement, 60% of them had strong privacy statements but the remainder were considered weak according to the FTC standards. An empirical examination of privacy statements in Dutch municipal websites showed that not all governments even bothered to post privacy statements on their websites, many of the statements are hard to find, and many of the privacy statements have divergent language that does not reflect best practices (Beldad et al. 2009). Even with the adoption of privacy statements by these governments there is an inconsistency in the quality of these statements.

5.2.3 Technology and Privacy

Technological change has enabled government to more easily monitor individuals and their actions (Bannister 2005). With advances in big data governments can more easily assemble information from many different sources about an individual. For instance, rapid technological advances have brought about new challenges in data protection such as social networking sites, cloud computing, location-based services and smart cards which has brought about rising concerns about privacy and security of personal information (Tsohou et al. 2014). Even knowing that public services can benefit from these innovations, the compliance of protecting personal data is still developing.

Furthermore, there is an increasing move by governments to provide greater transparency and open government. There has also been the rise of the Internet of Things (IoT) and other innovations that have made our lives easier, but at the same time can threaten individual privacy (Janssen and van den Hoven 2015). As Janssen and van den Hoven (2015) argue Big and Open Linked Data (BOLD) challenges privacy and transparency

since in order to create one you must not limit the other: therefore, full transparency may not even feasibly exist.

Other examples of challenges to privacy are persistent cookies, which allow users to select setting preferences while at the same time provide the cookie owner with valuable information for analytics to get better website conveniences (McCarthy and Yates 2010). Federal agencies in the United States have been banned since 2000 from the use of cookies in federal government websites. One beneficial aspect of cookies is to use web tracking to customize the user's experience when visiting government websites (McCarthy and Yates 2010). By using persistent cookies the website would remember the user's preferences and settings. Another benefit derives from the analytics of persistent cookies because of enhanced web analytics. However, making the case for cookies is not clear given the "big brother" issue of privacy. Do cookies constitute an invasion of one's privacy? E-government research has shown that customer privacy concerns may reduce the perceived benefits of e-government for citizens. However, research is mixed with perceived privacy not having an impact on smartcard use in Spain for example (Belanche-Gracia et al. 2015).

5.2.4 Privacy and Trust

Research shows that if there is an increased perception of trustworthiness of government agencies, with such mechanisms as privacy statements, this can assure citizens about the reliability of e-government and increase intention to its use (Carter and Bélanger 2005). Bannister and Connolly (2011) argue that e-government has been seen as a mechanism for creating more trust in government. However, the empirical evidence does not find a direct link between e-government and increasing trust. What the literature does say is that e-government can create greater transparency, and this increases trust since citizens know more about their government. Empirical results of a public opinion survey show that citizens that are more satisfied with e-government also trust the government more, and those individuals who trust the government more, are also more likely to be satisfied with e-government (Welch et al. 2005).

Empirical research on Dutch respondents to a survey on privacy statements revealed that Internet user's confidence in online privacy statements

is a very important determinate of their trust in government organizations and how they use their personal information (Beldad et al. 2012). In an examination of usability and credibility, with privacy and security being one factor, of local e-government in the UK, results from a statistical analysis revealed that there was a close correlation between e-government websites' usability and credibility (Huang and Benyoucef 2014). Therefore, a high degree of usability of an e-government website that is also seen as credible is believed to enhance trust in government.

5.2.5 Benchmarking Studies

Providing benchmarks of e-government development, such as what we do in this chapter, has developed very quickly in the research. E-government benchmarking and rankings measure the past achievements of government agencies at different levels of government and contexts and their use of websites (Rorissa et al. 2011). Policymakers can use these rankings to monitor the implementation of e-government to have an influence on investments. However, one of the major concerns with these rankings is that websites and technology evolve over time, which makes it difficult to create categories that are still comparable but take technology change into account (Rorissa et al. 2011).

Although critical of benchmarking studies, Bannister (2007) argues that these studies provide a useful purpose of focusing attention on the need to develop e-government for greater efficiency, better service delivery, and improved transparency and accountability. This high level of standardization can be difficult to interpret when comparing different government agencies, and these results should be viewed with a sense of caution.

More specifically, examining privacy on e-government websites using 18 measures of privacy/security on websites in the 100 most populous cities in the world, research showed that the performance of these cities has continued to increase with only 26 cities scoring zero on privacy in 2007 compared to 31 in 2005 (Holzer et al. 2010). In contrast, other 2011 survey research showed that cities have performed poorly in privacy, indicting a lack of significant progress in this important e-government area (Manoharan et al. 2015).

5.2.6 Factors That Influence Privacy Statement Adoption

There have been several important governmental, economic, and social factors used to test the development of e-government through benchmarking studies. In an examination of EU local governments and benchmarking of their websites, and factors that predicted e-government development, this indicated that size of the city, population size, public administration style, and e-commerce showed more positive e-government maturity (Pina et al. 2009). In an analysis of e-government in a 2012 New Jersey municipal e-government survey of website benchmarking, which examined the impact of e-participation on local government structures, budget size, and municipal size, e-services, transparency, and technology, its found that form of government but not budget or city size had an impact (Zheng et al. 2014).

Examining the development of e-government in US state government rankings showed that extensive use of e-government was associated with legislative professionalism and professional networks (McNeal et al. 2003). However, state wealth and budget resources were not found to be significant. Therefore, greater professionalism drives innovation and reform as seen through state e-government rankings. Further research on public sector e-commerce rankings by Reddick (2004), showed that traditional factors used to explain technology diffusion, such as state wealth, was not statistically significant.

Research also shows more innovation and reform is supported by greater development of e-government (Tolbert et al. 2008). In an examination of US counties and their adoption of e-government portals, just over half have adopted them and e-government was significantly correlated with the county's population, ethnicity, education, housing, income, and business factors. Essentially, adopter counties were associated with demographic factors (Huang 2007). Studies have shown that larger cities are more developed in e-government because of the diverse environment that they face and all of the demands placed on them for innovative public service delivery (Torres et al. 2005). Overall, the empirical studies show that the common variables used to predict innovation in e-government are population size, political complexion, overall spending, and demographics. Most of the studies have found mixed evidence of these predictors for e-government development. In this chapter

we will test some of the common factors already examined in the literature—namely economy, budget, and location—to explain privacy statement benchmarking performance.

5.3 Background

Over the past two decades, China has made great progress as a developing county in the development of e-government, while facing many challenges such as privacy and security of information. With the fast development of e-government in China since 1999, governments at all levels have started to build their websites for information provision and service delivery. In 2006, China had around 12,000 government websites in total. By 2015, it has increased to around 58,000, covering 100% of government sectors at the national level, 100% of governments at the province level, 99.1% at the city level, and more than 85% at the county level. Local governments in China have increasingly been making greater use of mobile apps to provide for more convenient services. In addition, various city governments utilized big data to promote policy-making and have implemented strategies to develop smart cities.

However, the dramatic progress cannot cover problems in the protection of personal privacy, as indicated in many media reports. The Railway Ticketing System "12306" in China showed that it has a lot of website vulnerabilities and thousands of users' private information was disclosed, including identification numbers, phone numbers, email addresses, usernames, and passcodes (Liu and Lin 2014). In addition, based on the latest "2015 China Websites Security Report" from Qihoo 360, a famous Chinese Internet security company, there were 28,000 website vulnerabilities recorded, including thousands of government and public sectors websites (Qihoo 360 2015). The report also showed that the healthcare systems in several provinces and cities have high-risk website vulnerabilities, involving millions of patients' private information. Since there is much private data belonging to citizens stored on government websites, these websites' vulnerabilities put citizens' privacy at great risk. In China, compared to the fast development in e-government services, the protection of citizens' personal privacy is still lacking.

Even worse, compared with developed countries, the Internet privacy laws and regulations in China are not as comprehensive as many developed

countries. In 2000, the NPC Standing Committee (NPC, China's top legislative body) passed the Decision on Safeguarding Internet Security (Shao 2012, 31), in which *Article 4* clearly stated that the "illegal interception, alteration or deletion of others e-mail or other data is an infringement upon citizens' freedom and privacy" and may constitute a crime (Zhang 2015). After that, many public sectors agencies, such as the Ministry of Industry and Information Technology, implemented related policies and regulations to protect personal privacy and information security. In 2012, the NPC Standing Committee passed the Decision on Strengthening Network Information Protection, which strictly preserves the secrecy of citizens' personal electronic data that they collect; not to divulge, distort, or damage the data; and not to sell or provide the data to others illegally and adopt technical measures and other necessary methods to ensure information security and prevent divulging, damaging or losing the personal electronic data collected during business activities (Zhang 2013). However, until now, there is no special law in China particularly for personal information security and privacy protection as there are in most developed countries. A complete legal system to protect individual Internet information security has, to date, not been devised (Liu and Jiang 2015).

5.4 Research Methods

Referring to previous studies, we built up a benchmarking index to measure government performance in privacy statement with 16 questions in eight categories, including the availability of privacy policy, data collection, data security, data usage, users' rights, privacy protection of minors, exemption, inquiry and feedback. We underscore our concerns as to how governments collect, store, and use data, and how citizens' private information is protected.

As for the sample, we chose the top 100 cities in China based on their gross domestic product (GDP) ranking. Most e-government services that citizens have access to in China are provided by local governments, especially larger, fast economic growth, city governments. In this study, we want to focus on privacy protection in city governments. Cities are increasingly providing more e-government services and are facing many challenges in privacy protection, because of frequent transactions and storing large amounts of private data and information collected from citizens. The

larger cities are the ones with high Internet use, and are located on the east coastline and middle part of China where most of the population and economic growth occurs. Thus, for our sample, we choose the top 100 cities based on their GDP ranking because there are the innovators in e-government development.

The preparation of the evaluation index was initially done in an Excel spreadsheet. The evaluation was pretested for one week by evaluating five cities (out of 100), the results of which contributed to revisions to the index. After that, we finalized the index and spent June 2016 evaluating the privacy statements of the top 100 cities. After the data was collected we found data for these cities with measures for GDP, budget, and location, from various government sources.

Our analysis firstly examined whether a privacy statement is available on the main page of government websites. Usually, the statement is located at the bottom of this page. Furthermore, we checked if the statement could be accessed directly from each page. As for data collection, we determined whether the statement clearly indicates which organization or department collects users' personal data and information. We checked if the statement showed what data or information about users was collected, and by what means it was gathered by government. For data security, our analysis focused on to what extent the statement indicates that appropriate measures are taken to ensure that personal data or information is safely stored, and that it will not be illegally obtained and used after it is collected.

In the data use part, we started by examining whether governments explicitly state their intended use of the data and the purpose of use. We determined whether users would be informed or need approval when their personal data or information is used and whether users have rights to refuse the use of their data or information. We also looked for whether users' data or information will be disclosed to third parties, and if yes, whether users have rights to refuse or decline the disclosure.

Furthermore, our analysis also examined users' rights and the protection of minors. We addressed whether users have rights or the ability to inquire, review, correct, or delete their personal data or information collected by government. We also examined whether the statement indicates how minors' personal data or information is protected. In addition, we tested if governments clearly showed under what conditions they are not required to take responsibility. Finally, we examined whether convenient tools and methods are provided for users for inquiry and feedback. See Table 5.1 for details of the questions in our survey of privacy statements.

Table 5.1 Evaluation index for the city government privacy statements

	Categories	*Measurements*
1	Statement availability	Does the site have a privacy/security statement? Whether the statement can be accessed directly on each page?
2	Data collection	Whether the statement clearly indicates: which organization or department collects users' personal data or information? Whether the statement clearly indicates: what data or information is collected? Whether the statement clearly indicates: under what condition or by what means is the data or information collected?
3	Data security	Whether the statement clearly indicates: how personal data or information is safely stored and protected? Whether the statement clearly indicates: what appropriate measures have been taken to ensure that the data or information will not be illegally obtained and used?
4	Data use	Whether the statement clearly indicate: the use purpose of personal data or information? Whether the statement clearly indicate: users will be informed or need to approve when their personal data or information is used? Whether the statement clearly indicate: users have rights to refuse their data or information to be used? Whether the statement clearly indicate: users' data or information will be disclosed to third parties? Whether the statement clearly indicates: that users have rights to refuse that their data or information be disclosed to third parties?
5	Users' rights	Whether the statement clearly indicates: that users have rights to inquire, correct, or delete their personal data or information collected?
6	Protection of minors	Whether the statement clearly indicates: how minors' personal data or information is protected?
7	Disclaimer	Whether the statement clearly indicates: under what condition government is not required to take responsibility?
8	Inquiry and feedback	Are there any contact methods (phone number, email, etc.) for users to inquire or give feedback towards the privacy/security statement?

Source: Own elaboration

5.5 Findings

5.5.1 Descriptive Statistics

Table 5.2 shows the score that each city received towards its performance in privacy statement performance. The top 10 cities were Wuhan, Ningbo, Qingdao, Suqian, Taian, Taizhou (Zhejiang), Shenzhen, Wenzhou, Yangzhou, and Zibo. From these, six cities got a full score (100) and the rest of the four cities are higher than 90, reflecting the highest level in China. The

Table 5.2 Score and rankings of privacy statement performance in city governments

Ranking	*City*	*Score*	*Ranking*	*City*	*Score*
1	Wuhan	100	51	Baotou	0
2	Ningbo	100	52	Changde	0
3	Qingdao	100	53	Guiyang	0
4	Suqian	100	54	Huizhou	0
5	Taian	100	55	Jilin	0
6	Taizhou (Zhejiang)	100	56	Lanzhou	0
7	Shenzhen	93.75	57	Quanzhou	0
8	Wenzhou	93.75	58	Wulumuqi	0
9	Yangzhou	93.75	59	Xuzhou	0
10	Zibo	93.75	60	Yichang	0
11	Guangzhou	87.5	61	Zunyi	0
12	Hangzhou	87.5	62	Kunming	0
13	Xiangyang	87.5	63	Luoyang	0
14	Hohhot	81.25	64	Nanjing	0
15	Jining	81.25	65	Nanning	0
16	Zhanjiang	81.25	66	Xiamen	0
17	Beijing	75	67	Shenyang	0
18	Dalian	75	68	Suzhou	0
19	Jinhua	75	69	Nanyang	0
20	Jinan	75	70	Nantong	0
21	Shaoxing	75	71	Liuzhou	0
22	Yueyang	68.75	72	Linxi	0
23	Tongliao	68.75	73	Lianyungang	0
24	Huzhou	68.75	74	Langfang	0
25	Nangchang	62.5	75	Xinxiang	0
26	Wuhu	62.5	76	Xianyang	0
27	Jiangmen	62.5	77	Weifang	0
28	Foshan	62.5	78	Weihai	0
29	Zhenjiang	62.5	79	Taizhou (Jiangsu)	0
30	Liaocheng	50	80	Jiaxing	0
31	Wuxi	43.75	81	Hengyang	0
32	Zhongshan	43.75	82	Heze	0
33	Shanghai	37.5	83	Handan	0
34	Maoming	31.25	84	Ordos	0
35	Huaian	31.25	85	Dongying	0
36	Binzhou (Shandong)	31.25	86	Dongguan	0
37	Chengdu	18.75	87	Dezhou	0
38	Fuzhou	0	88	Daqing	0
39	Harbin	0	89	Binzhou (Hunan)	0
40	Hefei	0	90	Changzhou	0

(*continued*)

Table 5.2 (continued)

Ranking	*City*	*Score*	*Ranking*	*City*	*Score*
41	Shijiazhuang	0	91	Cangzhou	0
42	Taiyuan	0	92	Baoding	0
43	Tangshan	0	93	Anshan	0
44	Tianjin	0	94	Zhuzhou	0
45	Xi'an	0	95	Zhoukou	0
46	Yantai	0	96	Zhangzhou	0
47	Changchun	0	97	Zaozhuang	0
48	Changsha	0	98	Yulin	0
49	Zhengzhou	0	99	Yancheng	0
50	Chongqing	0	100	Xuchang	0
Average Score: 26.63					

Table 5.3 Distribution of 100 cities in privacy statement performance

Score	*Frequency*	*Percentage (%)*
100	6	6.00
93.75	4	4.00
87.5	3	3.00
81.25	3	3.00
75	5	5.00
68.75	3	3.00
62.5	5	5.00
50	1	1.00
43.75	2	2.00
37.5	1	1.00
31.25	3	3.00
18.75	1	1.00
0	63	63.00
Average Score: 26.63		

Source: Own elaboration

results indicated that 71 cities received scores lower than 60. Even worse, 63 cities had a score of 0, which means that they do not have a privacy statement on their official government website. The average score for all 100 cities is 26.63, which is very low.

Table 5.3 shows the distribution of the 100 cities in their privacy statement performance. We found that 10 cities received scores higher than 90; six cities are between 80 and 90; and 13 cities received scores between 60 and 80.

The results indicate the great divide among all these cities: 16 cities received scores higher than 80 while 66 cities received 0. These two groups make up 90% of all the cities, reflecting the "U" shaped pattern among these cities.

Table 5.4 shows the government performance of these 100 cities in individual measurements. Results show that 30% of the cities enable citizens to access the privacy statement on any page of the website. Government performance in data security and disclaimer is better than the other categories. The results showed that 32% of cities clearly indicated how personal data or information is safely stored and protected; 31% of cities stated appropriate measures have been taken to ensure that the data or information will not be illegally obtained and used; and 31% of cities indicated under what condition government is not required to take responsibility. However, only 16% of cities specify whether the organization or department collects users' personal data or information and 19% of them clearly indicate how minors' personal data or information is protected.

5.5.2 Chi-square Tests

In this study, Chi-square tests were also used to further examine the relationships between these city governments' performance in privacy statements and the economy, budget, and location of the city. GDP was used to measure the economy and all of the cities were classified into four groups based on their GDP (low = below 500,000 million RMB; 2 = below 1,000,000 million RMB; 3 = below 2,000,000 million RMB; 4 = above 2,000,000 million RMB). The result indicates that the Chi-square test statistic is 97.20 with a significance level of 0.01. City government's performance in privacy statements is significantly related with the GDP in 2015. Similarly, for the budget, all the cities were divided into four groups based on their budget (1 = below 50,000 million RMB; 2 = below 100,000 million RMB; 3 = below 200,000 million RMB; 4 = above 200,000 million RMB). The result indicates that city government's performance in privacy statement is significantly related with the budget size. The Chi-square test statistic is 79.40 which is significant at the 0.01 level. That is, cities with a stronger economy and with more budget resources are more likely to perform better in their website privacy statements.

As for the location, we divided all the cities into different groups based on the provinces these cities belong to. The Chi-square results show that city government's performance in privacy statements is significantly related to the provinces they belong to (i.e., the Chi-square test statistic is 364.07 and significant at the 0.05 level). Essentially, cities performing better in

Table 5.4 Performance in each measurement of city government privacy statements

	Categories	*Measurements*	*Percentage (%)*
1	Statement availability	Does the site have a privacy/security statement?	37.00
		Whether the statement can be accessed directly on each page?	30.00
2	Data collection	Whether the statement clearly indicates: which organization or department collects users' personal data or information?	16.00
		Whether the statement clearly indicates: what data or information is collected?	27.00
		Whether the statement clearly indicates: under what condition or by what means is the data or information collected?	32.00
3	Data security	Whether the statement clearly indicates: how personal data or information is safely stored and protected?	32.00
		Whether the statement clearly indicates: what appropriate measures have been taken to ensure that the data or information will not be illegally obtained and used?	31.00
4	Data use	Whether the statement clearly indicates: the use and purpose of personal data or information?	22.00
		Whether the statement clearly indicates: that users will be informed or need to approve when their personal data or information is used?	28.00
		Whether the statement clearly indicates: that users have rights to refuse their data or information be used?	24.00
		Whether the statement clearly indicates: that users' data or information will be disclosed to third parties?	27.00
		Whether the statement clearly indicates: that users have rights to refuse their data or information be disclosed to third parties?	22.00
5	Users' rights	Whether the statement clearly indicates: that users have rights to inquire, correct, or delete their personal data or information collected?	25.00
6	Protection of minors	Whether the statement clearly indicates: how minors' personal data or information is protected?	19.00
7	Disclaimer	Whether the statement clearly indicates: under what condition government is not required to take responsibility?	31.00
8	Inquiry and feedback	Are there any contact methods (phone number, email, etc.) for users to inquire or give feedback towards the privacy/security statement?	24.00

privacy statements are more likely to be from the same provinces. For example, the average score for the cities in Zhejiang province is 75 and the average score for the cities in Guangdong province is 51.4, both of which are much higher than the average of the 100 cities at 26.6.

5.6 Conclusions

As we step into the era of big data, emphasis has been increasingly given to the value of data and its use for better decisions. The practices in businesses indicate how data integration and analysis put personal information privacy at risk, as shown in the research. Developments in information technologies on the one hand bring modern conveniences, while on the other hand more threats to privacy and information security are prevalent. Even worse, the lack of comprehensive laws and regulations makes privacy protection in China more difficult. All of this results in privacy protection being a big issue, attracting the attention of governments and citizens.

The improvement of privacy protection in e-government in China is based on an understanding of the fast paced development of e-government and privacy laws not catching up with this rapid development. We chose the 100 largest cities based on GDP ranking and evaluated their performance in privacy protection when citizens use their official government websites. A privacy statement is a contract between citizens and governments toward how to protect citizens' privacy, and is an important component of privacy protection. In this study, we focused on the privacy statements and examined privacy protection through a benchmarking index composed of 16 questions in eight categories.

The study found that the overall performance of city governments in privacy statements was poor. The majority of the cities did not provided comprehensive information in the privacy statement regarding how they collect, store, and use personal data from public users. We found that 63 cities received a score of 0, with no privacy statement at all on their official government website. The average score was 26.63, which is very low, but comparable to other research in developing countries (Al-Jamal and Abu-Shanab 2015a). In addition, governments perform differently depending on the category of the index. The performance in data security and disclaimer is better than other categories, although the level is still low (around 30%). The performance in the category of protection of minors is poor at only 19%, clearly indicating how minors' personal data or information will be protected. City level governments need to have stronger

privacy protection in place and take further steps to improve individual privacy protection, which will create a more favourable environment and citizen support for further e-government development. Finally, we found evidence that economic, budgetary, and city location were factors that predicted greater performance in privacy statement adoption.

The practical implications of this research should be mentioned. This research showed the importance of benchmarking privacy in these city governments, to learn more about how they are performing relative to one another. Public managers can also use this information to identify which cities are performing well and the areas for improvement in the laggards.

This study has limitations of a small sample size and many smaller cities in the middle and western part of China were not examined. Future research needs to expand the cities included, and better define and improve the evaluation index, exploring more factors that determine city government performance regarding privacy statements.

References

Alhomod, S. M., & Shafi, M. M. (2012). Privacy policy in e-government websites: A case study of Saudi Arabia. *Computer and Information Science, 5*(2), 88–93.

Al-Jamal, M., & Abu-Shanab, E. (2015a). Privacy policy of e-government websites and the effect on users' privacy. *ICIT 2015 The 7th International Conference on Information Technology, 4*, 338–344.

Al-Jamal, M., & Abu-Shanab, E. (2015b). Privacy policy of e-government websites: An itemized checklist proposed and tested. *Management Research and Practice, 7*(3), 80–95.

Bannister, F. (2005). The panoptic state: Privacy, surveillance and the balance of risk. *Information Polity: The International Journal of Government & Democracy in the Information Age, 10*(1, 2), 65–80.

Bannister, F. (2007). The curse of the benchmark: An assessment of the validity and value of e-government comparisons. *International Review of Administrative Sciences, 73*(2), 171–188.

Bannister, F., & Connolly, R. (2011). Trust and transformational government: A proposed framework for research. *Government Information Quarterly, 28*(2), 137–147.

Belanche-Gracia, D., Casaló-Ariño, L. V., & Pérez-Rueda, A. (2015). Determinants of multi-service smartcard success for smart cities development: A study based on citizens' privacy and security perceptions. *Government Information Quarterly, 32*(2), 154–163. doi:10.1016/j.giq.2014.12.004.

Bélanger, F., & Crossler, R. E. (2011). Privacy in the digital age: A review of information privacy research in information systems. *MIS Quarterly, 35*(4), 1017–1042.

Bélanger, F., & Hiller, J. S. (2006). A framework for e-government: Privacy implications. *Business Process Management Journal, 12*(1), 48–60.

Beldad, A., De Jong, M., & Steehouder, M. F. (2009). When the bureaucrat promises to safeguard your online privacy: Dissecting the contents of privacy statements on Dutch municipal websites. *Government Information Quarterly, 26*(4), 559–566. doi:10.1016/j.giq.2009.05.002.

Beldad, A., De Jong, M., & Steehouder, M. (2010). Reading the least read? Indicators of users' intention to consult privacy statements on municipal websites. *Government Information Quarterly, 27*(3), 238–244.

Beldad, A., Van der Geest, T., De Jong, M., & Steehouder, M. (2012). A cue or two and I'll trust you: Determinants of trust in government organizations in terms of their processing and usage of citizens' personal information disclosed online. *Government Information Quarterly, 29*(1), 41–49. doi:10.1016/j.giq.2011.05.003.

Carter, L., & Bélanger, F. (2005). The utilization of e-government services: Citizen trust, innovation and acceptance factors. *Information Systems Journal, 15*(1), 5–25.

Carter, L., & McBride, A. (2010). Information privacy concerns and e-government: A research agenda. *Transforming Government: People, Process and Policy, 4*(1), 10–13. doi:10.1108/17506161011028777.

Dawes, S. S. (2010). Stewardship and usefulness: Policy principles for information-based transparency. *Government Information Quarterly, 27*(4), 377–383.

Dias, G. P., Gomes, H., & Zúquete, A. (2013). Privacy policies in web sites of portuguese municipalities: An empirical study. In *Advances in information systems and technologies* (pp. 87–96). Berlin; Heidelberg: Springer.

Drogkaris, P., Gritzalis, S., & Lambrinoudakis, C. (2013). Employing privacy policies and preferences in modern e-government environments. *International Journal of Electronic Governance, 6*(2), 101–116.

Dutton, W., Guerra, G. A., Zizzo, D. J., & Peltu, M. (2005). The cyber trust tension in E-government: Balancing identity, privacy, security. *Information Polity: The International Journal of Government & Democracy in the Information Age, 10*(1/2), 13–23.

Hiller, J. S., & Bélanger, F. (2001). Privacy strategies for electronic government. In M. A. Abramson & G. E. Means (Eds.), *E-Government 2001* (pp. 162–198). Lanham, MD: Rowman & Littlefield Publishers.

Holzer, M., Manoharan, A., & Van Ryzin, G. (2010). Global cities on the web: An empirical typology of municipal websites. *International Public Management Review, 11*(3), 104–121.

Huang, Z. (2007). A comprehensive analysis of U.S. counties' e-Government portals: Development status and functionalities. *European Journal of Information Systems, 16*(2), 149–164.

Huang, Z., & Benyoucef, M. (2014). Usability and credibility of e-government websites. *Government Information Quarterly, 31*(4), 584–595.

Janssen, M., & Van den Hoven, J. (2015). Big and open linked data (BOLD) in government: A challenge to transparency and privacy? *Government Information Quarterly, 32*(4), 363–368.

Liu, J., & Jiang, X. (2015). *Analysis to current legislation of China's internet security of personal information*. Retrieved July 24 from http://www.chinacourt.org/article/detail/2015/04/id/1577452.shtml

Liu, X., & Lin, Q. (2014). *12306 website responds to data leakage of 130,000 users*. Retrieved July 20, 2016, from http://politics.people.com.cn/n/2014/1226/c1001-26279548.html

Manoharan, A., Fudge, M., & Zheng, Y. (2015). Global clusters in municipal e-governance: A longitudinal study. *International Journal of Public Administration, 38*(2), 116–131.

McCarthy, L., & Yates, D. (2010). The use of cookies in federal agency web sites: Privacy and recordkeeping issues. *Government Information Quarterly, 27*(3), 231–237.

McNeal, R. S., Tolbert, C. J., Mossberger, K., & Dotterweich, L. J. (2003). Innovating in digital government in the American States. *Social Science Quarterly, 84*(1), 52–70.

Pina, V., Torres, L., & Royo, S. (2009). E-government evolution in EU local governments: A comparative perspective. *Online Information Review, 33*(6), 1137–1168.

Qihoo 360. (2015). *2015 China website security report*. Retrieved July 22, 2016, from http://bobao.360.cn/news/detail/2526.html

Reddick, C. G. (2004). Public-sector e-commerce and state financial management. *Social Science Computer Review, 22*(3), 293–306.

Rorissa, A., Demissie, D., & Pardo, T. (2011). Benchmarking e-government: A comparison of frameworks for computing e-government index and ranking. *Government Information Quarterly, 28*(3), 354–362.

Shao, G. (2012). *Internet law in China*. Oxford: Chandos Publishing.

Tolbert, C. J., Mossberger, K., & McNeal, R. (2008). Institutions, policy innovation, and e-government in the American States. *Public Administration Review, 68*(3), 549–563.

Torres, L., Pina, V., & Acerete, B. (2005). E-government developments on delivering public services among EU cities. *Government Information Quarterly, 22*(2), 217–238.

Tsohou, A., Lee, H., & Zahir, I. (2014). Innovative public governance through cloud computing. *Transforming Government: People, Process and Policy, 8*(2), 251–282.

Welch, E. W., Hinnant, C. C., & Moon, M. J. (2005). Linking citizen satisfaction with e-government and trust in government. *Journal of Public Administration Research and Theory, 15*(3), 371–391.

Wu, Y. (2014). Protecting personal data in E-government: A cross-country study. *Government Information Quarterly, 31*(1), 150–159.

Zhang, L. (2013). *China: NPC decision on network information protection*. Retrieved July 20, 2016, from http://www.loc.gov/law/foreign-news/article/china-npc-decision-on-network-information-protection/

Zhang, X. (2015). From privacy to personal information: Theory of interest balancing and institutional arrangement. *Chinese Laws, 3*, 38–59.

Zhao, J. J., & Zhao, S. Y. (2010). Opportunities and threats: A security assessment of state e-government websites. *Government Information Quarterly, 27*(1), 49–56.

Zheng, Y., Schachter, H. L., & Holze, M. (2014). The impact of government form on e-participation: A study of New Jersey municipalities. *Government Information Quarterly, 31*(4), 653–659.

Christopher G. Reddick is a professor and the chair of the Department of Public Administration at the University of Texas at San Antonio, USA. Dr. Reddick's research and teaching interests are in information technology and public sector organizations.

Yueping Zheng is an assistant professor in Centre for Chinese Public Administration Research, School of Government, Sun Yat-sen University, Guangzhou, China. His research interests are digital governance, citizen participation, and smart city.

CHAPTER 6

E-Government Development in the Central Asian States: Best Practices, Challenges and Lessons Learned

Ulan Brimkulov and Kasym Baryktabasov

6.1 Introduction

Nowadays e-government plays an important role in many countries. E-government is the use of information and communication technologies (ICTs) and particularly the Internet, as a tool to achieve better government (OECD 2003). It is widely perceived to be fundamental to reform and modernization in the public sector in order to improve service quality (OECD 2003; Foley and Alfonso 2009; Norris and Moon 2005).

E-government is transformative in nature affecting the management of human, technological, and organizational resources and processes (Grant and Chau 2006). The transformation agenda focuses on the need for governments to more effectively manage inputs, processes, and outputs of public administration organizations, and covers broad classes of institutional reform (Osborne and Gaebler 1992; Muhammad Rais 1999). The advent of new public management transforms traditional systems and adds new dimensions to the functioning of modern government to provide the

U. Brimkulov (✉) • K. Baryktabasov
Kyrgyz-Turkish "Manas" University, Bishkek, Kyrgyzstan

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_6

best services for its citizens by strengthening its internal operational efficiency (Imran and Gregor 2010; Saxena 2005).

ICTs are seen by many as a cost-effective and convenient means of promoting openness and transparency, and reducing corruption (Bertot et al. 2010). Heeks points out that experience suggests public servants often perceive that IT introduction is going to have a significant effect in reducing corruption (Heeks 1998).

A 2003 World Bank report reveals that the application of ICTs in government operations can result in better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or efficient government management (Bhuiyan 2011). The 2010 United Nations' (UN) E-Government Survey also finds that citizens are benefiting from more advanced e-service delivery, better access to information, more efficient government management, and improved interactions with governments, primarily as a result of increasing use by the public sector of ICT (UN 2010).

The history of e-government development around the world shows that e-government development in many countries faces a number of problems and challenges. Strejcek and Theil, based on EU country material, emphasize the existing gap between the ambition of e-government projects and their actual implementation (Strejcek and Theil 2002).

It is well known that e-government development initiatives cannot succeed without the appropriate level of development in such areas as ICT, economy, legal framework, and citizens' literacy. Political stability and leadership is also very important. This chapter attempts to corroborate this by using the example of the Central Asian (CA) countries. In order to avoid the mistakes and learn from the past it is also very important to know which problems and obstacles face the government bodies in their e-government development efforts. It should also be noted that there is insufficient research on e-government development in CA countries, especially in those such as Tajikistan and Turkmenistan.

Therefore the objective of this chapter is to show the dependency between e-government development and ICT, economy and legal framework development, to analyse the e-government initiatives in the CA countries, and to share the best practices and generalize the main challenges and obstacles of e-government development in the region.

This chapter is primarily based on the analysis of secondary sources. Most of the information has been received from academic sources on

e-government development in the CA countries. Some information has been obtained from analytical reports of governmental and non-governmental organizations. Some data have been obtained from well-known international organizations, such as the World Bank, International Budget Partnership, International Telecommunication Union (ITU), Transparency International, and United Nations Division for Public Administration and Development Management. Information from the government and news websites has also been used.

Section 6.2 presents a general overview of the CA countries, their land area, population size, gross domestic product (GDP) etc. Section 6.3 presents the situation in ICT development and its influence on e-government development in the region. Section 6.4 contains information on the legal framework of ICT and e-government development in the CA countries. Section 6.5 describes the best practices of e-government development in the region. Section 6.6 points out the main challenges and obstacles of e-government development in CA countries. Section 6.7 discusses the results of the study and lessons learned and Sect. 6.8 concludes the chapter.

6.2 General Overview of the Central Asian Countries

Central Asia is the core region of the Asian continent and stretches from the Caspian Sea in the west to China in the east and from Afghanistan in the south to Russia in the north. It is also sometimes referred to as Middle Asia and, colloquially, "the 'stans" (as the six countries generally considered to be within the region all have names ending with the Persian suffix "-stan", meaning "land of") and is within the scope of the wider Eurasian continent. In modern contexts, all definitions of CA include these five republics of the former Soviet Union: Kazakhstan, Kyrgyzstan (Kyrgyz Republic), Tajikistan, Turkmenistan, and Uzbekistan (Wikipedia the Free Encyclopedia 2016) (see Table 6.1)

The literacy rate in the region is above 99% (Central Intelligence Agency 2016). But after the collapse of the Soviet Union all of the CA countries faced considerable problems ranging from their economic development, governance, accountability of government officials, corruption, political stability, social life etc. Even though more than 20 years have passed since then, many of these problems are still on the agenda. The Worldwide Governance Indicators (WGI) project reveals these problems.

Table 6.1 The CA countries. General information

Country name	*Surface area (sq. km), 2015*	*Population, total, 2014*	*GDP per capita (current US$), 2014*
Kazakhstan	2,724,902	17,289,224	12,601.62
Kyrgyz Republic	199,949	5,835,500	1268.86
Tajikistan	142,550	8,295,840	1114.01
Turkmenistan	488,100	5,307,188	9031.51
Uzbekistan	447,400	30,757,700	2036.69

Source: The World Bank (2016b)

Table 6.2 The World Governance Indicators for the CA countries

Years	*2014*	*2013*	*2012*	*2014*	*2013*	*2012*
	Voice and accountability			*Political stability and absence of violence/terrorism*		
Country/territory						
Kazakhstan	15.27	14.22	15.17	47.57	34.60	36.02
Kyrgyz Republic	31.03	30.33	28.44	19.90	18.96	18.96
Tajikistan	7.39	7.11	9.00	23.30	14.22	13.74
Turkmenistan	0.00	0.95	0.47	48.54	53.55	59.24
Uzbekistan	2.46	2.37	1.90	36.41	26.54	29.38
	Rule of law			Government effectiveness		
Kazakhstan	34.13	30.33	30.81	54.33	35.41	39.71
Kyrgyz Republic	15.87	12.80	12.32	18.75	28.71	29.19
Tajikistan	15.38	9.95	10.90	22.60	14.35	18.18
Turkmenistan	7.21	6.64	5.21	17.79	8.61	8.13
Uzbekistan	12.02	11.37	7.58	27.40	18.18	17.22

Source: The World Bank (2016a)

Table 6.2 presents ranking by four dimensions of governance as of 2014. In the table, rank means percentile rank among all countries and ranges from 0 (lowest) to 100 (highest).

As we can see from Table 6.2, the position of the CA countries is very low in all of the four dimensions of governance of the WGI report.

The level of corruption in the CA countries can be assessed using the Corruption Perceptions Index (CPI) prepared by Transparency

Table 6.3 Ranking of the CA countries by the CPI

Country/territory	*Ranks*			
	2015	*2014*	*2013*	*2012*
Kazakhstan	123	126	140	133
Kyrgyzstan	123	136	150	154
Tajikistan	136	152	154	157
Uzbekistan	153	166	168	170
Turkmenistan	154	169	168	170

Source: Transparency International (2015)

Table 6.4 Ranking of the CA countries by the OBI

Country	*2006*	*2008*	*2010*	*2012*	*2015*[a]
Kazakhstan	31	53	56	47	39
Kyrgyz Republic	–	71	74	75	34
Tajikistan	–	–	–	79	83
Turkmenistan	–	–	–	–	–
Uzbekistan	–	–	–	–	–

Source: The International Budget Partnership (2016)

Note: [a]It should be noted that the Open Budget Survey methodology and questionnaire underwent some revisions since the 2012 Survey round, which among other things affected the number and numbering of the questions.

International. As shown in Table 6.3, the position of these states relative to the other countries is very low.

One of the reasons for the high corruption levels in the CA countries is absence of open information on how the government bodies spend their financial resources. Research findings of the International Budget Partnership (IBP) on budget transparency measured by the Open Budget Index (OBI) complement this thesis (The International Budget Partnership 2016). As shown in Table 6.4, after the development of the open budget portals, Kazakhstan and Kyrgyzstan have achieved better ranks since 2012. At the same time these two countries improved their positions according to the CPI (see Table 6.3). On the other hand there is no information on the level of budget transparency (by OBI) in such countries as Uzbekistan and Turkmenistan; at the same time the position of these countries is much worse in CPI terms.

Because of the issues described above it is necessary to develop e-government in the CA countries as it is one of the ways to decrease the level of corruption and improve the openness of governments for better service delivery to citizens.

There are many factors that affect the result of e-government implementation initiatives such as the level of development of ICT infrastructure, citizen's literacy in general and ability to use ICT in particular, the level of economic development, the level of legal framework development, political leadership etc.

The next section describes the level of ICT infrastructure development in the CA countries as one of the main factors that influence the result of e-government implementation activities.

6.3 The Extent of ICT Sector Development in Central Asia

The ICT sector has been developing very fast during the past few years in the CA countries. According to the International Telecommunication Union, Kazakhstan is the leader in the region in ICT infrastructure development. Kazakhstan's rank in the ICT Development Index (IDI) is relatively high (see Table 6.5).

At the same time Kyrgyzstan showed considerable improvement, rising by 15 places from 2013 to 2015 and becomes one of the 10 most dynamic countries in the Commonwealth of Independent States region (International Telecommunication Union 2015).

One of the most notable growth areas is mobile technology (see Fig. 6.1). As shown in Table 6.6, there are more than 100 mobile cellular subscriptions per 100 people in Kazakhstan, Kyrgyzstan, and Turkmenistan. This means that there are good opportunities for citizens to use mobile

Table 6.5 The CA countries IDI ranking

Economy	*2015*	*2013*	*2012*	*2010*
Kazakhstan	58	53	53	62
Kyrgyzstan	97	108	107	112
Uzbekistan		115	116	
Tajikistan				
Turkmenistan				

Source: International Telecommunication Union (2015)

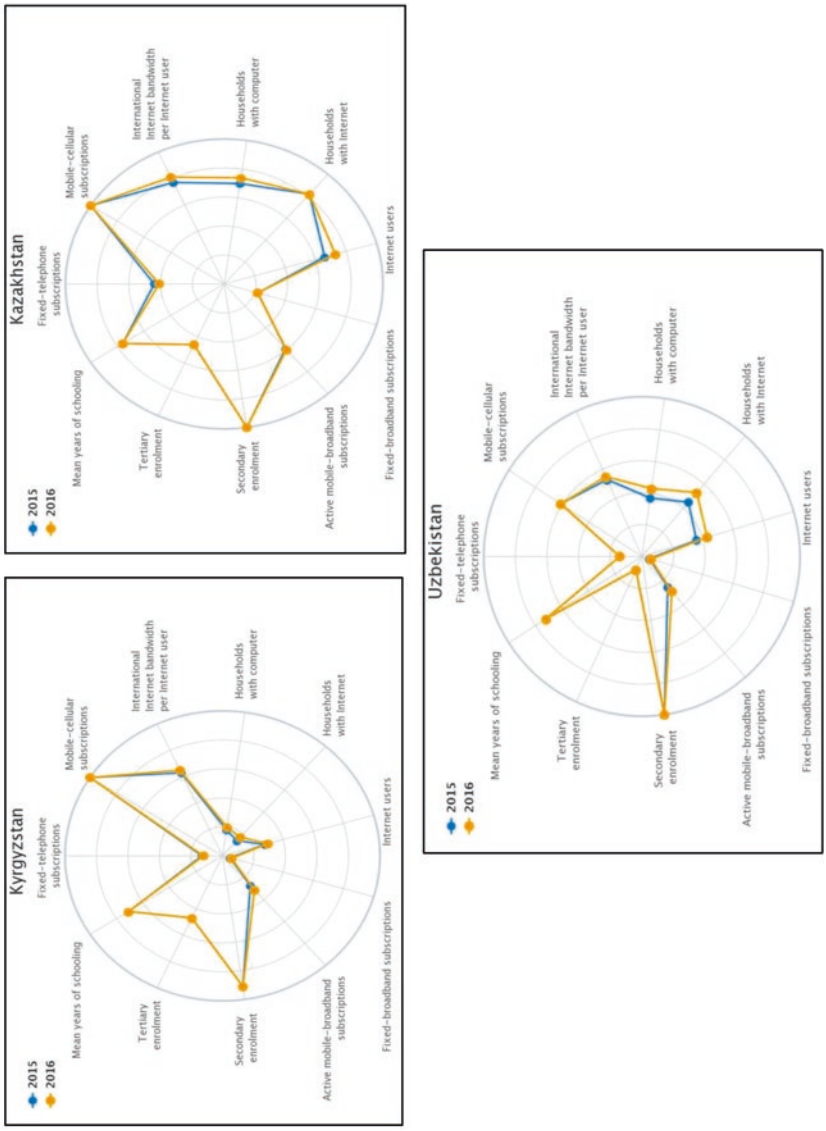

Fig. 6.1 ICT development in Kazakhstan, Kyrgyzstan, and Uzbekistan. Source: International Telecommunication Union (2015)

Table 6.6 Fixed telephone and mobile cellular subscription

Country name	*Fixed telephone subscriptions (per 100 people)*		*Mobile cellular subscriptions (per 100 people)*	
	2013	*2014*	*2013*	*2014*
Kazakhstan	26.71	26.21	184.69	172.19
Kyrgyz Republic	8.31	7.88	121.45	134.46
Tajikistan	5.18	5.24	91.83	95.13
Turkmenistan	11.49	11.77	116.89	135.78
Uzbekistan	6.91	8.55	74.31	78.42

Source: The World Bank (2016b)

Table 6.7 Fixed broadband subscriptions and Internet users

Country name	*Fixed broadband subscriptions (per 100 people)*		*Internet users (per 100 people)*	
	2013	*2014*	*2013*	*2014*
Kazakhstan	11.91	12.93	54	54.89
Kyrgyz Republic	2.45	4.16	23	28.30
Tajikistan	0.07	0.07	16	17.49
Turkmenistan	0.03	0.04	9.6	12.20
Uzbekistan	1.06	1.87	38.2	43.55

Source: The World Bank (2016b)

internet in order to access government online services. Based on this information, government officials may also decide to develop mobile government (m-government).

Even though there are many mobile subscriptions, there are much fewer fixed telephone and fixed broadband subscriptions (see Table 6.7). The number of Internet users is also low. One of the reasons for the low number of Internet users is the high price for Internet connection and use. As it has been mentioned above, GDP per capita in such countries like Kyrgyzstan and Tajikistan is a little more than 1000USD (see Table 6.1). So it is just not affordable for citizens of these countries to have a fixed broadband subscription. As a result, we can see the lower numbers of

Table 6.8 ICT prices, fixed-broadband sub-basket, 2014

Rank	*Economy*	*As % of GNI p.c.*	*USD*	*Speed in Mbit/s*	*Cap per month in GB*
30	Kazakhstan	1.12	10.77	1.00	10.00
95	Turkmenistan	4.30	24.65	2.00	1.00
102	Uzbekistan	4.73	7.40	0.25	1.17
129	Kyrgyzstan	10.66	10.74	0.50	Unlimited
	Tajikistan				

Source: International Telecommunication Union (2015)

Table 6.9 Mobile-broadband prices, prepaid handset-based 500 MB, 2013

Rank	*Economy*	*As % of GNI p.c.*	*USD*	*GNI p.c., USD, 2013*[a]	*Monthly data allowance (MB)*
19	Kazakhstan	0.69	6.51	11,380	1024
87	Turkmenistan	3.06	17.54	6880	500
93	Uzbekistan	3.79	6.00	1900	500
115	Kyrgyzstan	8.88	8.88	1200	500
127	Tajikistan	17.01	14.03	990	1000

Source: International Telecommunication Union (2014a)

Note: [a]Data correspond to the GNI per capita (Atlas method) in 2013 or latest available year adjusted with the international inflation rates.

Internet users in Kyrgyzstan and Tajikistan comparing to Kazakhstan and Uzbekistan.

The research conducted by the International Telecommunication Union complement this finding. Tables 6.8 and 6.9 show prices for Internet and mobile services. As we can see, fixed broadband and mobile broadband prices in Tajikistan and Kyrgyzstan constitute a significant part of gross national income (GNI) per capita in comparison to other countries in the region.

The data presented above show that Kazakhstan is the leader in the region in many aspects. The GDP per capita in Kazakhstan is highest among other countries of the region; there are lowest prices for Internet access as a percentage of GNI per capita; the rank of the country by OBI

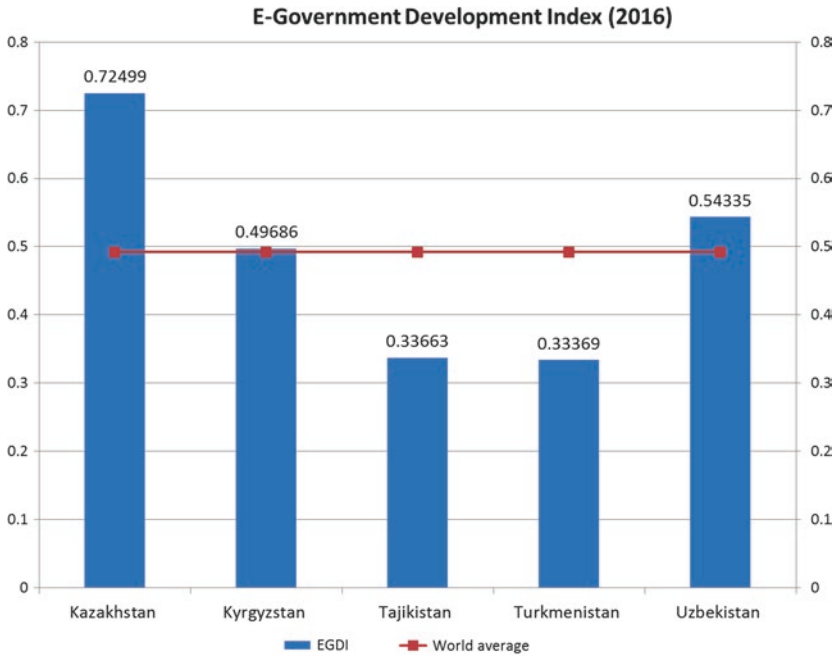

Fig. 6.2 UN E-Government Development Index of the CA states. Source: United Nations, Department of Economic and Social Affairs (2016)

and CPI is also the best in the region. On the other hand, sometimes there is a lack of sufficient information on Turkmenistan and Tajikistan.

This economic and ICT infrastructure development influence e-government development in the region. As we can see from the E-government Development Index data provided by UN Department of Economic and Social Affairs, Kazakhstan is the leader in e-government development in the region, but Turkmenistan and Tajikistan have the lowest ranks among the other CA countries (see Figs. 6.2 and 6.3).

The level of e-government development also depends on the legal framework in the state. It is hard to succeed without appropriate strategies, laws, and political leadership to move towards enhancing the use of ICT for better service delivery. For this reason the next section describes the main laws, national strategies, and programmes in the CA countries.

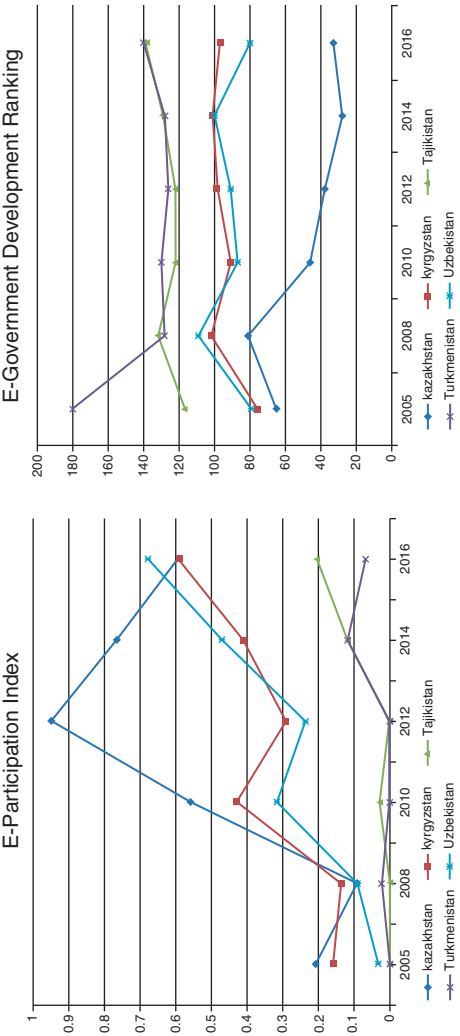

Fig. 6.3 UN E-government Development sub-indexes of the CA countries. Source: United Nations, Department of Economic and Social Affairs (2016)

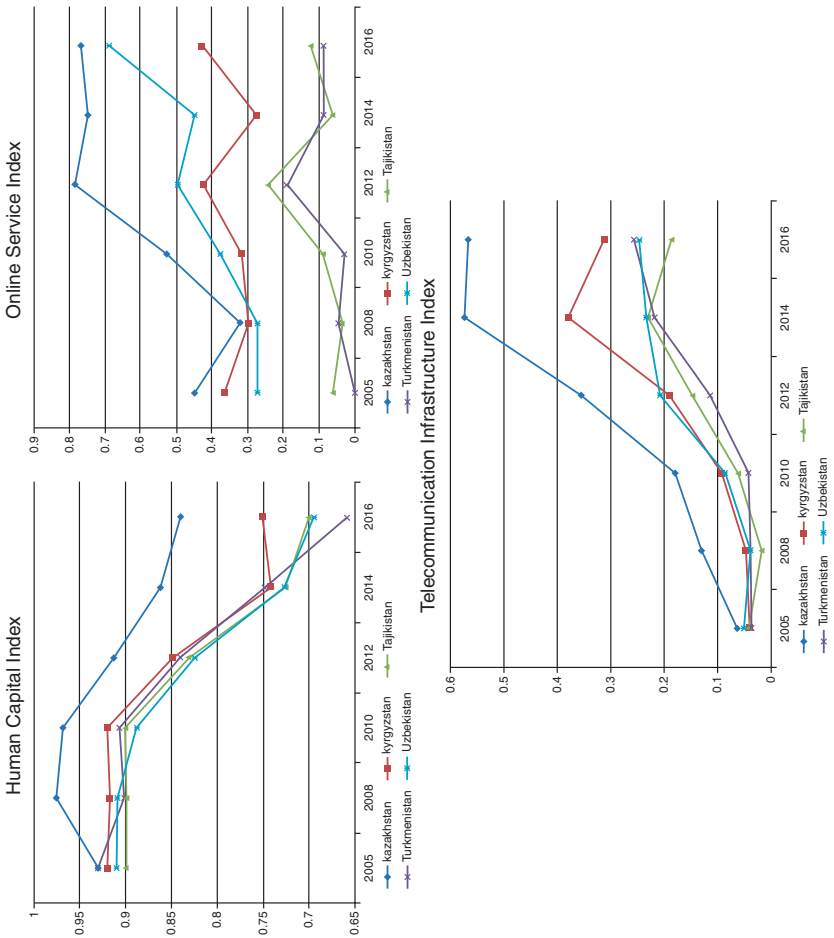

Fig. 6.3 (Continued)

6.4 The Legal Framework of ICT and E-Government Development in CA Countries

6.4.1 Kazakhstan

The following documents have been enacted in Kazakhstan in order to develop e-government (see Table 6.10).

The following documents also in use:

- State Program "Information Kazakhstan-2020", approved by the Decree of the President of the Republic of Kazakhstan as of January 8, 2013 #464 (Sadykov et al. 2014).
- National programme for building up e-government
- Law on Public Services as of April 15, 2013.

Table 6.10 Important documents on e-government development in Kazakhstan

Document	*Objective*	*Enacted date*
The message of the President to the nation "Kazakhstan-2030"	To establish the priority of an independent and effective system of telecommunications services of its own, competitive in future with similar infrastructures of the world developed economies	1997
The presidential decree on formation of the common information space		1997
The conception of the single information space of Kazakhstan		1998
The state programme on formation and development of national information infrastructure in the Republic of Kazakhstan		2001
The law on informatization	To regulate the informatization process, development and protection of information resources and information systems, to establish the competence of government, rights and responsibilities of citizens and businesses in this sphere	2003
The law on electronic document and digital signature	To regulate the use of digital signatures, modification or termination of legal relations, as well as rights and duties of parties in the e-document flow process	2003

Source: Kassen (2010)

6.4.2 *Kyrgyz Republic*

Several important documents to enable e-government development in the Kyrgyz Republic have been approved (Table 6.11).

Several laws to enable e-government development in Kyrgyzstan have also been adopted. Some of them are listed in Table 6.12.

The following documents have been also approved (Nurashbekov 2015):

Table 6.11 The concept, programme and strategy for e-government development in Kyrgyzstan

Document title	*Objective*	*Document type*	*Approved date and number*
The "Concept of Creation and Development of Information Network of the Kyrgyz Republic"	To enable access to information for citizens	Concept	September 23, 1994 #722
The "Programme of Information and Communication Technologies Development in the Kyrgyz Republic"	To prepare the main mechanism of integration and coordination of the different ICT programmes, subprogrammes and projects, and development of the integrated information environment of the Kyrgyz Republic.	Programme	November 8, 2001. Government decree #697
"Information and Communication Technologies for the Kyrgyz Republic Development"	It defines the main objectives, common principles, and state policy of ICT development in Kyrgyzstan. The most important priority of the strategy is using ICT for effective and transparent governance (e-government).	National Strategy	March 10, 2002. Presidential decree #54
The "Action Plan on Implementation of the Programme of ICT Development in the Kyrgyz Republic"		Action Plan	April 2002
The National Action Plan on Implementation of the ICT Strategy		Action Plan	September 6, 2003

Source: Brimkulov and Baryktabasov (2014)

Table 6.12 Legal framework for e-government in Kyrgyzstan

Document title	*Objective*	*Approved date and number*
The law on "Guarantees and Free Access to Information"	To provide citizens with the rights to search, obtain, analyse, and disseminate information.	December 5, 1997. #89
The law on "ICT Dissemination and Usage (Informatization)"	To create an enabling environment to satisfy informational needs of citizens and development of the modern information infrastructure of the Kyrgyz Republic integrated with international networks and systems.	October 8, 1999. #107
The law on "Electronic Payments"	Legal regulation of electronic payments	November 6, 1999. #121.
The law on "Electronic Signature"	To regulate the permitted types and usage of digital signature in the Kyrgyz Republic	July 7, 2004. #92
The law on "E-procurement"	To obligate all government bodies to procure online using the web portal http://zakupki.gov.kg	April 3, 2015. #72

Source: Brimkulov and Baryktabasov (2014)

- The National strategy for sustainable development of Kyrgyz Republic 2013–2017.
- The Program of transition of Kyrgyz Republic towards sustainable development for 2013–2017, approved by the government decree as of December 18, 2013 #3694-V.
- The Program of the Government of Kyrgyz Republic on implementation of electronic governance in the public administration for 2014–2017, approved by the Decree of the government as of November 17, 2014 #651.

The International Telecommunication Union states that the legal framework related to e-government in the Kyrgyz Republic is quite sufficient and comprises 16 laws on ICTs. However, additional laws need to be prepared and adopted in order to open the door to further implementation of electronic services and information exchange in the country (for example, a law on e-commerce, and unify technical standards and requirements) (International Telecommunication Union 2014b).

6.4.3 Tajikistan

Table 6.13 Legacy Framework of ICT and e-government development in Tajikistan

#	*Document title*	*Approved date and number*
	The decrees of the government of the Republic of Tajikistan	
1	"On creation of the united automated system of preparing documents in the state apparatus of the Republic of Tajikistan"	#108 February 19, 1997
2	"On creation of the Republic wide data transfer networks and measures to regulate access to the global information networks"	#389 August 08, 2001
3	"The rules of Internet service provision in the Republic of Tajikistan"	#389 August 08, 2001
4	"About the State support of formation, usage and protection of information resources of the Republic of Tajikistan"	#532 December 05, 2003
	The decrees of the President of the Republic of Tajikistan	
5	"On measures of providing access to the global information networks"	#1347 September 16, 1999
6	About the State Strategy "ICT for development of the Republic of Tajikistan"	#1174 November 05, 2003
7	About the "Concept of information security of the Republic of Tajikistan"	#1175 November 07, 2003
	The laws of the Republic of Tajikistan	
8	"On informatization"	#40 August 06, 2001
9	"On e-document"	#51 May 10, 2002
10	"On information"	#55 May 10, 2002
11	"On telecommunications"	#56 May 10, 2002
12	"On protection of information"	#71 December 02, 2002

Source: Republic of Tajikistan's Government (2004)

Table 6.13 shows a list of the main documents regulating ICT and e-government development in Tajikistan (Republic of Tajikistan's Government 2004).

For the purpose of contributing to development of e-government in the Republic of Tajikistan the following documents also have been approved (Nurashbekov 2015):

- The state strategy "The ICT for development of the Republic of Tajikistan";

- The state program "Development and implementation of ICT in the Republic of Tajikistan, 2014–2017";
- The programme for the provision of information security in the Republic of Tajikistan.
- There are also the following:
- The state programme on development and implementation of ICT in Tajikistan approved by Government Decree of Republic of Tajikistan as of December 3, 2004 #468;
- The Concept of State Information Policy of Tajikistan approved by the decree of President of the Republic of Tajikistan as of April 30, 2008, #451;
- The Concept of formation of e-government in the Republic of Tajikistan approved by the decree of the government of the Republic of Tajikistan as of December 30, 2001 #643.

6.4.4 Turkmenistan

In Turkmenistan, the main direction of ICT development has been defined in the National Programme for social and economic development for 2011–2030. In this were defined the long-term development strategy priorities, key indicators and ways of phasing (Orazbayev 2012). However, in an analytical report (Nurashbekov 2015) it has been stated that there are no special national programmes or strategic documents for ICT development in Turkmenistan. The authors of this study could not find any related documents themselves.

6.4.5 Uzbekistan

Table 6.14 lists the laws that are in force in Uzbekistan to support and regulate e-government development.

National programmes on ICT and e-government development in Uzbekistan have also been accepted (Makhkamov 2015):

- The Complex program of development of National information and communication system of the Republic of Uzbekistan for 2013–2020;
- The program of development of telecommunication technologies, networks and infrastructure of communication in the Republic of Uzbekistan for 2013–2020.

Table 6.14 The list of e-government supporting law for Uzbekistan

The title of the law	*Source*
• About communication • About informatization • About electronic document management • About electronic signature • About electronic commerce • About openness of the activities of public administration bodies and management	Kasimova (2015)
• About electronic government	Yakubov and Kubaev (2016).

Source: Authors' own elaboration

There are also a variety of projects on e-government development such as "Promoting e-government for increasing the quality of the public services" carried out by the United Nations Development Program (UNDP) (Nurashbekov 2015).

6.5 Best Practices of E-Government Development in Central Asia

6.5.1 Kazakhstan

One of the most recent and significant reforms to take place in Kazakhstan is the introduction of performance standards for public services. This development appears to have been ignored by analysts of public sector reform in developing countries. In fact, performance measurement in Kazakhstan is a central plank in the reform strategy aimed at improving the quality of public services (Knox 2008).

Table 6.15 also describes the best e-government initiatives in Kazakhstan.

6.5.2 Kyrgyz Republic

6.5.2.1 Unified Automated Land and Real Estate Registration System

Among the successfully implemented World Bank initiatives with proactive use of ICT in Kyrgyzstan was the project on Land and Real Estate

Table 6.15 E-government initiatives in Kazakhstan

Initiative title	*Objective of initiative*	*Results achieved*
The National database of legal entities	Automation of business processes of legal entities registration, re-registration and termination of activities and information sharing with other government bodies and interested citizens according to their privileges	As a result the time needed for registration of a corporate entity is shortened from 3 days to 1 hour.
The National database of individuals	Providing information on individuals to government entities and other interested or concerned persons according to their privileges	The database is already integrated with 28 government information systems. As of January 2010, NDI contained data on 90% of all citizens (Janenova 2010)
United system of electronic document management	To raise efficiency and transparency of the workflow and business processes of the state and local government bodies	The system implemented in 65 state bodies, 2574 territorial units, in 16 local executive authorities (LEA) and 2370 government organizations of the LEA. Using the system shortened the time for document delivery to the local municipalities from 7 days to 20 minutes, improved efficiency, shortened the time to discuss and negotiate the documents, allowed saving of financial resources regarding paper and delivery of the documents.
The infrastructure of the open keys of the National Identification System	Providing the tools of secure authentication and electronic digital signature to the citizens and legal entities of the Republic of Kazakhstan	At the moment 8.3 million electronic digital signatures have been granted to citizens.

(*continued*)

Table 6.15 (continued)

Initiative title	*Objective of initiative*	*Results achieved*
E-government web portal https://egov.kz	Rising efficiency and transparency of public service delivery by providing e-services to citizens	215 e-services have been implemented on the web portal. The services were used more than 30.7 million times during the period from January 1 to October 15, 2015. There are 4.2 million registered users of the portal (Sheryazdanova et al. 2016).
The project of implementation of online e-payment	Development of the automated system to provide payments by cash and cashless online payments for government online services	The total number of payments during the period from January 1 to October 15, 2015 reached 1 million, and gross transaction amount exceeded 7.7 billion Tenge (the local currency).
The Information system "National database of E-licensing" http://www.elicense.kz/	Automation of business processes for granting licences and authorizing documents, and providing efficient and transparent information sharing with government bodies and business	The system is integrated with 27 information systems of government bodies; 1612 documents have been optimized. The system was evaluated as the best project in the category of "E-business" in the competition WSIS Project Prizes 2013 conducted during the World Summit on Information Society in Geneva on May 13, 2013.

Source: Nurashbekov (2015)

Registration. Within this project a unified automated registration system was developed and implemented in all 50 local registration offices across the country. The main outcomes of the project for people are that they are now served more quickly and in a more convenient way. Now citizens do not need to visit the registration office several times as they did before (Abdrisaev et al. 2011).

6.5.2.2 Transparent Budget

The Ministry of Finance of the Kyrgyz Republic launched in 2012 a few e-initiatives on budget transparency, such as: "Transparent budget" (http://budget.okmot.kg)—an automatic system for providing data on revenue and expenditure of central and local budgets. For the first time in the country's history, ordinary citizens and legal entities have free access to detailed data on implementation of the state budget (International Telecommunication Union 2014b).

6.5.2.3 E-Procurement

State e-procurement (http://zakupki.gov.kg) is an automatic system for state procurements, including online registration, bid participation and other related information and actions (International Telecommunication Union 2014b). This initiative made the process of procurement transparent, improved the discipline of government bodies and helped to improve efficiency of government procurements.

The following government websites have been highlighted as providing interesting e-services (The public fund "Civil Initiative on Internet Policy" 2013):

- Website of the Ministry of Justice, which has published the base of the legal framework and a database of legal persons of the country;
- The web portals "Open budget", "Economic card" of the Ministry of Finance.
- The website of the Tax service which provides an opportunity to search the invoices and official stamps of the legal entities.
- One of the most demanded and interesting resources during elections—the system of online election monitoring.

The following services were highlighted as the most interesting online transactional services of governmental organizations (Brimkulov and Baryktabasov 2014):

- The availability to submit tax reports online to the State Tax Inspection of the Kyrgyz Republic.
- Several different state websites for citizens' complaints about corruption (for example http://www.aks.kg) have been developed. There are also similar special sections on many state websites serving the same purpose.

6.5.3 Uzbekistan

6.5.3.1 E-Government Web Portal

The e-government portal www.mygov.uz is a single window to government information and more than 200 online e-services. As of July 2015 254,770 applications have been made, 58% of which are from legal entities and 42% from individuals. Some 139 sets of data located on the web portal have been used 6600 times (Kasimova 2015).

6.5.3.2 E-Procurement

In the Republic of Uzbekistan e-procurement operations are conducted through the Republic's commodity stock exchange in the form of an electronic auction for the lowest prices. In 2014 government procurement volume exceeded 470 billion Sum (local currency), up 13% from the previous year (Kasimova 2015).

6.5.3.3 E-Tax Reporting

About 98% of all legal entities and organizations are submitting their tax reports in electronic format. In 2009 there were 349,000 visits to the State Tax Service's web portal, and in 2014 the total number of visits exceeded 30 million, showing the demand for information and services on the web portal (Avezova 2015).

6.6 The Main Challenges and Obstacles to E-Government Development in the Central Asian Countries

E-government development is a very complex task, and governments all around the world face plenty of challenges and obstacles during the implementation of e-government initiatives. The CA countries are no exception. All of these countries have very similar problems and issues.

Based on the literature review of e-government development in CA countries the authors tried to map the problems and issues specific to the countries of the region. The following is a list of the issues and the references to the research papers indicate the appropriate issue according to the country of origin.

Digital divide. One of the main challenges of e-government development is the digital divide, lack of qualifications and specific knowledge of civil servants, and citizens' lack of IT skills (see Table 6.16).

Table 6.16 The sources indicating the digital divide

Kazakhstan	Bhuiyan (2011), Nurashbekov (2015), Janenova (2010), Janenova and Kim (2016)
Kyrgyzstan	Abdrisaev et al. (2011), Thakur (2013), Dzhusupova (2013)
Tajikistan	Republic of Tajikistan's Government (2004), Dietrich et al. (2015)
Turkmenistan	Orazbayev (2012)
Uzbekistan	Kasimova (2015), Yakubov and Kubaev (2016)
CA generally	Bershadskaya et al. (2013a, b), Warf (2014), Yigitcanlar and Baum (2006), Warf (2013)

Source: Authors' own elaboration

Table 6.17 The sources pointed to poor demand for e-services from citizens

Kazakhstan	Ibrayeva et al. (2016)
Kyrgyzstan	Brimkulov and Baryktabasov (2014), The public fund "Civil Initiative on Internet Policy" (2013), Kasymova et al. (2016)
CA generally	Jaeger and Thompson (2003)

Source: Authors' own elaboration

This is mostly because of low levels of income, insufficient development of ICT infrastructure, high price of Internet access, and insufficient education in IT skills. As a result, there is poor demand for e-services from citizens (see Table 6.17), and the absence of strong leadership among civil servants with their poor performance in e-government initiatives.

Corruption should be pointed out as another challenge of e-government development in the CA countries (see Table 6.18). As many government officials do not want to lose their unofficial income, they are not motivated or incentivized to promote e-government initiatives and sometimes resist change (Kyrgyzstan: Dzhusupova 2013). Many government officials participate in e-government projects to obtain grants and financial support from international and non-governmental organizations (CA generally: Morozov 2011).

The insufficient development of ICT infrastructure and other technological problems are also very important challenges to e-government development in CA countries, especially in the rural regions (see Table 6.19). Often the state governments cannot communicate with the local municipalities located in mountainous or remote areas because of the absence of Internet connections (Kazakhstan: Janenova 2010). Sometimes

Table 6.18 The sources pointed to corruption as a challenge to e-government development

Kazakhstan	Bhuiyan (2011), Janenova (2010)
Kyrgyzstan	Brimkulov and Baryktabasov (2014), UNDP (2010)
Tajikistan	Dietrich et al. (2015)
Uzbekistan	Rakhmanov (2009)
Generally CA	Johnson and Kolko (2010)

Source: Authors' own elaboration

Table 6.19 The sources pointed to insufficient development of ICT infrastructure

	Insufficient development of ICT infrastructure	*Incompatibility of ICT systems*
Kazakhstan	Bhuiyan (2011), Kassen (2010), Janenova and Kim (2016)	Sadykov et al. (2014), Janenova (2010)
Kyrgyzstan	Thakur (2013)	
Tajikistan	Republic of Tajikistan's Government (2004), Dietrich et al. (2015), Republic of Tajikistan's Government (2008)	Republic of Tajikistan's Government (2004)
Uzbekistan	Gafurova (2015)	

Source: Authors' own elaboration

the problem is outdated software and old hardware used by the municipalities. In other cases, ICT systems are incompatible.

The lack of coordination of efforts for e-government development between government bodies often results in fragmentation, duplication of effort, inefficient use of financial resources, incompatibility of developed systems, and absence of horizontal data sharing. Cooperation of all stakeholders, vertically and horizontally, to allow information to flow across government bodies is vital. Unified standards and mechanisms (methodology) of data sharing and construction of communication networks are also needed. All of the CA countries that faced these obstacles, as reported in plenty of studies (see Table 6.20).

Lack of political support and leadership also challenges e-government development in CA countries (see Table 6.21). The reason for this may be corruption, cultural resistance, and lack of knowledge and IT skills of the leaders or even the authoritarian political regime. Local administrations with a strong leadership and understanding of the benefits of democratic

Table 6.20 The sources pointed to a lack of coordination of efforts

Kazakhstan	Sadykov et al. (2014), Nurashbekov (2015), Janenova (2010), Kassen (2015)
Kyrgyzstan	Brimkulov and Baryktabasov (2014), Thakur (2013)
Tajikistan	Republic of Tajikistan's Government (2004), Dietrich et al. (2015), Analysis of E-government Projects in Tajikistan (2014)
Turkmenistan	Orazbayev (2012)
Generally CA	International Telecommunication Union (2014b)

Source: Authors' own elaboration

Table 6.21 The sources pointed to the lack of political support and leadership

Kazakhstan	Bhuiyan (2011), Janenova (2010), Knox (2008)
Kyrgyzstan	Dzhusupova (2013)
Generally CA	International Telecommunication Union (2014b)

Source: Authors' own elaboration

Table 6.22 The sources pointed to insufficient development of the legal framework

Kazakhstan	Kassen (2010), Nurashbekov (2015), Kassen (2015)
Tajikistan	Dietrich et al. (2015)

Source: Authors' own elaboration

local governance, and with support from the central government, are able to create an enabling environment and encourage staff in the sustainable operation of local e-government while weak leaders cannot provide even the basic conditions required for establishing the system (Kyrgyzstan: Dzhusupova 2013).

Insufficient development of the legal framework often slows down development and implementation of e-government initiatives (see Table 6.22). Because all of the CA countries are former Soviet Union republics, they have inherited from the Soviet Union a legal framework that has become outdated and insufficient for the modern needs of the countries in transition. Although there have been many laws, programmes and strategies, there is still work needed in this domain to develop new documents or change old ones in specific areas.

There is a **low level of accountability**, monitoring and performance evaluation of ongoing projects (see Table 6.23), which can affect the proj-

ect results and cause an inefficient use of financial resources etc. The low level of accountability also negatively impacts the level of transparency of public authorities' activities (Kazakhstan: Ibrayeva et al. 2016). To overcome this kind of challenge, the projects should have clear objectives and measurable indicators to be successful.

Financing e-government projects in some cases becomes challenging for governments, especially in conditions of economic crisis (see Table 6.24). For countries such as the Kyrgyz Republic and the Republic of Tajikistan, most e-government initiatives have been supported by international and non-governmental organizations. Compared to the above mentioned states, Kazakhstan and Uzbekistan have more opportunities to fund e-government initiatives themselves.

Political stability became another challenge for countries such as the Kyrgyz Republic (Brimkulov and Baryktabasov 2014; Dzhusupova 2013). As a result of two revolutions during the past 11 years, many e-government initiatives paused or stopped. The Republic lost several positions in the international e-government development rankings.

Low level of information security is also an important issue that should be addressed to protect personal data and closed information from unauthorized access (see Table 6.25).

The governments of the CA countries also face **cultural impediments** such as language difficulties. Many studies report that the most of the information contained in government portals and websites of the CA countries are in Russian even though the Russians are a minority of the

Table 6.23 The sources pointed to a low level of accountability

Kazakhstan	Nurashbekov (2015), Janenova (2010)
Kyrgyzstan	Baimyrzaeva (2011)
Turkmenistan	Orazbayev (2012)

Source: Authors' own elaboration

Table 6.24 The sources pointed to problems with financing e-government projects

Kazakhstan	Kassen (2010)
Kyrgyzstan	Brimkulov and Baryktabasov (2014)
Tajikistan	Dietrich et al. (2015), Analysis of E-government Projects in Tajikistan (2014)

Source: Authors' own elaboration

Table 6.25 The sources pointed to a low level of information security

Kazakhstan	Kassen (2010), Sadykov et al. (2014)
Kyrgyzstan	Ismailova (2015)

Source: Authors' own elaboration

Table 6.26 The sources pointed to cultural impediments

Kazakhstan	Bhuiyan (2011), Janenova (2010)
Kyrgyzstan	Brimkulov and Baryktabasov (2014), The public fund "Civil Initiative on Internet Policy" (2013)
Generally CA	Warf (2013)

Source: Authors' own elaboration

population (see Table 6.26). This leads to the problem that local citizens who do not speak Russian cannot use the e-services and information provided.

There is also a lack of surveys initiated by government on the views of customers about their choice of public services, channels of delivery, and quality of received service to make e-government initiatives more customer oriented (Kazakhstan: Janenova and Kim 2016).

6.7 Discussion

It is widely accepted by the most researchers that e-government leads to transparency, operational effectiveness, reduction of corruption, and citizen satisfaction. But there is also another point of view. For example, in the study by Mcglinchey and Johnson (2007) the authors found that Internet regulatory policy in the CA countries varies according to who provides the financial capital for ICT. Where international aid organizations and non-governmental organizations provide capital and assistance for ICT infrastructure, such as in Kyrgyzstan and Tajikistan and, to a lesser extent, in Uzbekistan, the formal regulatory environment is more open, clearly articulated, and permissive of electronic media. In contrast, where domestic actors fund the development of ICT infrastructure, as in Kazakhstan, regulation is vague and government control and interference more extensive (Mcglinchey and Johnson 2007).

Moreover, Erica Johnson and Beth Kolko argue that in authoritarian countries a government's online presence may, in fact, be a continuation of

the repressive and bureaucratic processes that permeate all other state-citizen interfaces. E-government initiatives in such countries seem, at times, to be driven by a desire to embrace modernity and the global information society rather than a desire to increase transparency, the flow of free information, or citizen access to services. Such findings have important implications for how we think about the roles and functions of e-government in authoritarian states. Rather than liberalizing and democratizing, e-government sites allow governments to extend their control into the digital sphere (Johnson and Kolko 2010; Bowe et al. 2012). There is a wide variety of methods that are used to restrict and/or regulate Internet access, including applying laws and licences, content filtering, tapping and surveillance, discriminatory pricing and taxation policies, harassment of bloggers (e.g., via libel laws or invoking national security), hardware and software manipulation, and pervasive self-censorship (Warf 2013).

Uzbekistan and Turkmenistan, regarded by Reporters Without Borders as two of its Internet enemies, have engaged in widespread and systematic Internet censorship (Warf 2013).

Morozov revealed the reason why the CA countries pursue such modernization—it is not because they want to shorten the distance between the citizen and the bureaucrat but because they see it as a way to attract funds from foreign donors (e.g., the IMF and the World Bank) while also removing the unnecessary red tape barriers to economic growth (Morozov 2011).

Another issue for discussion is the adoption of developed countries' best practices in the CA countries. In Mcglinchey and Johnson (2007) the authors argue that foreign aid programmes are woefully ignorant of local culture and political traditions and, thus, are destined to fail. For example, in Kazakhstan the country-specific model of "alternative-access" service delivery was unable to implement in-depth changes in the work of the public sector and improve service quality. The main conclusion is that the governments of transitional countries need to critically analyse the pros and cons of the new policies and reflect on their cultures before making further steps to adopt Western managerial initiatives (Kazakhstan: Janenova and Kim 2016; CA in general: McCourt 2002; Larbi 2006).

The same applies in Uzbekistan, where it became apparent that importing governance one-size-fits-all recipes from the market-based sophisticated Western economies to the countries in transition was not a solution either, as they were often either rejected or manipulated to reflect the dominant cultural influences (Uzbekistan: Aminova and Jegers 2011).

In Kyrgyzstan, Dzhusupova argues that the most critical key lesson is that e-government initiatives can support democratic local governance

when it is designed carefully, based on a comprehensive analysis of local needs and priorities, and considers institutional, organizational, cultural, and human factors specific to a local area (Kyrgyzstan: Dzhusupova 2013).

One more lesson has been learned from Erica Johnson and Beth Kolko. They found that e- government sites at the national level do not increase the transparency or accountability of the government institutions and agencies that they represent. They also found that city/regional level e-government initiatives are more citizen-oriented and transparent (Johnson and Kolko 2010).

6.8 Conclusion

As a result of the study it can be stated that the CA countries are on their way in e-government development, but while there are many similarities between them, there are also many differences. Kazakhstan, for example, is the leader in e-government development as it has a more powerful economy compared to other countries in the region. Kazakhstan can fund many of its e-government development initiatives itself, while Kyrgyzstan and Tajikistan rely on the help of international organizations. The weak economy of Kyrgyzstan and Tajikistan does not make ICT services such as Internet connection affordable for most citizens. From this point of view, this study confirmed that e-government development depends on the level of economic and ICT development.

Turkmenistan is the most closed country of the region as it is hard to obtain enough information about it. Because of the policies of the governments of Uzbekistan and Turkmenistan, their ICT infrastructure is under more strict control compared to the other countries in the region.

The digital divide, corruption, insufficient ICT development and Internet penetration, and lack of political leadership are the most common obstacles to e-government development in the region.

The governments of the region should analyse the opportunities of developing mobile technologies and m-government. It would be very beneficial to research the views of citizens of the CA countries to enable them to choose which public services they need, what channels of delivery are more convenient, and obtain feedback about the quality of the received service to make further e-government initiatives more customer oriented. It is also advised that more attention should be paid to government websites' security and usability.

References

Abdrisaev, B., Dzhusupova, Z., & Aidaraliev, A. (2011). Contributing to sustainable mountain development by facilitating networking and knowledge sharing through ICT – Collaboration between rocky mountain states and Central Asia. *Systemics, Cybernetics And Informatics, 9*(7), 30–39.

Aminova, M., & Jegers, M. (2011). Informal structures and governance processes in transition economies: The case of Uzbekistan. *International Journal of Public Administration, 34*(9), 579–590.

Analysis of E-government Projects in Tajikistan. (2014). *Internet cervice providers association of Tajikistan*. Civil Internet Policy Initiative. Retrieved July 25, 2016, from http://ispa.tj/wp-content/uploads/2014/02/eGovInitiatives_CIPIAnalyticalReport_2013.pdf

Avezova, S. M. (2015). The informatively-communication technologies as important factor of development of economy of Uzbekistan. *European Journal of Economics and Management Sciences, 1*, 21–24.

Baimyrzaeva, M. (2011). Kyrgyzstan's public sector reforms: 1991–2010. *International Journal of Public Administration, 34*(9), 555–566.

Bershadskaya, L., Chugunov, A., & Dzhusupova, Z. (2013a). Understanding e-government development barriers in CIS countries and exploring mechanisms for regional cooperation. In C. Leitner, H. LEitold, & A. P. A. Ko (Eds.), *International conference on electronic government and the information systems perspective* (pp. 87–101). Prague: Springer Berlin Heidelberg.

Bershadskaya, L., Chugunov, A., & Trutnev, D. (2013b). Civil servants' educational needs in the field of e-governance in CIS countries. *EGOV/ePart Ongoing Research*, 132–139.

Bertot, J. C., Jaeger, P., Jaeger, T., & Grimes, J. M. (2010). Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Government Information Quarterly, 27*(3), 264–271.

Bhuiyan, S. H. (2011). Trajectories of e-government implementation for public sector service delivery in Kazakhstan. *International Journal of Public Administration, 34*(9), 604–615.

Bowe, B. J., Freedman, E., & Blom, R. (2012). Social media, cyber-dissent, and constraints on online political communication in Central Asia. *Central Asia And The Caucasus, 13*(1), 144–152.

Brimkulov, U., & Baryktabasov, K. (2014). Public transactional e-services through government web sites in Kyrgyzstan. *Electronic Journal of e-Government, 12*(1), 39–53.

Central Intelligence Agency. (2016, June). https://www.cia.gov/library/publications/the-world-factbook/fields/2103.html

Dietrich, D., Atoev, A., & Kosimov, R. (2015). *Open data readiness assessment Tajikistan*. Retrieved July 25, 2016, from http://ict4d.tj/2015/07/otsenka-gotovnosti-k-ispolzovaniyu-otkryityih-dannyih-v-tadzhikistane/

Dzhusupova, Z. (2013). Enabling democratic local governance through rural e-municipalities in Kyrgyzstan. In Z. Mahmood (Ed.), *E-government implementation and practice in developing countries* (pp. 34–58). Hershey: IGI Global.

Foley, P., & Alfonso, X. (2009). E-government and the transformation agenda. *Public Administration, 87*(2), 371–396.

Gafurova, D. (2015, December). Analisys of e-government system development in Uzbekistan (in Russian). *Young Scientist, 22*, 367–370.

Grant, G., & Chau, D. (2006). Developing a generic framework for e-government. In G. Hunter & F. Tan (Eds.), *Advanced topics in global informational management* (Vol. 5, pp. 72–101). London: Idea Group Publishing.

Heeks, R. 1998. *Information technology and public sector corruption*. Information Systems for Public Sector Management, Working Paper Series, Paper No. 4 Manchester: University of Manchester, Institute for Development Policy and Management.

Ibrayeva, A., Sifullina, A., & Yassetova, S. (2016). Problems in the implementation of the transparency principle in the activities of the public authority bodies of Kazakhstan. *International Conference on Management, Leadership & Governance*, Saint-Petersburg, 165–173.

Imran, A., & Gregor, S. (2010). Uncovering the hidden issues in e-government adoption in a least developed country: The case of Bangladesh. *Journal of Global Information Management, 18*(2), 30–56.

International Telecommunication Union. (2014a). Measuring the Information Society Report. Geneva, Switzerland.

International Telecommunication Union. (2014b). *Question 17-3/2: Progress on e-government activities and identification of areas of application of e-government for the benefit of developing countries*. International Telecommunication Union. Retrieved April 23, 2016, from http://www.itu.int/dms_pub/itu-d/opb/stg/D-STG-SG02.17.3-2014-PDF-E.pdf

International Telecommunication Union. (2015). *Measuring the information society report, executive summary*. Geneva, Switzerland. http://www.itu.int

Ismailova, R. (2015). Web site accessibility, usability and security: A survey of government web sites in Kyrgyz Republic. *Universal Access in the Information Society, 2015*, 1–8.

Jaeger, P. T., & Thompson, K. M. (2003). E-government around the world: Lessons, challenges, and future directions. *Government Information Quarterly, 20*, 389–394.

Janenova, Saltanat. (2010). E-Government in Kazakhstan: Challenges for a transitional country. *18th NISPAcee Annual Conference 'Public Administration in Times of Crisis'*. Warsaw, 12–14.

Janenova, S., & Kim, P. S. (2016). Innovating public service delivery in transitional countries: The case of one stop shops in Kazakhstan. *International Journal of Public Administration, 39*(4), 323–333.

Johnson, E., & Kolko, B. (2010). E-government and transparency in authoritarian regimes: Comparison of national- and city-level e-government web sites in Central Asia. *Digital Icons: Studies in Russian, Eurasian and Central European New Media, 3*, 15–48.

Kasimova, D. (2015). Level of development in information communication technologies in Uzbekistan. *Educatio, 6*(13), 50–53.

Kassen, Maxat. (2010). *E-Government in Kazakhstan: realization and prospects.* Southern Illinois University Carbondale, OpenSIUC.

Kassen, M. (2015). *Understanding systems of e-Government: E-Federalism and e-Centralism in the US and Kazakhstan.* Lanham, MD: Lexington Books.

Kasymova, J., Ferreira, M. A. M., & Piotrowski, S. (2016). Do open data initiatives promote and sustain transparency? A comparative analysis of open budget portals in developing countries. In *Information, models, and sustainability. Policy informatics in the age of big data and open government* (pp. 137–155). Cham: Springer International Publishing.

Knox, C. (2008). Kazakhstan: Modernizing government in the context of political inertia. *International Review of Administrative Sciences, 74*(3), 477–496.

Larbi, G. (2006). Applying the new public management in developing countries. In Y. Bangura & G. Larbi (Eds.), *Public sector reform in developing countries: Capacity challenges to improve services.* Basingstoke: Palgrave Macmillan.

Makhkamov, B. S. (2015). New opportunities of implementation of ICT in the Republic of Uzbekistan. *Voice of Research, 4*(3), 43–44.

McCourt, W. (2002). New public management in developing countries. In K. McLaughlin, E. Ferlie, & S. Osborne (Eds.), *New public management: Current trends and future prospects* (pp. 227–242). London: Routledge.

Mcglinchey, E., & Johnson, E. (2007). Aiding the Internet in Central Asia. *Democratization, 14*(2), 273–288.

Morozov, E. (2011). *The net delusion: The dark side of Internet freedom.* New York: Public Affairs.

Muhammad Rais and Abdul Karim (1999). *Rengineering the public service: Leadership and change in an electronic age.* Kuala Lumpur: Pelanduk Publications.

Norris, D. F., & Moon, M. J. (2005). Advancing e-government at the grassroots: Tortoise or hare? *Public Administration Review, 65*(1), 64–75.

Nurashbekov, R. (2015). *Analytical report. Analysis of the program documents of Commonwealth of Independent States' countries based on data provided by the government bodies and open sources* (in Russian). National ICT holding company "Зерде", Astana.

OECD. (2003). The case for e-government: Excerpts from the OECD report "The e-government imperative". *OECD Journal on Budgeting, 3*(1), 62–96.

Orazbayev, S. (2012). The role of ICT in social and economic development of Turkmenistan. In F. Matthias & F. N. Sultana (Eds.), *E-governance, A global journey* (pp. 23–38). Amsterdam: IOS Press.

Osborne, D., & Gaebler, T. (1992). *Reinventing government: How the entrepreneurial spirit is transforming the public sector*. Wokingham: Addison-Wesley.

Rakhmanov, Elyor. 2009. The barriers affecting e-government development in Uzbekistan. *Computer Sciences and Convergence Information Technology*. Seoul, 1474–1480.

Republic of Tajikistan's Government. (2004, December). *The state programme on development and implementation of ICT in Tajikistan, Approved by Government Decree of Republic of Tajikistan dated 3th of December 2004 #468*. Document.

Republic of Tajikistan's Government. (2008). *The concept of state information policy of Tajikistan, approved by the decree of the Republic of Tajikistan's President dated 30th April 2008, #451*. Document.

Sadykov, T., Taizhanov, A., & Gumilyov, L. N. (2014). Solution of problems of development of the electronic government in the Republic of Kazakhstan. *Asian Social Science, 10*(24), 134–143.

Saxena, K. B. C. (2005). Towards excellence in e-governance. *International Journal of Public Sector Management, 18*(6), 498–513.

Sheryazdanova, G., Abdina, A., Abdildina, H., Kakimzhanova, M., Sadykova, T., & Gappasova, A. (2016, February). Development of electronic government in Kazakhstan as a tool to combat corruption. *Indian Journal of Science and Technology, 9*(5), 1–7.

Strejcek, G., & Theil, M. (2002). Technology push, legislation pull? E-Government in the European Union. *Decision Support Systems, 34*, 305–313.

Thakur, Nitin Raj. (2013). *e-Readiness Evaluation – Kyrgyz Republic*. United Nations Development Programme, Bishkek.

The International Budget Partnership. (2016). http://www.internationalbudget.org

The Public Fund "Civil Initiative on Internet Policy". (2013). *Review of government websites of Kyrgyz Republic*. The public fund "Civil Initiative on Internet Policy". Retrieved July 24, 2016, from http://www.gipi.kg/en/obzor-sajtov-gosudarstvennyx-organov-kyrgyzstana/

The World Bank. (2016a). http://info.worldbank.org/governance/wgi/index.aspx#home

The World Bank. (2016b, June). http://databank.worldbank.org

Transparency International. (2015). http://www.transparency.org/cpi2015

UN. (2010). *United Nations e-government survey 2010: Leveraging e-government at a time of financial and economic crisis*. New York: UN (United Nations).

UNDP. (2010). *The Kyrgyz Republic: The second progress report on the millenium development goals*. United Nations Development Program (UNDP). Retrieved July 24, 2016, from http://www.kg.undp.org/content/dam/kyrgyzstan/Publications/povred/UNDP_kgz_MDG_Progress_Report_revised_2011_RUS.pdf

United Nations, Department of Economic and Social Affairs. (2016). https://publicadministration.un.org/egovkb/en-us/Data-Center

Warf, B. (2013). The Central Asian digital divide. In M. Ragnedda & G. W. Muschert (Eds.), *The digital divide: The Internet and social inequality in international perspective* (pp. 270–284). London: Routledge.

Warf, B. (2014). Asian geographies of e-government. *Eurasian Geography and Economics, 55*(1), 94–110.

Wikipedia the Free Encyclopedia. (2016, July). https://en.wikipedia.org/wiki/Central_Asia

Yakubov, M. S., & Kubaev, U. R. (2016). Multistage processes of e-government formation. *Science and World, 1*(3), 101–103.

Yigitcanlar, T., & Baum, S. (2006). E-government and the digital divide. In M. Khosrow-Pour (Ed.), *Encyclopedia of e-commerce, e-government, and mobile commerce* (pp. 353–358). Hershey: IGI Global.

Ulan N. Brimkulov is Professor of Computer Engineering, Department of Kygyz-Turkish Manas University (Bishkek, Kyrgyzstan). He is a Corresponding Member of Kyrgyz Republic National Academy of Science, Member of: International Engineering Academy (Moscow); International Informatization Academy; and Academy of Pedagogical and Social Sciences (Russia). He has also contributed to the development of information and communication technologies (ICTs) in the Kyrgyz Republic in the fields of education and public administration. And lately, he was a national expert in the field of "E-government services" at the UN Development Program.

Kasym Baryktabasov received a B.Sc. in computer science from Kyrgyz National University, Bishkek, Kyrgyz Republic in 2002 and an M.Sc. in Computer Information Systems and Internet from the same university in 2004. He is currently pursuing a Ph.D. in computer engineering at Kyrgyz-Turkish "Manas" University. His research interest includes computing algorithms, knowledge management and e-government. In 2010 he was engaged as a fellow at the United Nations University, International Institute for Software Technology, Center for Electronic Governance to research on Knowledge Management Infrastructure for Electronic Government and contribute to the ongoing projects.

CHAPTER 7

Brazilian E-Government Policy and Implementation

Valeria Esther Nigri Musafir

7.1 Introduction

Electronic government (e-government or e-gov) officially started in Brazil in 2000. Since then, new technologies such as mobile data, social media, and cloud computing, have enabled new forms of public engagement with government. Citizens now expect to obtain services and participate in governmental decision-making in the same manner that they do with the private sector.

The concept of e-government as the provision by government of electronic services to the citizen has been expanded to digital government, where the citizen goes from being passive to being active, using not only the Internet but other digital media. According to the Organization for Economic Co-operation and Development—OECD (2014), "new public governance approaches are needed to support a shift from governments anticipating citizens' and business's needs (citizen-centric approaches) to citizens and businesses determining their own needs and addressing them in partnership with governments (citizen-driven approaches)".

For the World Bank (2015), the concept of digital government is changing the way governments around the world are acting: "from setting

V.E.N. Musafir (✉)
SERPRO, Rio de Janeiro, Brazil

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_7

measurable administrative goals to improving public service delivery, from making data-driven decisions to enacting evidence-based policies, from ensuring greater accountability and transparency within government to building greater public trust, governments are leveraging the power of information technologies in transformative ways".

The recent Brazilian "Digital Governance Policy" established in January 2016 aims to generate benefits to society through the use of ICT in the provision of public services and to encourage participation in the formulation, implementation, monitoring, and evaluation of public policies and services using digital media (Brasil 2016a).

According to the OECD (2014), the new digital governance context brings challenges and risks. The challenge is not related to new digital technologies alone, but to their integration into public sector modernization processes. For the organization, "this shift to use technology to shape public governance outcomes, and not simply to support government processes, requires coherent and strategic planning of policies for digital technologies in all areas and at all levels of the administration".

Based on the above considerations, this chapter proposes to answer the following questions: "What has been the Brazilian Electronic Government Development Policy in the past eight years? To what degree has it been aligned with International Organizations' guidelines? What are the Brazilian e-government challenges and best practices, including its most innovative implementations?"

The Brazilian e-government policy has been studied by the author since 2014, when interviews were conducted with 15 government executives from the Ministry of Planning, Development, and Management (MP) and Serpro (the Federal Data Processing Service), responsible for the planning and coordination of public policies in this sector.

Since the popular demonstrations in June 2013, the impeachment of President Dilma and the recent government of President Michel Temer, Brazil has faced a troubled political period, worsened by economic and financial crises reflected in all government programmes. Currently, innovation plays a central role within government strategies and, in this troubled scenario, it gains even more importance.

The objective of this research is to analyse the strategic direction of the Brazilian Electronic Government Programme from 2008 to 2016, through document research of strategic planning based on three e-governance categories: e-services, e-administration, and e-democracy; and interviews with government executives from the MP and Serpro. The United Nations e-Government Survey and other international reports were used to

examine a possible alignment of national strategic guidelines with those suggested by International Organizations. This research also shows the top Brazilian innovative solutions, the challenges, and best practices of e-government development.

In the literature, and specifically in Brazil, the term e-government is being replaced by digital government and e-governance by digital governance. For this study, both terms will be used depending on the context or period analysed.

This chapter is divided into four more sections: a literature review (Sect. 7.2); research methodology (Sect. 7.3); research results (Sect. 7.4); and finally, the conclusion (Sect. 7.5), showing new perspectives that may enhance governance, improve the efficiency of public management, and reduce costs.

7.2 Literature Review

This section consists of four sub-sections. First, the UNESCO conceptualization and UN e-government evaluation methodology is introduced. Second, the Brazilian e-Government Programme evolution and the current Digital Governance Policy are described. Third, the e-government elements are categorized under the three UNESCO fields. The final section analyses e-government strategic planning in both the Federal Public Administration (FPA) and Serpro.

7.2.1 E-Government According to the United Nations

Since 2003, the UN e-Government Survey has evaluated e-government in 193 countries using a weighted average of three dimensions: an online services index—OSI; a telecommunication infrastructure index—TII; and a human capital index—HCI. The OSI index, in turn, also uses an e-participation index—EPI—in its composition. The overall ranking is known as the e-Government Development Index—EGDI (United Nations 2012).

Several researchers use these indexes to evaluate their e-government programmes. According to research developed by Celso et al. (2012), all the BRIC(S) countries—Brazil, Russia, India and China (the study did not include South Africa, which is now considered part of BRICS)—have suffered a decline in EGDI index in 2010 due to the economic crisis of 2008, with the exception of Russia. Despite suffering a slight drop in 2008, Russia is the only country that increased its index in 2010 and also

exceeded Brazil. China, despite having an authoritarian government, obtained the group's leadership position in the e-participation index in 2010, reaching the 32nd position in the global rankings while Brazil was in the 42nd position. However, analysing the 2012 Survey we observed that the ranking in e-participation was reversed, with Russia surprisingly going up from the 86th position to the 19th and therefore leading the group. Brazil assumed the 31st position and China dropped to 66th, losing 34 positions.

Alshomrani (2012) used the EGDI index and its three sub-indexes (OSI, TII, and HCI) in order to compare e-government development between Saudi Arabia and the USA, using gap analysis and trends to recommend policies to improve e-government in Saudi Arabia.

Since the 2012 UN Survey, researchers have started to take into account the rising importance of a whole-of-government (WoG) approach and integrated online service delivery. The 2016 Survey stated that "WoG service delivery, enabled by e-government technology, can offer people services from various public agencies bundled together as a single, joined-up service in a one-stop-shop. For people, it means that interacting with public administration becomes much simpler" (United Nations 2016).

The terms e-government and e-governance are being synonymously used by academia, but it is important to understand the difference between them. According to UNESCO (2005b) "government is the institution itself, whereas governance is a broader concept describing forms of governing which are not necessarily in the hands of the formal government, ensuring a wider participation and involvement of citizens, institutions, NGO as well as private firms. Governance is the societal synthesis of politics, policies, and programs".

The purpose of implementing e-governance is to enhance good governance that is generally characterized by participation, transparency, and accountability. For UNESCO (2005b), "e-Governance is the public sector's use of information and communication technologies with the aim of improving information and service delivery, encouraging citizen participation in the decision-making process and making government more accountable, transparent and effective".

7.2.2 From the Brazilian E-Government Programme to Digital Governance

Electronic government in Brazil started in 2000 through a Presidential Decree. The Executive Committee for Electronic Government (CEGE)

was created to formulate policies, establish guidelines, and coordinate and articulate the actions for e-government implementation (Chahin et al. 2004). The basic principle is to make all government information and public services available on the Internet and to assure and expand digital and social inclusion. In 2003, eight technical committees (e.g. free software implementation; digital inclusion; and management of sites and online services) of CEGE were established under the Ministry of Planning (Brasil 2013).

The Information Technology Resource Administration System (SISP) was created by decree in January 1994 and updated in October 2011 with the objective of coordinating the IT resources of more than 200 agencies of the Federal Public Administration (FPA). One of its purposes is to define the strategic policy of IT management for the Federal Executive Branch (EGTI 2011).

The Secretariat of Information Technology—STI (previously Secretariat of Logistic and Information Technology—SLTI)—of the Ministry of Planning is responsible for planning, coordinating, and standardizing the activities of the Electronic Government Programme (MP/SLTI 2013).

The "National Public Management and Debureaucratization Programme"—GESPÚBLICA (2005) was launched by Presidential Decree in February 2005 with the aim of establishing an excellence model of management focused on results and citizen-oriented services. Ten years later, in February 2015, the government launched the "*Programa Bem Mais Simples*" ("Much More Simple Programme") with the objective of simplifying the day to day needs of citizens and enterprises and reducing bureaucracy in public administration. The Programme has six guidelines: eliminate formalities that have become obsolete with new technology; unify the registration and identification of citizens; centralize public services in one place; keep citizen data for queries; restore confidence in the word of the Brazilian citizen; and do not ask for information that the government already has (Brasil 2016c).

The "Digital Governance Policy" was established by Presidential Decree in January 2016 extinguishing the CEGE and its eight technical committees. It establishes that each agency of the FPA should create a digital governance committee and it also creates the "*Redes de Conhecimento*" ("Knowledge Network") in order to debate, in an open and participative way, technical themes that are important for public policy (Brasil 2016a).

In March 2016, the government launched the "Digital Governance Strategy"—EGD 2016–2019—to implement the Digital Governance

Policy. This strategic plan intends to promote a simplification and improvement of the public management efficiency as suggested by the "Much More Simple Programme" (EGD 2016).

7.2.3 E-Governance Elements and UNESCO Categorization

7.2.3.1 E-Services or Digital Public Services

The Services Portal (services.gov.br) was first launched in 2013, but was restructured in 2015 as an open platform that brings all the services of the government agencies to the same entry point. It has about 600 services available. The Apps Catalogue Portal (aplicativos.gov.br) shows all the apps that can be downloaded, classified by thematic categories or federal organizations.

7.2.3.2 Interoperability, Integration, and Standardization

Establishing the integration and sharing of information requires the use of interoperability standards that are vital for the provision of e-government services geared to the needs of citizens, such as e-PING (Electronic Government Interoperability Standards) in Brazil and e-GIF (Government Interoperability Framework) in the United Kingdom. Since 2003, efforts have been made to consolidate the standard e-PING in e-government projects and to establish the Brazilian interoperability framework (MP/SLTI 2010).

The standard of accessibility, described in the "Electronic Government Accessibility Model" (e-MAG) launched in 2005 aims at promoting universal access to e-government services through technical recommendations for building portal websites. In 2007, the e-MAG was institutionalized and its compliance became mandatory on sites and portals of the FPA. Finally, in 2010, the "Web Standards in Electronic Government" (e-PWG) was created, which consists of recommendations of good practices developed under the Digital Identity of the Federal Government (Brasil 2013).

The Federal Government is working on the "Framework for Enterprise Architecture and Interoperability Standards"—FACIN (2016) that will support the Brazilian Digital Governance Strategy. After public consultation, FACIN will be incorporated to the e-PING interoperability architecture version 2017. One interesting fact is that the most advanced countries on the UN EGDI index, such as South Korea, Singapore, the USA, Denmark, and Australia are already adopting enterprise architectures.

7.2.3.3 Structuring Systems

In Brazil, the concept of government "structuring systems" is applied to define transversal systems that are used by various agencies of the Federal Public Administration that represent the foundation of government systems. Serpro is responsible for the development of the majority of those systems that cover among others, the financial, accounting, organizational information, and people management areas.

7.2.3.4 Open Data and Transparency

In 2014, the Office of the Comptroller General—CGU (2014)—launched the Transparency Portal which is intended to allow citizens to track how public money is being used. Another mechanism which allows for greater popular participation and social control of government actions since 2011 is the "Access to Information Law" (LAI), which granted society access to all information produced by the government not classified as confidential.

The Open Government Partnership (OGP)—of which Brazil is co-leader—is recognized as an effort of several partner countries to make governments more transparent, effective, and reliable through the establishment of Open Government goals included in the agendas of each country. The National Infrastructure Open Data (INDA) established on April 2012 was built based on a participatory process and its purpose is to coordinate the open data policies. The Brazilian Open Data Portal (dados.gov.br) was also built in a participatory way, in order to be the central point of search, access, and use of governmental data. The "Open Data Policy" was established by a Presidential Decree on May 2016, with the objective of promoting the publication of data extracted from government databases, enhancing transparency, and delivering services in an integrated way. It calls for all agencies to have their Open Data Plan (PDA) published on their websites 60 days after the publication of the Decree. The governance of this Policy will be held by the Ministry of Planning (Brasil 2016b).

7.2.3.5 E-Participation or Social Participation

In a participatory democracy, there is a greater integration between the public and the civil spheres, having as a foundation the idea that the direct participation of the population in political processes is beneficial to the improvement of society. Parliaments of several countries have participatory experiences for promoting debate, discussion, and creating law proposals.

In Brazil there are several initiatives fostering participatory democracy. Created in 2009, the initiative called *e-Democracia* was developed by the Chamber of Deputies of the National Congress of Brazil to engage citizens in the process of elaborating legal proposals (Freitas 2015). The Brazilian Senate developed the portal *e-Cidadania*, a similar initiative to promote an online institutional space for political participation and direct collaboration of citizens in the parliamentary decision-making process. Recently the Brazilian citizen could vote on a proposed amendment to reduce the number of deputies in the House of Representatives and Senate while the legislation was pending (Brasil 2015b).

The "General Secretariat of the Republic Presidency"—SGPR—is responsible for policies developed to stimulate and increase social participation. In June 2014 the "Inter-council Forum" received the United Nations Public Service Award (UNPSA) as one of the best innovative practices of social participation in the world. This initiative encourages society to provide feedback and to monitor the implementation of the Multi-Annual Plans (PPA). According to SGPR, in the last Plan, 629 contributions were presented by civil society, of which 77% have been fully incorporated (SGPR 2014).

7.2.3.6 E-Governance Categorization

UNESCO (2005a) categorizes e-Governance in three fields: *e-Services*—improvement in the delivery of public services to citizens; *e-Administration*—improvement of internal government processes; and *e-Democracy*—processes to encourage active citizen participation in political decision-making.

Under this classification, the elements of interoperability, integration, standardization, and structuring systems compose the category *e-Administration*. When government improves its internal processes, modernizing its structuring systems with a concern for interoperability and integration between systems, we obtain cost savings and increased the supply of electronic services.

The elements Open Data, Transparency, and e-Participation compose the category *e-Democracy* that is related to government initiatives that increase transparency and encourage citizen participation in democratic processes and government decision-making.

The conceptual division of e-governance applied here was also used by Prado et al. (2011) and Cunha et al. (2011) to facilitate data analysis. However, the boundary between these concepts is not always clear.

7.2.4 Strategic Planning of the Federal Public Administration and Serpro

The Multi-Annual Plan (PPA) integrates public programmes (not only of IT) that should be implemented by each of the state ministries to achieve the long-term strategic objectives of the government. In the 2008–2011 plan, a specific thematic programme related to e-government was defined under the responsibility of the Ministry of Planning (MP 2014). It was aimed at "coordinating, standardizing and streamlining information and computing resources, ensuring the agencies and entities of the FPA had adequate support in ICT" (MP/SPIE 2007).

In the 2012–2015 PPA—also called the "More Brazil Plan"—this topic was addressed in another thematic programme. These programmes were organized under strategic objectives which, in turn, were detailed under goals and initiatives. The alignment of strategic plans to PPA's actions is seen as crucial for government agencies to achieve common objectives (MP/SPIE 2011).

In the 2016–2019 PPA, one of the strategic axis addresses the "Strengthening of public institutions with participation and social control, transparency and quality management". It is mentioned that "a participative democracy together with a digital governance strategy, with transparency of government data leads to solid mechanisms of social control" (MP/SPIE 2016).

The MP/SLTI 2011–2015 is aligned with PPA and the General Information Technology Strategy (EGTI). Their strategic objectives are direct and specifically linked to e-government strategies (MP/SLTI 2013).

The "General Information Technology Strategy"—EGTI—is a tool of the Information Technology Resource Administration System (SISP) which defines guidelines to promote the continuous improvement of management and IT governance. Under SISP, five versions of EGTI were published in the period 2008–2014 (EGTI 2008–2014). The last one, called General Information Technology and Communication Strategy—EGTIC 2014–2015—uses the Balance ScoreCard (BSC) methodology. It has four perspectives (society; federal government; internal processes; people and learning) and seven strategic objectives (EGTIC 2014).

The "Digital Governance Strategy"—EGD 2016–2019—substituted the EGTIC 2014–2015 and should implement the Digital Governance Policy. Among many international references used on the EGD elaboration, the recommendations of the Council on Digital Government

Strategies of OECD and the alignment with its digital governance approach can be highlighted.

The EGD policy is guided by nine principles: focus on the needs of society; openness and transparency; simplicity; prioritization of public services in digital media; share of resources; security and privacy; participation and social control; government as a platform; and innovation. The strategy had three axis (Information Access, Services Delivery, and Social Participation) and nine strategic objectives. The Information Access axis uses the strategic index EGDI and the Social Participation axis uses the e-Participation index of the UN Survey to monitor their evolution (EGD 2016).

Serpro is the largest public information technology service provider in Brazil. It was established in 1964 under the Ministry of Finance. Its primary client is the Ministry of Finance, but it also works with the Ministry of Planning, the Chief of Staff of the Presidency of the Republic, and the Ministry of Justice, among others (Serpro 2014). Dataprev is the other large public IT service provider for social policy in Brazil, including retirement benefits, unemployment insurance, and social security information from the Federal Revenue of Brazil.

During the analysed period, Serpro produced three long-term strategic plans: 2008–2011, 2013–2016, and 2014–2022. The 2008–2011 plan defined direction in the following dimensions: customer and government; society; technology; people; management and organization.

For 2013–2016, seven strategic objectives were defined, established by the board of directors and superintendents. However, in the course of this plan, Serpro developed in 2014 an eight-year strategic plan instead of the usual four-year one. For the 2014–2022 plan, Serpro adopted a new model and only one strategic objective: the institution of the *centre for solution and information for the Brazilian government*, with a broader scope, divided into three dimensions (Government and Society, Economy, and Technology) and six strategic guidelines (Serpro 2014).

However, for the 2014–2022 plan cycle 2016, the enterprise guidelines was more focused on financial and economic sustainability and efficiency improvements. The plan returned to the BSC methodology, and was divided into five dimensions (Economic and Financial; Clients; Internal Processes; Social Responsibility; People and Learning) and nine strategic objectives like “enhance the economic result for sustainability” and “obtain more clients and increase revenues”.

7.3 Methodology

This research analysed the strategic directions of the Brazilian e-Government Programme from 2008 to 2016. This period corresponds to the second term of President Luis Inacio Lula da Silva (2007–2010), the first (2011–2014) and second term (January 2015–May 2016) of President Dilma Roussef, until she was suspended to face an impeachment trial, and the beginning of President Michel Temer's government (May–October 2016).

The methodological procedures of this research can be grouped into four phases. In the first phase, research was done based on document analysis from international organizations like the United Nations e-Government Surveys from 2008 to 2016, UNESCO, Open Knowledge International, and the OECD. In the second phase, a document research was elaborated to identify strategic objectives, goals, indicators, and actions from the federal government's strategic planning based on three categories: e-services, e-administration (interoperability, integration; standardization; structuring systems) and e-democracy (open data and transparency; e-participation). In the third phase, relevant federal e-government initiatives were selected and analysed with the aim of presenting the challenges and best practices found in their implementation. In the fourth phase, eight semi-structured interviews were conducted with government strategic executives, five from Serpro (president, directors, and strategic coordinators) and three from the Secretariat of Information Technology/ Ministry of Planning (ex-secretary, deputy secretary, and director). Four out of five executives from Serpro also participated on the previous interview held in May 2014 as presented in Musafir (2014). Five and a half hours of interviews were recorded in Brasilia in June 2016. The interviews consisted of 10 open questions. The main ones were: (1) "Is the government concerned with improving Brazil's position in the UN e-Government Survey and with other international organizations e-government policies?" (2) "What did the federal government learn and what were the main problems identified?" (3) "List the three most relevant and innovative e-government initiatives in the last few years, including what were the challenges and best practices." (4) "What are the challenges and best practices of Brazilian Digital Governance compared to those of other countries?".

The objective of the interviews was to evaluate the strategic direction of the federal government, the problems found to achieve the targets of the

previous plans, and to present some challenges and best practices of the top Brazilian e-government initiatives from their perspectives.

The qualitative analysis interview results presented important strategic information, complementing the document analysis, which allowed us to understand the motivations, and the economic and political context that were not explicit in the documents, and identify the influence of international organizations' reports on the Brazilian government's strategic policy.

From the results obtained in the previous phases, complemented by the evolution of the Brazilian ranking position on the global e-government development index, online index and e-participation index from the latest UN Surveys, and also the Global Open Data Index, we were able to reflect on the challenges to be overcome by the government to offer more services at the "connected" level, where they are no longer centred on the government, but become citizen-centric services, increasing interoperability between various government agencies. The alignment of national strategic guidelines with those suggested by the International Organizations could also be verified.

7.4 Research Results

The research results comprise six sections. First, the UN Survey and Open Data Index analysis. Second, the Brazilian e-government programme evolution and Digital Governance. The next sections named the three e-governance categories: e-Services, e-Administration, and e-Democracy. The final section presents the Top Brazilian e-Government Initiatives (G2C, G2B and G2G), its challenges, and best practices.

7.4.1 United Nations E-Government Survey and Global Open Data Index Analysis

In the first phase of the research, the following elements were analysed: the evolution of the e-participation index (EPI) and online service index (OSI) and its influence on the composition of the e-government development index (EGDI) in Brazil, from the collection of secondary data extracted from the e-Government Surveys published by the United Nations (2008–2016). Table 7.1 shows that in 2008 Brazil was ranked 45th in the global ranking and, in 2010, the country had its worst performance, dropping to 61st position. It has moved up two positions every two years,

Table 7.1 EGDI Index, its components and the Brazilian position on the world ranking

	2008	*2010*	*2012*	*2014*	*2016*
E-government Development Index (EGDI)	0.5679	0.5006	0.6167	0.6008	0.6377
EGDI ranking	45	61	59	57	51
Online Service Index (OSI)	0.6020	0.3683	0.6732	0.5984	0.7319
OSI ranking	30	55	22	–	–
Telecommunication Infrastructure Index (TII)	0.2181	0.2538	0.3568	0.4668	0.5025
TII ranking	–	70	77	–	–
Human Capital Index (HCI)	0.8825	0.8837	0.8203	0.7372	0.6787
HCI ranking	–	83	78	–	–
E-participation Index (EPI)	0.4545	0.2857	0.5000	0.7059	0.7288
EPI ranking	23	42	31	24	37

Source: Extracted from the United Nations e-Government Survey 2008–2016 (United Nations 2008–2016)

reaching 57th position in 2014. However, in the 2016 Survey, Brazil got 51st place in the world ranking. The top position went to United Kingdom, for the first time, followed by Australia and the Republic of Korea.

From Table 7.1 it can be observed that in 2010 Brazil had its worst performance also in the indexes that make up EGDI. In the OSI index, the country reached 22nd position in 2012. Since 2014 the ranking of the indexes that compose EGDI are not being published. Analysing the 2016 Survey, it can be observed that the six places that Brazil got in the EGDI index are due primarily to the improvement of the OSI index that went from 0.5984 to 0.7319, because the other two indexes had a slight variation up and down this year.

The EPI index measures e-participation according to a three-level model of participation that includes: *e-information*—provision of information on the Internet to the citizen; *e-consultation*—organizing public consultations online; and *e-decision-making*—engagement of citizens directly in decision processes. From 2008 to 2012 this index had the same behaviour as the OSI index. The EPI reached 23rd position in 2008 and 42nd position in 2010. From 2012 to 2014, Brazil moved up seven positions and reached 24th position on the global ranking. In 2014 Brazil got 92.59% (e-information), 54.55% (e-consultation), and 0% (e-decision-making), totalling 63.79%. In 2016, the country got respectively 85.3%, 78.9%, and 0%, totalling 73.3%. Although in 2016, the EPI went up to

0.7288, Brazil lost 11 places, apparently because of the improvement of other countries. In the last research, many countries advanced more than 25 positions in the EPI world ranking mainly because of progress on e-consultation (public consultation on policy options). Nevertheless, Brazil still needs to engage in decision-making processes to score the e-decision-making sub-index and consequently advance in e-participation (United Nations 2016).

Another interesting index analysed was the Global Open Data Index, run by Open Knowledge International in collaboration with a global network of experts and contributors. The Index ranks countries annually since 2013 based on the availability and accessibility of data in 13 key categories, including government budget and spending, election results, procurement, and pollution levels (OKFN 2015).

As shown in Table 7.2, Brazil moved from 24th position among 60 countries in 2013 to 26th position among 97 countries in 2014. However, in 2015, Brazil rose 14 positions and is now placed number 12 out of 122 countries. In 2015, the top three countries were Taiwan, the United Kingdom, and Denmark (OKFN 2015).

All of the MP interviewees said that Brazil undertook an international benchmarking using documents from the OECD, UNESCO, World Bank, Network of e-Government Leaders of Latin America and the Caribbean (RED GEALC), and also from advanced countries like the USA, United Kingdom, New Zealand, and Singapore to build the Brazilian strategy guidelines. They added that alignment with these best practices will automatically reflect Brazil's ranking position on the United Nations index as well as others like the Global Open Data index. A couple of months after the interviews, the improvement in Brazilian e-government was actually observed, as mentioned above.

These results can be observed as an expression of significant incentives and new initiatives fostered by the Brazilian government to improve online

Table 7.2 Global Open Data Index and the Brazilian position in the world ranking

	2013	*2014*	*2015*
Global Open Data Index	24	26	12
Number of countries assessed	60	97	122

Source: Extracted from the Open Knowledge International (OKFN 2015)

services and to consolidate a participatory democracy environment. This demonstrates that Brazil needs to continue investing in digital services, but also needs to invest much more in telecommunication infrastructure and human capital in order to leverage e-government. As seen in these two indexes, Brazil's performance in the world falls far short of what is desired.

7.4.2 Electronic Government Programme Evolution and Digital Governance

The "Brazilian Electronic Government Programme" has undergone some changes over time as illustrated in Fig. 7.1. In the 2008 PPA, the government demonstrated its importance through the creation of the Electronic Government Programme. In addition, the government created in 2012 the Improvement of Public Management Programme, in order to implement and make available to society the "Brazilian Digital Agenda for Electronic Government". SLTI also proposed as a strategic initiative an "Electronic Government Agenda" in 2011.

In 2008, in the document which defines the General Information Technology Strategy (EGTI), SLTI was committed to establishing mechanisms that would reinforce actions of the National Electronic Government Plan, which had also been proposed by the Federal Court of Accounts of Brazil (TCU 2006). In 2010, IT in federal government became strategic

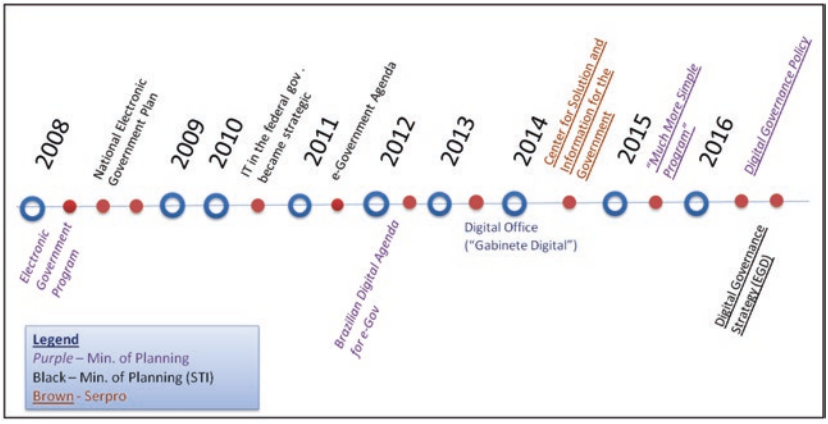

Fig. 7.1 E-Government Programme and Digital Governance. Source: Own elaboration

by attending the citizen directly and as a result of this guideline, actions were designed for the participation of IT in strategic planning of the Federal Government. In the following EGTI and in the 2011 SLTI document there is a greater concern from the Ministry of Planning in improving IT governance and strengthening the alignment between IT planning and the organization's strategies, strengthening SISP and e-government policy.

After the popular demonstrations in June 2013, the Republic Presidency created the "*Gabinete Digital*" ("Digital Office") that implemented various e-government initiatives like the new Brazilian main portal (www.brasil.gov.br) and the environment of e-participation, but it lost its political importance only five months later with the departure of the coordinator to the Chief of Staff of the Presidency of the Republic (Musafir and Freitas 2015).

Some of the problems cited in the 2014 interviews were addressed by the Brazilian government during the past two years: the "Much More Simple Programme" to simplify public services and reduce bureaucracy; the institutionalization of the "Digital Governance Policy" with the elimination of CEGE and its eight technical committees that were not working properly; and the Digital Governance Strategy (EGD), as a substitution of the EGTIC 2014–2015.

According to the MP respondents, since the first EGTI launched on 2008, the goal was the empowerment and structuring of the IT areas. The EGTI was a strategy made from IT for IT, while the EGD is a strategy made from IT to the businesses areas of the agencies. It is a paradigm shift.

Serpro's 2014–2022 strategic plan had a unique objective of establishing a *centre for solution and information for the Brazilian government*. However in 2016, the plan underwent a substantial change, returning to the BSC methodology with nine strategic objectives. It is not aligned with EGD and this unique objective was not explicitly shown. According to Serpro interviewees, this change was necessary because of the economic and financial problems that the enterprise is facing that require urgent solutions. However, Serpro's Quartzo product helped achieve the strategic objective of increasing revenues through use of information from government databases.

7.4.3 E-Services

A significant concern for improving and expanding the supply of e-services to society was observed in three government strategic plans starting in

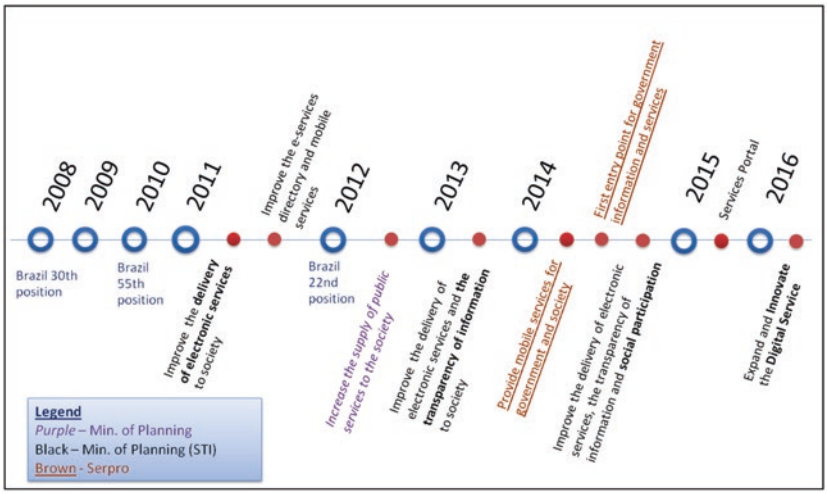

Fig. 7.2 E-services. Source: Own elaboration

2011, as shown in Fig. 7.2. In EGTI (2011), the objective was to "improve continuously the *delivery of electronic services* to society". In the subsequent EGTI new elements were added. Thus in 2013 the EGTI's goal turned into "improving continuously the delivery of electronic services and the *transparency of information* to society". In the EGTIC (2014) the intention becomes slightly different, turning into "improving the delivery of public services, the transparency of information and *social participation* through the effective use of ICT". This strategic goal is aligned with the broader concept of e-government and guidelines stipulated by the UN, not restricted to the provision of electronic services to citizens but also encouraging digital democracy by increasing transparency, democratic participation, and accountability of governments. In the EGD (2016) the strategic objective turned to "expand and innovate digital services". It can be observed that the term electronic service was replaced by digital service in government documents.

The Services Portal was first launched in 2013, but was technologically restructured in 2015. According to one MP respondent "the new Services Portal is an open source platform. It is ready for use. The challenges are to integrate services from many different agencies into the portal and to use the portal for any new electronic services that are created".

The explicit concern for offering more e-services was observed in Serpro's 2014–2022 strategic plan in two strategic requirements as shown in Fig. 7.2. These guidelines directly meet the criteria for e-government published by the UN. However these explicit e-service concerns could not be observed in the 2016 plan.

7.4.4 E-Administration (Interoperability and Integration; Standardization; Structuring Systems)

Since the 2008 EGTI the Ministry of Planning has addressed the need to integrate government information systems and to promote the use of standard e-PING for interoperability (EGTI 2008). The 2011 SLTI document listed the strategic initiative of "strengthening the interoperability of structuring systems of the federal government" as shown in Fig. 7.3 (MP/SLTI 2013).

In the EGD (2016) plan, the strategic objective "share and integrate data, processes, systems, services and infrastructure" and the strategic initiative "promote the use of e-government standards" can be observed.

Some 2014 interviewees mentioned the need for a corporative architecture and the majority of the 2016 interviewees are optimistic about the development of FACIN (Framework for Enterprise Architecture and Interoperability Standards). One MP respondent said that the challenge will be the adoption of this architecture by the agencies. This concern is

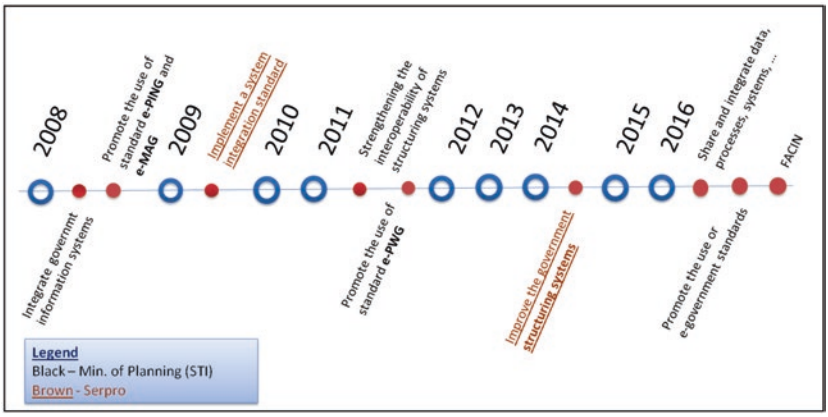

Fig. 7.3 E-administration. Source: Own elaboration

shared by one respondent from Serpro who added that "FACIN innovation is that it uses the e-PING experience, but it is being developed by organizations specialized in the subject. The government, because of its impartiality, is consolidating the contributions and this collaborative work will facilitate its adoption by the agencies".

Although Serpro has had a strong role in the development of e-PING, the adoption of e-PING and e-MAG standards were not explicitly written in the strategic plans of this period and many systems and portals developed did not follow what were intended to be mandatory standards.

Only in Serpro's 2014–2022 strategic plan, concern for improving the structuring systems by modernizing the architecture to facilitate interoperability could be explicitly observed. While these explicit concerns could not be observed in the 2016 plan, some Serpro interviewees said that the enterprise will modernize the structuring system if clients demand it, even if it is not in the strategic plan.

7.4.5 E-Democracy (Open Data and Transparency; E-Participation)

The issue of open data could be seen in the government's *agenda* in 2011, in several plans, with the strategic objectives of "implementing the National Infrastructure of Open Data (INDA)" and "encouraging states and municipalities to participate in the INDA" (MP/SLTI 2013). The EGTIC (2014) adds the need to "map out active transparency opportunities by opening up data from the FPA" as illustrated in Fig. 7.4. The EGD (2016) strategic objectives to "promote the availability and use of open data" and "expand the use of ICT to promote transparency and to publicize the application of public resources" reinforce the government's open data and transparency concern.

According to one MP respondent, "in recent years we took a leap in transparency. Despite the perception that corruption in Brazil has increased, it is undeniable that increased transparency in the medium term for the Brazilian State will be very good". Another respondent added that the Access to Information Law (LAI) was a milestone for the Brazilian transparency policy.

Serpro presented two strategic requirements related to open data in its 2014 strategic plan (see Fig. 7.4), but it was not explicitly written into the 2016 plan.

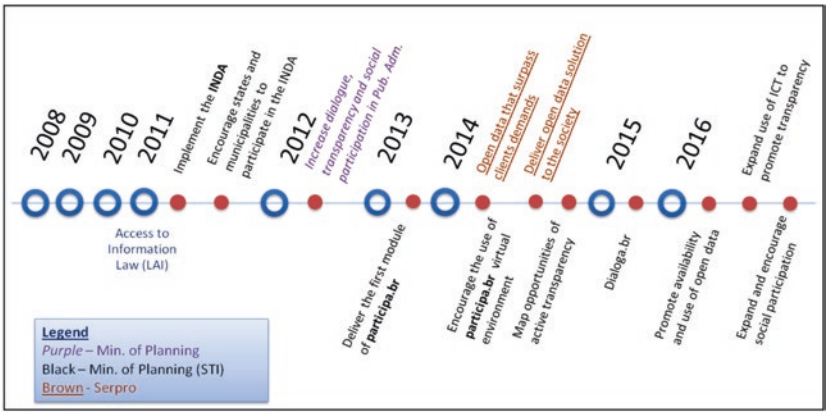

Fig. 7.4 E-democracy. Source: Own elaboration

The theme "Social Participation" has been included in the Brazilian agenda since the 2012 PPA with the strategic objective of "increasing dialogue, transparency and social participation in Public Administration, in order to promote greater interaction between state and society". The goals concerning the creation of new forms, languages, and instruments of social participation, as well as the creation of a proposal for a National Social Participation System were set out. This guideline can also be seen in the 2014 EGTIC with the strategic action to "encourage the use of *participa.br* virtual environment for e-participation" and in the EGD (2016) with the objective "expand and encourage social participation in the creation and improvement of public services". It could be observed that the social participation theme, being one of the three strategic axes, was more strongly emphasized in the EGD plan.

From the beginning, President Dilma's government has shown interest in encouraging greater citizen participation. In July 2015 the e-participation platform *Dialoga Brasil* ("Dialogue Brazil") was launched, based on the *participa.br* environment, with the objective of enhancing political participation by encouraging citizens to propose specific actions related to subjects like health, education, security, and culture where the most popular suggestions could contribute to the formulation of public policies (Brasil 2015a). The MP also used the participa.br for public consultations about the EGD strategy and the FACIN architecture.

According to one MP respondent, in the past two years, we can highlight: "the improvement of the Brazilian position on the Global Open Data

Index (12th), the Open Data Policy and the Social Participation through the use of participa.br environment" and another respondent concluded that "Brazil is advancing a lot with the Transparency, Open Data and Participa.br Portals…the technological infrastructure already exists, the society needs to appropriate and use it, so that our democracy can take a leap".

7.4.6 Top Brazilian E-Government Initiatives

In the literature, e-government includes electronic interactions of three types: G2C (Government-to-Citizen), G2B (Government-to-Business), and G2G (Government-to-Government). According to the interviewees, the top Brazilian e-government innovative initiatives of each type of interaction, its challenges and best practices, are listed below.

7.4.6.1 Top G2C E-Services

Table 7.3 shows the three top G2C services, a brief description, the organization responsible for the system and "owner" of the data, the website,

Table 7.3 Top G2C e-services

	IRPF	*SPED/e-social*	*ENEM/SISU/FIES*
Description	Brazilian Tax Revenue system launched on 1997, but each year new functionalities are added which makes it a still innovative e-service. Since 2013, the citizen can send also by mobile media and since 2014 the citizen can fill a draft of the income tax return during the year	The "Household Employer Portal" launched on October 2015 was the most recent module of the "Public Digital Bookkeeping System" (SPED) created in 2007 with the purpose of unifying the fiscal, social security and labours taxes in order to facilitate labour obligations	These three education services provide the nationwide public policy for higher education: registration for the ENEM qualifying exams, appliance to a selection process to enter a public university through the ENEM grades using SISU Portal (since 2010) and provision of finance to students enrolled in private universities under specific conditions using the FIES Portal

(*continued*)

Table 7.3 (continued)

	IRPF	*SPED/e-social*	*ENEM/SISU/FIES*
Responsibility	Secretariat of the Federal Revenue of Brazil (RFB)/Ministry of Finance	Ministry of Labour and Social Security	Ministry of Education (MEC)
URL	http://receita.fazenda.gov.br	http://www.esocial.gov.br	http://www.mec.gov.br
Coverage	RFB interoperates with many government organizations	Ministry of Labour and Social Security, Federal Saving Bank (CEF), National Institute of Social Security (INSS), Ministry of Planning and RFB	Ministry of Education, INSS, Federal and some State Universities
Challenge	Reduce fraud and increase revenue enhancing data crossover	Interoperation with CEF, INSS, Ministry of Labour, Ministry of Planning and RFB	The SISU service is 100% digital, but FIES is 90% digital because MEC is not interoperating with INSS, which increased the number of students going in person to the INSS agency to ask for paycheck documents
Best practice	Simplification of the income tax return with more pre-filled data each year, availability in mobile medias, use of high security procedures.	Reduction of bureaucracy, processes integration, increased government revenue and simplification on the relation of the citizen as a household employer	Simplification, facilitates the student procedures to enter a public university in any city of Brazil and to apply for public finance
Notes/ Volumes	3.9 million income taxes sent on the last day with security out of 27.9 million and 89,000 sent by smartphone and tablets, in 2016	Until 2017 the system may achieve 10 million employers and 65 million employees	9.2 million students registered for ENEM 2016

Source: Own elaboration

the government agencies that the system needs to interoperate with, the huge volume of information, the challenges, and best practices.

1. IRPF—Tax Revenue System
2. SPED/eSocial—Public Digital Bookkeeping System/Household Employer Portal
3. ENEM/SISU/FIES—Higher Education Services.

7.4.6.2 Top G2B E-Services

Table 7.4 shows the two top G2B services, a brief description, the organization responsible for the service, the website, the government agencies

Table 7.4 Top G2B e-services

	Simple enterprise portal	*Single portal for foreign trade*
Description	The system simplifies the process of opening and closing enterprises, interoperating data from the federal level (RFB) with state level (Board of Trade) to reduce bureaucracy	The Exterior Trade Portal is an initiative that will reformulate the importation, exportation and customs transit processes
Responsibility	Secretariat of Micro and Small Businesses	Ministry of Development, Industry and Foreign Trade (MDIC)
URL	http://www.empresasimples.gov.br/	http://www.portalsiscomex.gov.br/
Coverage	Secretariat of Micro and Small Businesses, RFB and Board of Trades	22 agencies including MDIC, RFB, Anvisa and Federal Policy
Challenge	Reduce the average time to start a business from 83 to 5 days and the cost to Brazil	This is a complex project over many years and it aims to modernize processes in the customs area in order to reduce the average time to import and export goods and the cost to Brazil; interoperates with 22 agencies in order to be 100% digital
Best practice	Simplification, reduction of bureaucracy, process integration, use of agile methodology and use of digital certificate to enhance the security and solve more than 90% of the requests digitally	Simplification, reduction of bureaucracy, process integration, use of digital certificate, use the single window approach defined by the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT)
Note	It was a strategic project of the Serpro 2014–2022 strategic plan	It is a strategic project of EGD and it is at the beginning of its development

Source: Own elaboration

that the system needs to interoperate with, notes related to the strategic plans, the challenges and best practices.

1. *Portal Empresa Simples*—Simple Enterprise Portal
2. *Portal Único do Comercio Exterior*—Single Portal for Foreign Trade.

7.4.6.3 Top G2G Structuring Systems and Processes (E-Administration)
Lastly, Table 7.5 presents the top three G2G structuring systems and one transversal process of APF, a brief description, the organization responsible for the system, the website, the government agencies that the system needs to interoperate with, notes about the strategies and volumes, the challenges and best practices.

1. SICONFI—Accounting and Tax Information System of the Brazilian Public Sector
2. SIGEPE—People Management System for the Federal Government
3. SINESP—National System of Information of Public Security, Prison and Drugs
4. PEN/SEI—National Electronic Process/Electronic Information System.

7.5 Conclusion

The objective of this research was to analyse the strategic direction of Brazilian e-government policy and implementation from 2008 to 2016. The scope of this study was limited to the Federal Executive Branch, although many of the policies and best practices implemented could be applied to state and local levels, as well as to legislative and judicial government branches.

Since 2008, Brazilian e-government public policies have advanced. In particular, the research has shown that in the past two years, digital government strategies have become much more aligned with international organizations' guidelines, like those of the the United Nations, OECD, and UNESCO.

The concern for improving and expanding the supply of e-services could be observed in the strategic plans since 2011, with the addition of the elements of transparency, social participation, and innovation in the following plans.

Table 7.5 Top G2G structuring systems and processes

	SICONFI	*SIGEPE*	*SINESP*	*PEN/SEI*
Description	The "Accounting and Tax Information System of the Brazilian Public Sector" is a tool for reception and analyses of financial, accounting and fiscal statistics information	The "People Management System for the Federal Government" is being developed by Serpro and Dataprev with the objective of promoting people management policy and human resources operations of the Federal Government	The "National System of Information of Public Security, Prison and Drugs" is a set of systems that provides information to promote the public policies related to security. The principal objectives are: to promote a diagnostic about criminality and offer modern tools for public security professionals	The "Electronic Information System" is part of the "National Electronic Process" (PEN) that covers the digital workflow of the documents and processes
Responsibility	Secretariat of National Treasure (STN)/ Ministry of Finance	Ministry of Planning	Ministry of Justice	Ministry of Planning
URL	http://siconfi.tesouro.gov.br/	http://servidor.gov.br/	http://www.sinesp.gov.br/	http://softwarepublico.gov.br/social/sei
Coverage	5568 municipalities, 26 states and federal level	Around 200 government agencies	Ministry of Justice, Denatran, RFB and 26 federative states	Many agencies of the Federal Government as courts, city halls, federal government and Public Ministry
Challenge	Interoperability with the three levels of government (federal, state and local) with a technological diversity between the agencies	SIGEPE was very much cited in the 2014 interviews. However two of the 2016 interviewees said that the challenge now is to continue this long project with the same intensity and with budget cuts	Public security is a complex task for any country. For Brazil the challenge is bigger because of the immense population and continental dimension, besides the wide economic and technological diversity between the federative state and agencies related to this area	Cultural barrier and resistance to change

(*continued*)

Table 7.5 (continued)

	SICONFI	*SIGEPE*	*SINESP*	*PEN/SEI*
Best practice	Use of e-PING open standard XBRL (Extensible Business Reporting Language) to interchange information between government agencies. This pattern is known worldwide but it was the first Brazilian system to use it. Use of agile methodology and digital certificate for security. Improvement of transparency and social control and bureaucracy reduction	Use of e-PING standards, modernization of a structuring system, use of agile methodology and great integration	Use of agile methodology and the incremental development of the module of SINESP, integration between agencies and professionals at different government levels. The states receive free systems to automate their processes and fill and send the information to the central system	Implementation of a government transversal system in agencies of different branches (Judiciary and Executive) and levels of government to reduce the average time to analyse and conclude a process, improving the administrative efficiency and reducing the government costs
Notes/ Volumes	It was a strategic project of Serpro 2014–2022 strategic plan and won the 2016 CONIP Excellence Award in innovation in Public Management	Around 1 million public servants (active, retired and pensioners) from more than 200 government agencies	The app "SINESP Citizen" provides consultation on stolen vehicles. It has more than 150 million queries and helped recover more than 120,000 stolen vehicles	It was cited on the EGD as an opportunity to improve the performance and transparency of the administrative processes of the FPA

Source: Own elaboration

Government strategies in the 2011–2013 period have shown significant impetus with the promotion of greater interaction between government and society, stimulating mechanisms that generate more public transparency since the "Access to Information Law" in 2011. The recent "Open Data Policy" established in May 2016 will be a great incentive to promote publication of data from all FPA agencies and enhance transparency. Brazil reached 12th position in the Global Open Data Index in 2015, but there are still a lot of issues regarding what data should be public and what to do with that data.

The expansion of social participation had already been a government strategic direction since 2012, and it gained more importance in the Digital Governance Strategy—EGD 2016. This concern made Brazil reach 24th position in the 2014 UN e-participation index. Although in 2016, when the index value went up, Brazil lost 13 places. As e-democracy has been significantly stimulated in public policies and plays a key role in the outcomes of digital governance strategies, citizens need to effectively engage in government decision-making processes to advance more in e-participation.

We can conclude from the research, complemented by the interviews, that the Brazilian challenges for the development of e-government or digital governance are:

1. "Organizational Culture"—the size of the federal government; the fragmentation of our organizations; constant political change; and the appointment of government executives based on politics rather than technical or meritocratic considerations.
2. "Integration Challenge"—many agencies act independently and do not work together to simplify processes. Integration across levels of government is critical, but very difficult.
   According to the president of Serpro, Gloria Guimarães,

   > one of our biggest challenge is to generate useful information for our clients, using big data analytics. In order to do this, it is essential to surpass another great challenge: the integration challenge. At Serpro we work with two levels of integration: data and services.

3. "Financial Problem"—all of the government ministries are facing budget cuts that are substantially affecting the IT budget.

And in order to address these problems, the Brazilian government should:

1. Advance in corporate governance with the objective of making public management more professional with less political influence. Two good solutions for the organizations' fragmentation problem are: (1) the use of the "Knowledge Network" of SISP and the allocation of technicians by the Ministry of Planning to agencies of SISP linked to the achievement of EGD goals defined between them; and (2) implementation of flexible careers where people can move and bring innovation from one department to another.
2. Simplify processes so that they can be automated without replicating the bureaucracy. "Think Simple"—treat the exceptions as exceptions without penalizing the citizen who just wants to consume a service offered by the state in a simple way.
3. Increase IT revenue through a new business model where government organizations sell the data or service to other government or private organizations that need that information for their businesses, in order to reduce their costs. This is already a strategic direction in Serpro's latest strategic plan.

Despite these challenges, the top Brazilian e-government implementations pointed out by the interviewees such as "Tax Revenue System", "e-Social", "Simple Enterprise Portal", SICONFI, and SIGEPE are innovative global solutions because of their best practices such as: simplification of processes; reduction of bureaucracy; reduction of Brazil's cost; improvement of transparency; great integration and interoperability between agencies at different government levels; use of agile methodology in the development of the systems; use of international standards (e.g., XBRL); and use of digital certificates to enhance security and provide 100% digital services.

Although the Brazilian tax and fiscal processes from the Ministry of Finance are fully automated and are very well known by the CIAT (Inter-American Center of Tax Administrations) and, as shown in this chapter, there are others successful initiatives, there are still many processes that need to be improved.

Future research could examine other government organizations that are also very important for e-governance, such as the "Chief of Staff of the Presidency of the Republic", the "Government Secretariat of the

Presidency of the Republic", and the "Secretariat of Communication of the Presidency of the Republic".

In the past two years, Brazil has been facing political, economic, and financial crises, which are now resulting in some important policy changes by President Temer's government. For example, the "Law of Responsibility for State Companies" approved in June 2016, establishes more rigid rules for purchasing, bidding, and nomination of top state companies' executives (technical instead of political); and also by reducing the size of Brazil's government, cutting ministries and commissioned positions.

The paradigm shift that the Digital Governance Strategy (EGD) is bringing to Brazilian e-governance policy could very well be summarized by the citation of Fernando Siqueira, deputy secretary of the Ministry of Planning:

> The EGD brings a paradigm shift…Instead of designing public services thinking on the citizen, we have to design public services from the citizen point of view…If we succeed on presenting this new focus to the business analysts, developers and technicians, than we will be building digital governance.

As the federal government is pursuing digital governance guidelines and a whole-of-government approach, focusing on the citizen, acting more across-the-board, with cross-agency collaboration, the state will improve the efficiency and effectiveness of public management and reduce Brazil's costs over the following years. We expect to see Brazil improve its position in the international indexes.

Acknowledgements I dedicate this book chapter to my dear husband Jacques for his love and encouragement of my intellectual journey in spite of all the time it took me away from my family, and to our lovely daughters Michelle and Nicole for inspiring me to learn, teach, and leave a legacy. I also dedicate it to my father Salomão Nigri Z' L and mother Irene for teaching me the value of a good education and sharing all my successes. My family and friends gave me the care and support I needed to be emotionally ready for the challenge of writing a chapter of an international book.

I would like to express my deepest gratitude to Rona Zevin for trusting in me, encouraging my passion for e-government since 2003 in the City of Seattle, and for her English reviews of my works over the past few years. I would also like to thank Serpro for sponsoring the Master in Public Administration (MPA) Course from the University of Brasilia; my former advisor Prof. Christiana Freitas for her kind guidance and great help to drive my research theme; all my enterprise

colleagues for the support and specially the e-PING group for our discussions on e-government issues and encouragement of my research; and also all the executive interviewees from Serpro and the Ministry of Planning for their interest and availability. Last but not least, my thanks go to Prof. Laura Alcaide Muñoz and Prof. Manuel Pedro Rodríguez Bolívar, from the University of Granada, for their invitation to contribute to this prestigious book.

References

Alshomrani, S. (2012). A comparative study on United Nations E-government indicators between Saudi Arabia and USA. *Journal of Emerging Trends in Computing and Information Sciences, 3*, March.

Brasil. (2013). *Portal de Governo Eletrônico do Brasil* (Online). Retrieved December 12, 2013, from http://www.governoeletronico.gov.br

Brasil. (2015a). *Dialoga Brasil* (Online). Retrieved August 7, 2015, from http://www.dialoga.gov.br

Brasil. (2015b). *e-Cidadania* (Online). Retrieved August 30, 2015, from http://www12.senado.gov.br/ecidadania

Brasil. (2016a). *Decreto n° 8.638, de 15 de janeiro de 2016. Institui a Política de Governança Digital no âmbito dos órgãos e das entidades da administração pública federal direta, autárquica e fundacional.* Diário Oficial da República Federativa do Brasil, Poder Executivo, Brasília, DF, 18 jan. 2016. Seção 1. p. 2.

Brasil. (2016b). *Decreto n° 8.777, de 11 de maio de 2016. Institui a Política de Dados Abertos do Poder Executivo Federal.* Diário Oficial da República Federativa do Brasil, Poder Executivo, Brasília, DF, 12 maio 2016. Seção 1. p. 21.

Brasil. (2016c). *Portal Brasil* (Online). Retrieved May 19, 2016, from http://www.brasil.gov.br/economia-e-emprego/2016/02/bem-mais-simples

Celso, R. P., et al. (2012). Análise Comparativa das Políticas de Governança Eletrônica nos BRIC(s). *Revista Debates, 6*(2, May–August), 37–63.

CGU. (2014). Controladoria Geral da União. *Portal da Transparência* (Online). Retrieved June 14, 2014, from http://www.portaltransparencia.gov.br

Chahin, A., Cunha, M. A., Knight, P. T., & Pinto, S. L. (2004). *E-gov.br, a próxima revolução brasileira: eficiência, qualidade e democracia – o governo eletrônico no Brasil e no mundo.* São Paulo: Prentice Hall.

Cunha, M. A. V. C., Frega, J. R., & Lemos, I. S. (2011). Portais de Serviços Públicos e de Informação ao Cidadão no Brasil: uma Descrição do Perfil do Visitante. *Revista Eletrônica de Sistemas de Informação, 10*(1, May).

EGD. (2016). Estratégia de Governança Digital da Administração Pública Federal 2016–2019. Ministério do Planejamento, Orçamento e Gestão – Secretaria de Tecnologia da Informação. Brasília.

EGTI. (2008). Estratégia Geral de Tecnologia da Informação do SISP 2008: versão 1.0. Ministério do Planejamento, Orçamento e Gestão – Secretaria de Logística e Tecnologia da Informação. Brasília.

EGTI. (2010). Estratégia Geral de Tecnologia da Informação do SISP 2010: versão 1.1. Ministério do Planejamento, Orçamento e Gestão – Secretaria de Logística e Tecnologia da Informação. Brasília.

EGTI. (2011). Estratégia Geral de Tecnologia da Informação do SISP 2011–2012. Ministério do Planejamento, Orçamento e Gestão – Secretaria de Logística e Tecnologia da Informação. Brasília.

EGTI. (2012). Estratégia Geral de Tecnologia da Informação do SISP 2013–2015: versão 1.1. Ministério do Planejamento, Orçamento e Gestão – Secretaria de Logística e Tecnologia da Informação. Brasília.

EGTIC. (2014). Estratégia Geral de Tecnologia da Informação e Comunicações do SISP 2014–2015. Ministério do Planejamento, Orçamento e Gestão – Secretaria de Logística e Tecnologia da Informação. Brasília.

FACIN. (2016). Framework de Arquitetura Corporativa para Interoperabilidade no Apoio à Governança, v1.0. Retrieved Maio 26, 2016, from http://www.participa.br/articles/public/0019/6143/FACIN_2016_01_11_Final.pdf

Freitas, C. S. (2015). Os desafios ao desenvolvimento de um ambiente para participação política digital: o caso de uma comunidade virtual legislativa do projeto e-Democracia no Brasil. *Revista Organizações e Sociedade, 22*, Ed. 75. Oct/Dec.

GESPÚBLICA. (2005). *Portal do GESPÚBLICA – Programa Nacional de Gestão Pública e Desburocratização* (Online). Retrieved July 2016, from http://www.gespublica.gov.br/content/decreto-no-5378-de-23-de-fevereiro-de-2005

MP. (2014). *Portal do Ministério do Planejamento, Orçamento e Gestão* (Online). Retrieved January 2014, from http://www.planejamento.gov.br

MP/SLTI. (2010). Panorama da Interoperabilidade no Brasil. Organisers: Mesquita, Cláudia Mesquita; Nazaré Lopes Bretas. Ministério do Planejamento, Orçamento e Gestão – Secretaria de Logística e Tecnologia da Informação. Brasília.

MP/SLTI. (2013). *Planejamento Estratégico 2011–2015: versão 4 – 3ª revisão.* Ministério do Planejamento, Orçamento e Gestão – Secretaria de Logística e Tecnologia da Informação, Brasília.

MP/SPIE. (2007). Plano Plurianual 2008–2011. Ministério do Planejamento, Orçamento e Gestão. Secretaria de Planejamento e Investimentos Estratégicos. Brasília.

MP/SPIE. (2011). Plano Plurianual 2012–2015. Ministério do Planejamento, Orçamento e Gestão. Secretaria de Planejamento e Investimentos Estratégicos. Brasília.

MP/SPIE. (2016). Plano Plurianual 2016–2019. Ministério do Planejamento, Orçamento e Gestão. Secretaria de Planejamento e Investimentos Estratégicos. Brasília.

Musafir, V. E. N. (2014). O Papel Estratégico do Serpro no Desenvolvimento do Governo Eletrônico Brasileiro. Brasília, 2014: Trabalho de Conclusão do Curso de Pós Graduação em Gestão Pública com Foco em Negócios, Faculdade de Economia, Administração e Contabilidade. Universidade de Brasília. Brasil.

Musafir, V. E. N., & Freitas, C. S. (2015). Strategies, policies and evaluations of Brazilian electronic government. *The Electronic Journal of e-Government, 13*(2), 122–135. Retrieved from http://www.ejeg.com.

OECD. (2014). *Recommendation of the council on digital government strategies. Organisation for economic co-operation and development, 2014.* Retrieved June 11, 2015, from http://www.oecd.org/gov/public-innovation/Recommendation-digital-government-strategies.pdf

OKFN. (2015). *2015 Global Open Data Index shows decline in overall percentage of open datasets, 2015.* Retrieved June 26, 2016, from http://index.okfn.org/place

Prado, E. P. V., Souza, C. A., Ramalho, N. C. L., Cunha, M. A. V. C., & Reinhard, N. (2011). Iniciativas de governo eletrônico: análise das relações entre nível de governo e características dos projetos em casos de sucesso. *Revista Eletrônica de Sistemas de Informação, 10*(1), 1–22.

Serpro. (2014). *Portal do Serpro* (Online). Retrieved September 08, 2014, from http://www.serpro.gov.br/

SGPR. (2014). *Brasil Recebe da ONU o Premio Mais Importante do Mundo.* Secretaria Geral da Presidência da República, (Online). Retrieved June 10, 2014, from http://www.participa.br/portal/blog/brasil-recebe-da-onu-o-premio-mais-importante-em-gestao-publica-do-mundo

TCU. (2006). Tribunal de Contas de União. *Avaliação do Programa Governo Eletrônico*, Brasília: Ed. TCU, Secretaria de Fiscalização e Avaliação de Programas de Governo, Sumários Executivos, Nova Série.

UNESCO. (2005a). *United Nations educational, scientific and cultural organization. Defining e-governance, 2005* (Online). Retrieved June 11, 2014, from http://www.unesco.org

UNESCO. (2005b). *E-government toolkit for developing countries.* New Delhi, India: UNESCO.

United Nations. (2008). *United Nations E-government survey 2008.* New York: UN.

United Nations. (2010). *United Nations E-government survey 2010.* New York: UN.

United Nations. (2012). *United Nations E-government survey 2012.* New York: UN.

United Nations. (2014). *United Nations E-government survey 2014.* New York: UN.

United Nations. (2016). *United Nations E-government survey 2016.* New York: UN.

World Bank. (2015). *Digital development for government, 2015* (Online). Retrieved October 14, 2016, from http://www.worldbank.org/en/topic/ict/brief/digital-government-for-development

Valeria Esther Nigri Musafir has a M.Sc. in Computer Science from PUC-RJ, an MPA from University of Brasilia (UnB) and PMP certification. She is interested in e-government policy and e-services since her Humphrey Fellowship at the University of Washington in 2002–2003. On her return to SERPRO she worked managing projects for the Federal Government and now works on the development of the Brazilian Enterprise Architecture. She has authored articles published in international journals and is a conference speaker in the USA, Europe and Brazil.

CHAPTER 8

Designing Effervescent E-Government Solutions: Lessons from a Developing World Context

Bwalya Kelvin Joseph

8.1 Introduction

Electronic government (e-Government) entails the provision of public services through technology platforms thereby opening up channels for transparency and accountability. The foundations of e-Government hinge on the concept of New Public Management (NPM) which was based on providing citizen-centric public services. The use of different technology platforms in e-Government arose out of the desire to allow citizens access to public services as long as they are connected to Internet-enabled technology gadgets. Over the years, e-Government has evolved into Digital Government and now to Open Government (Navarra and Cornford 2012; Panopoulou et al. 2014). Traditionally, e-Government only entailed making available public information on technology platforms for citizens in a uni-directional flow of information mode. This has since changed, in that today, a bi-directional interaction environment is required of any meaningful e-Government, i.e. where both consumers (citizens, businesses

B.K. Joseph (✉)
Department of Information and Knowledge Management, University of Johannesburg, Johannesburg, South Africa

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_8

etc.) and government departments are able to exchange information through IT platforms.

The gamut of e-Government is changing from an information sharing platform to being an information analysis and synthesis platform where different traits in heterogeneous information (big data) can be perceived. Clearly, there is now a transition from perceiving e-Government as a platform built on an electronic media for accessing government information to one hinged on openness and a data platform which allows big data and predictive analytics, thereby adequately informing government policies and decisions. Given that e-Government platforms need to continuously evolve and be as scalable as possible, it follows that any e-Government platform, system or solution design should be as responsive as possible to the changes in the environment where it is implemented. A dynamic platform is an open one which allows different technologies to be incorporated into the e-Government solution as technology or customers'/stakeholders' preferences evolve.

In order to develop dynamic e-Government solutions, it is important that the factors pertinent to the anticipated customers/stakeholders are included in the design. Therefore, the focus of this chapter is on understanding the pertinent factors from the individuals' side that need to be incorporated in any effervescent e-Government design in the case of Zambia and other contextually similar settings. It is worth noting that e-Government is a multi-dimensional phenomenon and its success depends on many factors. However, this chapter only focuses on individuals' expectations of any e-Government solutions, and other factors can be observed from other studies and publications.

Section 8.2 presents the background which articulates the general aspects of the multi-dimensional nature of e-Government in order to provide leaders with a general mental model of the complexity of e-Government. Thereafter, the ethos for failure or success of e-Government implementation and the design efforts for effervescent e-Government in different parts of the world is presented (Sects. 8.3 to 8.5). The chapter continues (Secs. 8.6 to 8.9) with the presentation of the case for Zambia where empirical results and analysis are articulated. In general, the research intended to understand what matters with regards to e-Government comes from the perspective of individual citizens. The chapter posits that citizens' interest in e-Government needs to be included in the e-Government design regardless of the area in which it is implemented, and concludes in Sect. 8.10).

8.2 Background

Although e-Government has been implemented in developed countries for over three decades, it is only recently that many developing countries are jumping onto the bandwagon of using technology in the provision of public services (Joseph 2014; Anthopoulos et al. 2016). Consequently, there are very few examples that can be referenced from the developing world context in as far as design of responsive e-Government is concerned (Lee 2010). This means that countries intending to design citizen-relevant e-Government solutions may not have adequate choices about how to craft their designs so that e-Government responds to the information and public service needs of their citizens. In order to achieve citizen-centric e-Government, it is important that citizens are considered and included in the design process.

Inclusion of citizens in the design process entails that their interest in e-Government will be considered in the design process culminating in higher chances that they will be involved in the decision-making processes of the government using technology (e-Inclusion). The use of technology platforms to access information, public services and participation in the decision-making processes accords citizens a chance to provide their input in governance using technology (e-Participation) regardless of their socio-economic status. However, citizens' interest in politics, the world over, has been following a downward spiral and this is a concern as this translates into less participation in the established democratic processes and is a direct concern for e-Government design (Panopoulou et al. 2014). When e-Government is accessible and used by all citizens for the greater good of society, it will be considered as a public value preposition and thus a 'public good' (Hellberg and Grönlund 2013). Therefore, since e-Government revolves around citizens, it is important that citizens are involved at all stages of the e-Government design and implementation cycle so as to achieve citizen-centric e-Government solutions. It is worth noting that most e-Government design has been top-down, where governments are the sole responsible entity, supervising the development initiatives without a critical analysis of the needs of the e-Government users (Anthopoulos et al. 2007). This has resulted in a scenario where users are left out in the design endeavours and therefore their interests are not taken on board in the design.

The main purpose of this chapter is to explore individual factors that should be considered in the design of e-Government solutions. The

bottom-up approach rightly recognises e-Government as a hierarchical system with main sub-systems which have to be identified and analysed from multiple vantage points and integrated into a whole e-Government system. In this context, a system is considered a domain with different attributes such as people, technology, organisational environment, policies and processes. The different attributes define the multi-dimensional nature of e-Government. Each of the different attributes need to be considered in the design of responsive e-Government.

8.3 Prospects for E-Government Projects

In order to appreciate what factors influence success or failure of e-Government projects, it is important to explore different projects in different contextual settings. One of the key attributes of successful e-Government design is the inclusion of users in the design process, carefully checking the design philosophies to bridge the design-reality gaps, effective project management and realistic planning (Anthopoulos et al. 2016).

Many studies investigating e-Government have posited that many initiatives failed due to lack of consideration for the local contextual characteristics in the area in which it is implemented; limited consideration of the would-be users; inappropriate legal and institutional frameworks; incompatible government structures and e-Government solutions; limited consumer readiness (willingness to adopt and use the available services); a general lack of adequately and appropriately trained e-Government personnel; lack of sustained public leadership, commitment and institutionalisation; lack of involvement of all stakeholders in the design of e-Government solutions; shift in the power relationships leading to ultimate failure in many of the e-Government initiatives; lack of responsive evaluation and monitoring, etc. (Gil-Garcı´a and Pardo 2005; Kumar and Best 2006; Luk 2009; Wade and Grant 2010; Elkadi 2013; Joseph 2014; Anthopoulos et al. 2016). Current thinking is that failure of e-Government projects occurs right at the design stage and not the implementation stage (Anthopoulos et al. 2016). On the other hand, success has largely been achieved by designing e-Government solutions that are non-rigid and able to transform given the evolution of technology or citizens' needs, highly integrated e-Government solutions into government business processes, robust teams of experts, etc. (Jaeger and Bertot 2010; Joseph 2014). It is anticipated that successful e-Government design needs to consider all the

individual, organizational, managerial and technological issues in a given context and should, at the onset, incorporate all these in its design.

Many researchers and practitioners have measured the success of e-Government by considering the e-Government stage models. Measurement of success of e-Government projects cannot be defined solely by the stage models, such as the Layne and Lee model, as these only explore the general status of development and do not consider contextual issues that influence development (Khalil 2011; Joseph 2015; Epstein et al. 2014). Although this section has only articulated factors influencing success or failure of e-Government solutions, it is worth mentioning that lack of proper planning, poor design and inappropriate management are the core bottlenecks to successful e-Government implementation (Sarrayrih and Sriram 2015).

8.4 E-Government Design Process

As posited in the previous section, the probability of failure or success of e-Government is defined right at the design stage of e-Government solutions. If inappropriate design philosophies are used in the design of e-Government, it is likely that the overall e-Government initiative may be prone to failure. It is worth noting that in order to design usable public services, a holistic, multi-level, user-centred approach where user and business requirements are embedded into the design is required (Hamilton et al. 2011).

Responsive e-Government design entails coming up with designs that are easyily changed whenever there is a change in the technology solutions. Planning for and dealing with intermittent changes in the e-Government environment is a big challenge which has robbed governments and e-Government designers of the privilege of effectively dealing with contextual changes (Apostolou et al. 2011). The planning phase entails that the different entities of e-Government are domiciled together in a logical and coherent manner so as to produce a responsive system.

One of the key requirements for e-Government is that it should be used as an enabler for citizens' inclusion in the democracy value chains. In order to project e-Government as a democracy platform, it is needed an enabler for e-Inclusion of individuals and businesses in the governance value chains regardless of their socio-economic status. E-Inclusion can be achieved if there is appropriate and adequate usage of e-Government platforms defined by the ease of use of the platforms and users' information

and technology (ICT) skills. With regards to access and use, which are precedents to e-Inclusion and anticipated participatory governance in the realm of democracy, e-Government design need to perceive the anticipated users and their characteristics to embed these aspects into the design. To facilitate appropriate participation of ordinary citizens into the e-Government discourse, there is need to ensure that conducive and easy-to-use online platforms (such as Facebook or any social media platforms) are available to them.

The need for user involvement in e-Government service design cannot be over-emphasised. One of the ways in which centric-centric e-Government services can be achieved is to involve the anticipated users right at the beginning of the design cycle. One of the ways to achieve user-centric e-Government is to flag up the design process with user requirements engineering (van Velsen et al. 2009). Yenicioglu and Suerdem (2015) underscored the importance of participation of all relevant stakeholders in the development of any innovation within the concept of collaborative design, including e-Government. In order to understand what needs to go into the design of e-Government, there is need to understand what in context e-Government is to be employed. For example, stakeholder analysis can be used to understand the role and interest of each possible stakeholder in the e-Government agenda.

In the realm of facilitating collaborative design of e-Government, one of the models that should be used is the Public Private Partnership (P3). The P3 arrangement allows private entities to partner with government in e-Government conceptualisation, design and implementation. This model has not been utilised globally in e-Government design and is something that could be pursued (Abednego and Ogunlana 2006). When pursuing collaborative e-Government design, "discourse of dependency" and "discourse of consumerism" between providers and consumers of government services should be noted so that, during the design, both consumers and providers, are looked at using the same lens. Further, in order for citizens to participate in any e-Government efforts, there is need to educate them on their civic right to participate in decision-making.

In general, it can be posited that some of the issues that need to be carefully considered in the design of e-Government include the following: (1) ensuring that all anticipated e-Government users, regardless of their level of ICT skills and literacy (computer self-efficacy) or capabilities, are involved and considered in the design; (2) understand which e-Government services would impact to the most pn citizens and businesses; (3) engage

anticipated users so that they are able to articulate what their expectations are of the e-Government intervention in the public service delivery value chain(s); (4) come up with design metrics and solutions to ensure that the transition to e-Government from traditional public service routes does not culminate in reducing the responsiveness of public service officials; (5) understand the legal ramifications of not providing the agreed upon level of service (Wade and Grant 2010; Epstein et al. 2014).

In understanding e-Government's development failure and success, the growth models which have been widely utilised have been found not to be comprehensive enough for a single model to be used as a global guiding framework. Lee (2010) employed meta-synthesis to come up with a single five-stage model which considered technological, organizational, and citizen service perspectives altogether. Technological possibilities, other than user needs, have set the tone of e-Government design in many places where e-Government has been implemented. A lot of algorithms have been proposed such as the Liu and Hu metadata extraction algorithm to aid faster retrieval of information in the e-Government environment (Liu and Hu 2012). E-Government readiness should be based on the level of democratic responsiveness (Nour et al. 2008).

It is extremely difficult to come up with global conceptual design frameworks for e-Government because it is implemented in different contexts with varying socio-economic, government and technology settings (Nour et al. 2008). Therefore, several e-Government researchers and practitioners have come up with diverse interventions as core elements guiding their designs of e-Government. For example, Joseph (2014) designed a framework for measuring e-Government readiness. Trkman and Turk (2009) proposed a conceptual framework for development of broadband and e-Government. They further underscored the importance of broadband reliable and faster connections for accessing e-Government applications to ensure that citizens/businesses can access e-Government solutions without having to wait for a long time. Using the ontology-based approach, Apostolou et al. (2011) proposed a collaborative decision framework for developing and maintaining e-Government services. This framework provides constructs and guidelines for managing change during the implementation of e-Government. From a technology point-of-view, e-Government has many options to choose from. For example, Paiva Dias and Aberto Rafael (2007) proposed an e-Government distributed architecture that aimed to integrate the different government departments in the realm of e-Government. This architecture uses a client-centred

approach and facilitates channel multiplicity, concurrent access points, versatility and security.

Of late, there have been movements towards promoting social media as an effective tool for transparency and openness and one which can be embedded into e-Government technology platforms to form a wider open infrastructure for information sharing (Tsai et al. 2009). Further, the authors advocate the development of e-Government using the 'systems development life cycle approach [technology centric view]'. Nograšek and Vintar (2014) proposed a framework that aims to provide a clear explanation of ICTs as a force at the centre of organisational transformation for future e-Government development. This framework is important as it espouses the critical points to one when Business Process Reengineering is implemented in the face of ever-changing technology. The framework notes that the transformation power of ICTs is dependent on a host of other factors such as business processes, organisational structures, people, the organisational environment as a whole and its culture.

Lack of government departments' information system integration is one of the reasons why e-Government interventions fail as e-Government solutions do not achieve the intended benefits. With the overall goal of achieving effectiveness and efficiency of public services, interoperability is one of the key dimensions to achieving a one-stop information space for different government departments (Hellberg and Grönlund 2013). However, it is worth noting that interoperability is to a great extent a governance problem. Since e-Government is multi-dimensional, it depends on many types of expertise in its design phase—*viz* social, juridical, economic, organizational and technological perspectives (Batini et al. 2009).

8.5 Theoretical Framework

This research uses the Technology Acceptance Model (TAM) as a theoretical lens to understand factors that influence individuals to engage in e-Government. The study hypothesised that acceptance of technology already deployed in diverse public service platforms may indicate the likelihood that e-Government will succeed. The lessons learnt from this study may be used to further design e-Government projects in Zambia and in contextually similar environments. The TAM is shown in Fig. 8.1.

The TAM is used as a theoretical lens to measure the key factors that may influence individuals to engage in e-Government.

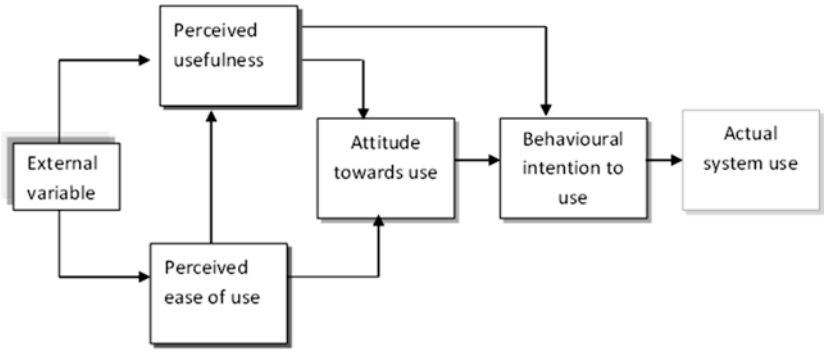

Fig. 8.1 Technology acceptance model (adapted from: Ajzen 1991)

8.6 Methodology

Using both the positivist and interpretivist research paradigms, questionnaires (with both closed and open-ended questions) and interviews data was collected which was analysed using multivariate analysis. Use of two research paradigms was important because the researcher aimed at understanding each of the e-Government phenomenon from two vantage points (Ngulube et al. 2009).

Data in this research was obtained both from the primary and secondary sources using empirical analysis and exploration of extensive literature and document analysis. It was a requirement that participants were at least 16 years of age, able to read/write and had accessed the Internet at least once in their lifetime. The preliminary stages of this research involved interviews with a total of 22 government workers from five government ministries and three parastatal organisations in order to explore the current status of e-Government implementation in Zambia, the challenges faced, etc. Interviewees were selected from different branches of the government: four general workers, seven line managers, sectional heads or mid-level management, and 11 senior managers and/or policymakers. The pilot study involved randomly selecting 40 participants among the students and academics at the University of Zambia. The main empirical part of the study distributed a total of 721 questionnaires in Livingstone, Lusaka and Kitwe targeting employees and students from the University of Zambia, employees from government line ministries and departments, and parastatal/business representatives including small businesses from

the three provincial centres. Some 411 questionnaires were returned for analysis and eventually 408 questionnaires were included in the final analysis (response rate: 57%).

Standard multiple regression (Kolmogorov-Smirnov and the Shapiro-Wilk tests) was used to analyse the data which was a priori checked for normality by checking its fit in the Gaussian normal distribution. Outliers were removed and data subjected to data transformation using natural logarithmic ramifications. Factor analysis (using multicolinearity values with factors >0.5 included for analysis) was then conducted, in conjunction with the Kaiser-Meyer-Olkin (KMO) to measure sampling adequacy. After that, simple ANOVA tests were conducted to check for R-squared values and degree of variance of each of the factors.

This study used standard multiple regression analysis to analyse the data. To be included in the data analysis, all the data was pre-tested for normality using the Gaussian normal distribution function, the Kolmogorov-Smirnov and the Shapiro-Wilk tests. Because of the pronounced negative skewness and the presence of outliers in the dataset, data transformation was performed using a logarithmic function. To measure the sampling adequacy of the study data, the Kaiser-Meyer-Olkin (KMO) recorded values greater than 0.5 on all the datasets analysed, thereby qualifying all the datasets for statistical analysis in the study. The dataset was tested for multicolinearity and singularity with a view to analysing the relationship between the different independent variables (Table 8.1).

To eliminate the extreme cases (outliers) and the non-linearity from the original dataset, the dataset was subjected to logarithmic data transformation. The major data transformation procedure removed the negatively skewed data from the identified factors. After data transformation, Table 8.4 (*in the appendix*) represents the measurement items that anchored the study.

Table 8.1 KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy.	0.872
Bartlett's test of sphericity	Approx. Chi-Square
Df	2556
Sig.	0.000

Source: Own elaboration

8.7 Empirical Results

In order to gain an insight into what factors are critical in the design and development of e-Government in Zambia, a series of factor analysis (22 iterations) were conducted using Principal Axis Factoring as the extraction methodology and using Promax with Kaiser Normalisation as the rotation methodology. This process yielded five factors: ICT infrastructure, PEOU, PU, computer self-efficacy and trust. Other factors had negligible impact on e-Government given their lower communalities. In order to understand the general awareness of e-Government by the citizens in Zambia, respondents were asked several questions as shown in the following tables. Table 8.2 shows the general awareness levels of citizens about e-Government applications/solutions/initiatives in Zambia.

Table 8.3 shows citizens' perceptions about each of the different aspects of the e-Government development process

Table 8.2 Awareness of e-Government initiatives in Zambia

		Not at all aware	*Slightly aware*	*Somewhat aware*	*Moderately aware*	*Fully aware*	*Total*
E-Government websites of the Lusaka City Council and other government agencies in Zambia.	*N*	129	66	90	38	38	399
	%	32.3%	16.5%	22.6%	9.5%	9.5%	100.0%
The benefits of using Zambian e-Government websites.	*N*	108	67	74	50	50	397
	%	27.2%	16.9%	18.6%	12.6%	12.6%	100.0%
Educational/training programmes about the overall features of Zambian e-Government websites.	*N*	138	86	70	31	31	400
	%	34.5%	21.5%	17.5%	7.8%	7.8%	100.0%
Government campaign advertisements encouraging the use of e-Government websites in Zambia.	*N*	169	72	65	23	23	400
	%	42.3%	18.0%	16.3%	5.8%	5.8%	100.0%

Source: Own elaboration

Table 8.3 Potential barriers to e-Government development ($N = 408$)

		Strongly disagree	*Disagree*	*Neutral*	*Agree*	*Strongly agree*	*Total*
Lack of readily available Internet access points.	Count	4	19	34	143	184	384
	Row *N*%	1.0%	4.9%	8.9%	37.2%	47.9%	100%
Lack of affordable Internet access points.	Count	5	26	27	139	186	383
	Row *N*%	1.3%	6.8%	7.0%	36.3%	48.6%	100%
Lack of services relevant to the local context.	Count	1	17	68	162	131	379
	Row *N*%	0.3%	4.5%	17.9%	42.7%	34.6%	100%
Lack of user-friendly e-Government platforms.	Count	0	13	79	148	143	383
	Row *N*%	0.0%	3.4%	20.6%	38.6%	37.3%	100%
Lack of availability of ICT infrastructure.	Count	1	9	49	140	180	379
	Row *N*%	0.3%	2.4%	12.9%	36.9%	47.5%	100%
Risk of information ending up in the hands of unauthorised individuals.	Count	2	14	75	138	149	378
	Row *N*%	0.5%	3.7%	19.8%	36.5%	39.4%	100%
Fear of change on the part of the customer and/or government staff.	Count	1	13	84	163	116	377
	Row *N*%	0.3%	3.4%	22.3%	43.2%	30.8%	100%
Limited ICT skills on the part of the customer.	Count	4	9	66	176	125	380
	Row *N*%	1.1%	2.4%	17.4%	46.3%	32.9%	100%
Limited ICT skills on the part of government employees.	Count	5	18	71	157	129	380
	Row *N*%	1.3%	4.7%	18.7%	41.3%	33.9%	100%
The customers' limited experience in interacting with ICT platforms and the Internet.	Count	3	14	54	196	113	380
	Row *N*%	0.8%	3.7%	14.2%	51.6%	29.7%	100%

(*continued*)

Table 8.3 (continued)

		Strongly disagree	*Disagree*	*Neutral*	*Agree*	*Strongly agree*	*Total*
Non-availability of native language (mother tongue) option on the website which could help the customer to perform tasks better.	Count	30	51	87	116	96	380
	Row *N*%	7.9%	13.4%	22.9%	30.5%	25.3%	100%
Lack of protection of the end-user in the online environment.	Count	8	20	94	152	106	380
	Row *N*%	2.1%	5.3%	24.7%	40.0%	27.9%	100%
Lack of awareness campaigns on the benefits of engaging in e-Government.	Count	3	13	29	158	179	382
	Row *N*%	0.8%	3.4%	7.6%	41.4%	46.9%	100%
Lack of appropriate end-user support.	Count	2	10	70	159	133	374
	Row *N*%	0.5%	2.7%	18.7%	42.5%	35.6%	100%
Other	Count	0	0	9	17	19	45
	Row *N*%	0.0%	0.0%	20.0%	37.8%	42.2%	100%

Source: Own elaboration

8.8 Findings

The likelihood that individuals will engage in e-Government can be articulated by their awareness of the available e-Government solutions, ability to use ICT and willingness to engage in e-Government. Individuals need to be aware of what e-government solutions or initiatives are in place and appreciate their value (benefits obtained from using them) as opposed to traditional governance systems.

In order to nurture a fertile ground for successful e-Government implementation, the Zambian government and other cooperating partners have implemented several initiatives aimed at promoting use of ICT in governance value chains. Many of these initiatives are aimed at ensuring that government departments are enabled to use ICTs in their everyday

business value chains. Document review, interviews and empirical research conducted in this study has revealed that some of the prominent interventions include the following:

- Introduction of a computerised human resource and payroll system in the public service using the Integrated Public Financial Management Information System (IFMIS) targeted at further increasing information transparency;
- Launching of the ICT policy in 2007 to facilitate mainstreaming of ICT in the different socio-economic frameworks in Zambia;
- Introduction of the Payroll Management and Establishment Control (PMEC) system targeted at improving information flows amongst different government departments;
- Computerization of the Customs system at the Zambia Revenue Authority through the Automated SYstem for CUstoms Data (ASYCUDA), etc. (IRMT 2007);
- Introduction of the Zambia Immigration Management System (ZIMS) aimed at improving efficiency in immigration processes, etc.

The tables shown in the previous section revealed that there are a few individuals who are aware of the different e-Government solutions in Zambia. For example, less than 30% are aware that there are websites where e-government services can be accessed in Zambia. Further, close to 30% of the participants were unaware of the benefits of using e-Government websites to access government information thereby casting doubt on their awareness of e-Government in general.

With regards to potential barriers to e-Government, results of this study have shown that a majority (over 60%) of the respondents agree that most of the mentioned barriers have a considerable impact on e-Government development. The summary of responses from the participants is as follows:

- Over 50% of the respondents indicated that they possess the appropriate requisite ICT skills necessary to efficiently use a computer so as to effectively engage in e-Government services. Further, over half of the respondents indicated that their adequate ICT skills were coupled with adequate levels of computer self-efficacy. Computer self-efficacy was important for individuals to effectively engage with the ICT platforms and e-government content. Despite potential

e-Government users having the requisite ICT skills and good computer self-efficacy, usage of e-Government applications is low (only 27% of the respondents access e-Government applications);

- About half (49%) of the respondents indicated that they were not aware at all of any e-Government services in Zambia; only 30% said they were moderately or slightly aware; and the rest indicated that they were fully aware of e-Government services in Zambia;
- Over 61% of the respondents indicated non-reliability of information on the e-Government websites—69% indicated that they are unaware of any policies in place to protect the user in the online environment. This makes it difficult for most of the respondents to engage in e-Government as they are not guaranteed that their privacy and well-being are safeguarded in the online environments. Further, 84% indicated that there are no security policies stated on e-Government websites. In addition, 84% of the respondents mentioned that they would not allow the government to share their information with other sites or store it in a central repository for fear of victimisation at a later stage;
- Over 50% of the respondents acknowledged the ready availability of Internet connectivity in Zambia. However, universal access to the Internet is hampered by expensive usage fees, non-availability of appropriate and readily accessible ICT infrastructure, non-availability of native language options, and lack of appropriate awareness campaigns about the benefits of e-Government;
- Citizens are willing to adopt and continue using e-Government applications if appropriate interventions are put in place.

Further, individuals' unwillingness to participate in e-Government was encouraged by the general non-reliability of information on e-Government websites, very expensive Internet, lack of awareness of e-Government services, etc. Given the above, it is evident that the demand side is not mature as many of the potential e-Government consumers are unaware of e-Government applications being implemented in Zambia at the moment.

8.9 E-Government Design

With evidence from the literature (e.g. Panetto and Molina 2008; Khalil 2011) and the empirical evidence from the case of Zambia presented above, it is evident that e-Government is a multi-dimensional issue

depending on many success factors. Given the fact that it is a multi-dimensional issue, e-Government needs to be designed while considering all the factors in a given context bordering on technology and technology perspectives. Effervescent e-Government designs need to ensure that the concerns of individuals are taken into consideration and the desired technology attributes are included (Paiva Dias and Aberto Rafael 2007; Prokopios et al. 2009; Lee 2010; Apostolou et al. 2011; Liu and Hu 2012; Joseph 2014; Nograšek and Vintar 2014; Epstein et al. 2014). This study has helped identify some of the key factors that influence individuals to engage in e-Government. Considering the local contextual characteristics, insights from this study's empirical research and a rigorous review of the literature, the following presents a framework that may be used for designing e-Government programmes/solutions in Zambia and other similar contexts.

Generally, Fig. 8.2 presents a reference point that needs to be visited when e-Government programmes, solutions and interventions are being designed. The key factors identified in this empirical research are included at the bottom of Fig. 8.2, accentuating the fact that individuals need to be included when conceptualization or designing e-Government solutions so that their aspirations and concerns are included in the design. The upper part of Fig. 8.2 show the constructs important in the design of e-Government as obtained from the literature review and careful consideration of the contextual setting in Zambia. Process-engineering capability entails that e-Government need to be designed in such a way that applications are scalable, open and can be re-designed at any time to accommodate changes in technology or citizens' information needs. Leadership entails individuals driving the development path of e-Government. Appropriate ICT infrastructure is needed to anchor the different e-Government applications and lastly, there needs to be a careful consideration of the local contextual characteristics, such as individuals' ICT skills, e-Readiness of the area, etc.

Although the proposed framework acts as a reference point for the design of effervescent e-Government applications, there is a lot that needs to be done for e-Government research to be appropriately meaningful to the practice of e-Government. For example, future research work needs to empirically test this framework by practically designing e-Government solutions based on this framework so as to confirm its validity. E-Government research needs to conduct more empirical

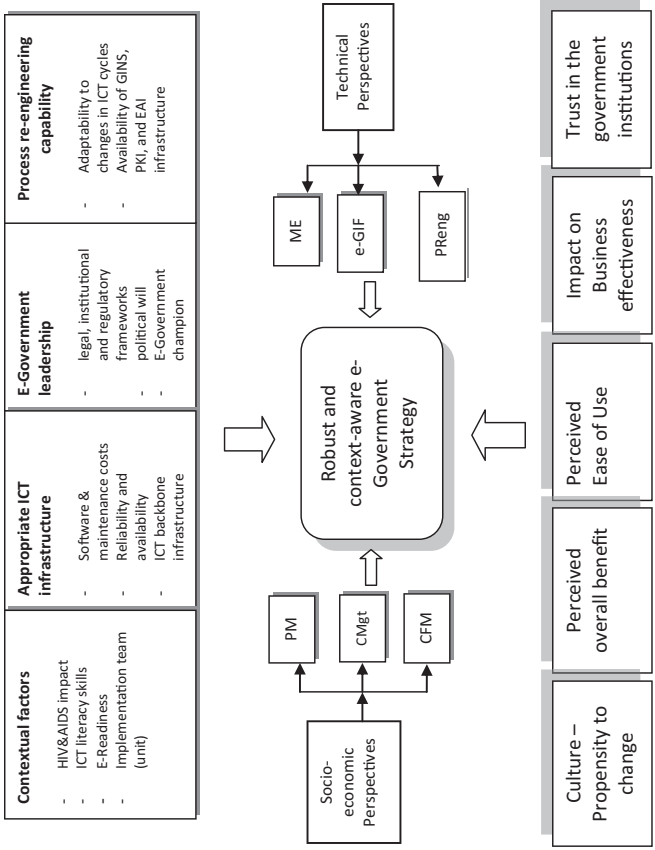

Fig. 8.2 Proposed framework for e-Government development

studies so as to test theories and frameworks in the field so that the leitmotif of lack of theory in e-Government research is done away with and the field is recognised as a genuine scientific undertaking (Bannister and Connolly 2014).

8.10 Conclusion

This chapter has highlighted the major factors that need to be considered when designing responsive e-Government solutions especially in a developing world context. Since technologies, users' preferences and the other factors influencing the success of e-Government change with time, it cannot be over-emphasised that there is need to design responsive and dynamic (scalable) e-Government solutions. In order to design such kinds of e-Government solutions/programmes, it is important to recognise all the different factors that may significantly impact on e-Government growth. Using the case of Zambia, this chapter proposes a conceptual framework that can be used as a reference point to guide e-Government design in contextually similar environments.

This chapter posits that further to the guidance provided by the proposed conceptual framework, it is important to ensure that other guiding principles are considered in the design of e-Government. For example, the DPADM/UNDESA has outlined guiding principles for successful e-Government implementation, *viz* (1) the government's active involvement in the e-Government design so that the society's priority needs are embedded into the design; (2) efficiency and effectiveness as key pillars guiding the design; (3) availability of adequate funding with a clear understanding of the costs involved; (4) active and responsive coordination between government departments; (5) unique legal requirements need to be carefully considered; (6) there should be the requisite ICT infrastructure in place; (7) reliable leadership and long-term political leadership are required; (8) public engagement to ensure that there is real collaborative engagement in the design; (9) proper plans for the development of human capital and ICT infrastructure; (10) meaningful partnerships; and (11) the need to set clear responsibilities and realistic benchmarks with regards to monitoring and evaluation; etc.

Appendix

Table 8.4 Measurement items

Measured item	[a]*Corresponding question number*	*Research sub-question(s)*	*Source*
Perceived Usefulness (PU)	[a]Q9.4 To what extent do you agree on the usefulness or value of e-Government applications listed below?	1–9	Davis (1989), Venkatesh et al. (2003)
	Q9.1 Do you think the benefits of engaging in e-Government have adequately been explained to stakeholders and potential users (citizens and government workers)?	N/A	
Perceived Ease of Use (PEOU)	Q9.6 To what extent do you agree with the ease of use of e-Government websites?	1–4	Davis (1989), Saadé and Kira (2007), Shen and Chiou (2010)
	Q11 To what extent would you agree that the potential barriers (listed below) delay the wide-scale usage of ICTs within government departments?	4	
Behaviour/ Intention to use	Q11 To what extent would you agree that the potential barriers (listed below) delay the wide-scale usage of ICTs within government departments?	7	Davis (1989), Venkatesh et al. (2003)
	Q13 To what extent will you engage/continue to engage with e-Government?	3	
ICT Infrastructure	Q11 To what extent would you agree that the potential barriers (listed below) delay the wide-scale usage of ICTs within government departments?	1, 2, 5	Weerakkody et al. (2007), Habeenzu (2010), Sander et al. (2005)
	Q12 What level of priority do the ICT developments listed below have in encouraging meaningful e-Government development in Zambia?	1, 2, 5, 7, 8, 11	

(*continued*)

Table 8.4 (continued)

Measured item	[a]*Corresponding question number*	*Research sub-question(s)*	*Source*
Language and content	Q9.5 What relationship exists between language and access to e-Government applications?	1–3	Al Nagi and Hamdan (2009), Khalil (2011)
	Q11 To what extent would you agree that the potential barriers (listed below) delay the wide-scale usage of ICTs within government departments?	3, 11	
	Q12 What level of priority do the ICT developments listed below have in encouraging meaningful e-Government development in Zambia?	9, 10	
Actual system use	Q8 General status of e-Government in Zambia	8(a), 8(b), 8(c)	Shareef et al. (2011), Lean et al. (2009)
	Q9.3 Given a chance to use technologies that would allow access to Zambian e-Government platforms, how important do you consider the following applications?	1–19	
Computer Self efficacy	Q7 Behaviour /Usage of the Internet	1–4	Anttiroiko and Malkia (2006)
	Q11 To what extent would you agree that the potential barriers (listed below) delay the wide-scale usage of ICTs within government departments?	8, 9, 10	
Lower access cost	Q12 what level of priority do the ICT developments listed below have in encouraging meaningful e-Government development in Zambia?	3, 6	Napitupulu (2014)
Appropriate legal and regulatory frameworks	Q10 In terms of trusting e-Government transactions, privacy and security, to what extend would you agree with the following statements?	4, 5, 7	Prokopios et al. (2009)

(*continued*)

Table 8.4 (continued)

Measured item	[a]*Corresponding question number*	*Research sub-question(s)*	*Source*
Appropriate and continued user support	Q11 To what extent would you agree that the potential barriers (listed below) delay the wide-scale usage of ICTs within government departments?	14	Misuraca et al. (2013)
Trust	Q10 In terms of trusting e-Government transactions, privacy and security, to what extend would you agree with the following statements?	1–8	Papadopoulou et al. (2010), IRMT (2007), Tassabehji and Elliman (2006)
	Q11 To what extent would you agree that the potential barriers (listed below) delay the wide-scale usage of ICTs within government departments?	6, 12	
	Q13 To what extent will you engage/continue to engage with e-Government?	1–3	
Continuance usage	Q13 To what extent will you engage/continue to engage with e-Government?	1–3	Coates and Nikolaus (2010)

[a]The actual questionnaire measuring most of these items can be found in the Ph.D. thesis at: https://ujcontent.uj.ac.za/vital/access/manager/Repository/uj:10439;jsessionid=6A66FC88FFEC81FE11B63D3F4D92DDA6?f1=sm_type%3A%22Thesis%22&f0=sm_subject%3A%22Public+administration%22&f2=sm_creator%3A%22Bwalya%2C+Kelvin+Joseph%22

References

Abednego, M. P., & Ogunlana, S. O. (2006). Good project governance for proper risk allocation in public–private partnerships in Indonesia. *International Journal of Project Management, 24*(7), 622–634.

Al Nagi, E., & Hamdan, M. (2009). Computerization and e-Government implementation in Jordan: Challenges, obstacles and successes. *Government Information Quarterly, 26*, 577–583.

Anthopoulos, L. G., Siozos, P., & Tsoukalas, I. A. (2007). Applying participatory design and collaboration in digital public services for discovering and redesigning e-Government services. *Government Information Quarterly, 24*(2), 353–376.

Anthopoulos, L., Reddick, C. G., Giannakidou, I., & Mavridis, N. (2016). Why e-government projects fail? An analysis of the Healthcare.gov website. *Government Information Quarterly, 33*, 161–173.

Anttiroiko, A.-V., & Malkia, M. (2006). *Encyclopedia of digital government*. Hershey, PA: Idea Group Reference (IGI) Publishing.

Apostolou, D., Mentzas, G., Stojanovic, L., Thoenssen, B., & Pariente Lobo, T. (2011). A collaborative decision framework for managing changes in e-Government services. *Government Information Quarterly, 28*(1), 101–116.

Bannister, F., & Connolly, R. (2014). ICT, public values and transformative government: A framework and programme for research. *Government Information Quarterly, 31*, 119–128.

Batini, C., Viscusi, G., & Cherubini, D. (2009). GovQual: A quality driven methodology for E-Government project planning. *Government Information Quarterly, 26*, 106–117.

Coates, N., & Nikolaus, L. (2010). Zambia and e-Government: An assessment and recommendations. In B. Maumbe (Ed.), *E-Agriculture and e-Government for global policy development: Implications and future directions* (pp. 137–161).

Davis, F. D. (1989). Perceived usefulness, ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–339.

Elkadi, H. (2013). Success and failure factors for e-government projects: A case from Egypt. *Egyptian Informatics Journal, 14*, 165–173.

Epstein, D., Newhart, M., & Vernon, R. (2014). Not by technology alone: The "analog" aspects of online public engagement in policymaking. *Government Information Quarterly, 31*, 337–344.

Gil-Garcı´a, J. R., & Pardo, T. A. (2005). E-government success factors: Mapping practical tools to theoretical foundations. *Government Information Quarterly, 22*, 187–216.

Habeenzu, S. (2010). Zambia ICT sector performance review 2009/2010: Towards evidence-based ICT policy and regulation, 2, Policy Paper 17/2010. Retrieved June 10, 2015, from www.researchictafrica.net/publications/ICT_Sector_Performance_Reviews_2010/Vol%202%20Paper%2017%20-%20Zambia%20ICT%20Sector%20Performance%20Review%202010.pdf

Hamilton, F., Pavan, P., & MCHale, K. (2011). Designing usable e-Government services for the citizen – Success within user centred design. *International Journal of Public Information Systems, 3*, 159–167.

Hellberg, A.-S., & Grönlund, Å. (2013). Conflicts in implementing interoperability: Re-operationalizing basic values. *Government Information Quarterly, 30*, 154–162.

IRMT. (2007). Fostering transparency in governance. Retrieved August 6, 2017, from http://www.irmt.org/documents/building_integrity/case_studies/IRMT_Case_Study_Zambia.pdf

Jaeger, P. T., & Bertot, J. C. (2010). Transparency and technological change: Ensuring equal and sustained public access to government information. *Government Information Quarterly, 27*, 371–376.

Joseph, S. (2014). *Development and validation of a framework for e-government readiness measurement, (21053794)*. Unpublished Master of Technology degree in Information Technology at Durban Institute of Technology. Retrieved June 10, 2016, from http://ir.dut.ac.za/handle/10321/1189

Khalil, O. E. M. (2011). E-Government readiness: Does national culture matter? *Government Information Quarterly, 28*, 388–399.

Kumar, R., & Best, M. L. (2006). Impact and sustainability of egovernment services in developing countries: Lessons learned from Tamil Nadu, India. *The Information Society, 22*(1), 1–12.

Lean, O. K., Zailani, S., Ramayah, T., & Fernando, Y. (2009). Factors influencing intention to use e-Government services among citizens in Malaysia. *International Journal of Information Management, 29*, 458–475.

Lee, J. (2010). 10 year retrospect on stage models of e-Government: A qualitative meta-synthesis. *Government Information Quarterly, 27*, 220–230.

Liu, X., & Hu, C. (2012). Research and design on e-government information retrieval model. *Procedia Engineering, 29*, 3170–3174.

Luk, S. C. Y. (2009). The impact of leadership and stakeholders on the success/failure of e-government service: Using the case study of e-stamping service in Hong Kong. *Government Information Quarterly, 3*, 594–560.

Misuraca, G., Codagnone, C., & Rossel, P. (2013). From practice to theory and back to practice: Reflexivity in measurement and evaluation for evidence-based policy making in the information society. *Government Information Quarterly, 30*, S68–S82. Elsevier Publishing, USA.

Napitupulu, D. (2014). The critical success factors study for e-Government implementation. *International Journal of Computer Applications, 89*(16), 23–32.

Navarra, D. D., & Cornford, T. (2012). The state and democracy after new public management: Exploring alternative models of e-governance. *The Information Society, 28*(1), 37–45.

Ngulube, P., Mokwatlo, K., & Ndwandwe, S. (2009). Utilisation and prevalence of mixed methods research in library and information research in South Africa 2002–2008. *South African Journal of Libraries and Information Science, 75*(2), 105–116.

Nograšek, J., & Vintar, M. (2014). E-government and organisational transformation of government: Black box revisited? *Government Information Quarterly, 31*, 108–118.

Nour, M. A., AbdelRahman, A., & Fadlalla, A. (2008). A context-based integrative framework for e-government initiatives. *Government Information Quarterly, 25*, 448–461.

Paiva Dias, G., & Aberto Rafael, J. (2007). A simple model and a distributed architecture for realizing one-stop e-government. *Electronic Commerce Research and Applications, 6*, 81–90.

Panetto, H., & Molina, A. (2008). Enterprise integration and interoperability in manufacturing systems: Trends and issues. *Computers in Industry, 59*(7), 641–664.

Panopoulou, E., Tambouris, E., & Tarabanis, K. (2014). Success factors in designing eParticipation initiatives. *Information and Organization, 24*, 195–213.

Papadopoulou, P., Nikolaidou, M., & Martakos, D. (2010). What is trust in e-Government? A proposed typology. Retrieved May 15, 2017, from https://www.dit.hua.gr/~mara/publications/HICSS10.pdf

Prokopios, D., Dimitris, G., Stefanos, G., Costas, L., & Mitrou, L. (2009). Towards an enhanced authentication framework for e-government services: The Greek case. *Trust and Security*, 189–196. Retrieved from http://www.icsd.aegean.gr/publication_files/conference/673141011.pdf

Sander, J. I., Bell, P. J., & Rice, S. D. (2005). MIS sustainability in sub-Saharan Africa: Three case studies from The Gambia. *International Journal of Education and Development Using Information and Communication Technology, 1*(3), 135–159.

Sarrayrih, M. A., & Sriram, B. (2015). Major challenges in developing a successful e-government: A review on the Sultanate of Oman. *Computer and Information Sciences, 27*, 230–235.

Shareef, A. M., Kumar, V., Kumar, U., & Dwivedi, Y. K. (2011). E-Government adoption model (GAM): Differing service maturity levels. *Government Information Quarterly, 2*, 17–35.

Shen, C. C., & Chiou, J.-S. (2010). The impact of perceived ease of use on Internet service adoption: The moderating effects of temporal distance and perceived risk. *Computers in Human Behavior, 26*(1), 42–50.

Tassabehji, R., & Elliman, T. (2006). *Generating citizen trust in e-Government using a trust verification agent: A research note*. European and Mediterranean Conference on Information Systems (EMCTS). Retrieved August 6, 2017, from www.iseing.org/emcis/EMCIS2006/Proceedings/Contributions/EGISE/eGISE4.pdf

Trkman, P., & Turk, T. (2009). A conceptual model for the development of broadband and e-government. *Government Information Quarterly, 26*, 416–424.

Tsai, N., Choi, B., & Perry, M. (2009). Improving the process of E-Government initiative: An in-depth case study of web-based GIS implementation. *Government Information Quarterly, 26*, 368–376.

van Velsen, L., van der Geest, T., ter Hedde, M., & Derks, W. (2009). Requirements engineering for e-Government services: A citizen-centric approach and case study. *Government Information Quarterly, 26*, 477–486.

Venkatesh, V., Moris, M. G., & Davis, G. B. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478.

Wade, R. R., & Grant, G. G. (2010). Critical issues pertaining to the planning and implementation of E-Government initiatives. *Government Information Quarterly, 27*, 26–33.

Weerakkody, V., Janssen, M., & Hjort-Madsen, K. (2007). Realising integrated e-Government services: A European perspective. *Journal of Cases in E-Commerce, Idea Group, 3*(2), 14–38.

Yenicioglu, B., & Suerdem, A. (2015). Participatory new product development – A framework for deliberately collaborative and continuous innovation design. *Procedia – Social and Behavioral Sciences, 195*, 1443–1452.

Bwalya Kelvin Joseph is an Associate Professor at the Centre for Information and Knowledge Management, University of Johannesburg. He is also a member of the Board of Directors—Mosi-oa-Tunya University of Science and Technology—MUST. Prof Bwalya is a Ph.D. supervisor and member of the Board of Exams at Tshwane University of Technology and seven other universities. He has supervised five Ph.D.s to completion, several Masters and undergraduate projects. He has published seven books and over 100 peer reviewed articles, and has managed research funds over US$500,000 in total.

PART III

Initiatives Undertaken, Good Practices and Lessons Learned in Other Countries

CHAPTER 9

Progress in Global Assessments of E-Democracy: Refined Measurements and New Findings

Gustav Lidén

9.1 Introduction

Political processes are commonly situated in a digital context, ranging from voters briefing themselves before elections via parties' and candidates' websites to deliberative online processes in which citizens can get direct access to decision-making processes (e.g. Dutton 2013). Since digital media facilitate technical conditions for enlarging participation and thereby could enhance equity in deliberative political processes, it is problematic that the expansion of such tools is not uniformly distributed (Bessant 2014a; Papacharissi 2010). On the global level there are significant variations in the opportunities for citizens to politically engage through the Internet (Jorba and Bimber 2012). This is due to the fact that citizens' involvement in digital politics is dependent on the supply side (e.g. Koc-Michalska et al. 2014; Rose 2005; Saglie and Vabo 2009; Vaccari 2013), meaning the presence of political actors and the structures created by them for citizens' involvement through information and communication technologies (ICTs). It is only through a comparative approach that

G. Lidén (✉)
Mid Sweden University, Sundsvall, Sweden

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_9

targets the global patterns of variation in this supply side that the preconditions for digital politics can be understood.

How ICTs shape such conditions for the creation of an electronic democracy (e-democracy) is the subject matter of a rising field of research. Recent examples (Åström et al. 2012; Gulati et al. 2014; Jho and Song 2015; Katz and Halpern 2013; Lee et al. 2011) examine different countries' success in e-democracy. Through cross-sectional analyses they identify the influencing determinants. The most concordant finding is how technological aspects are of importance for the supply of e-democracy. In terms of the influence of socio-economic and political aspects, results are more ambiguous.

Measuring e-democracy on a global scale is challenging, though, and at least two obstacles should be emphasized. First, there are no benchmark solutions to the question of how to quantify e-democracy. Alternatives range from collecting data from governmental or party websites (Katz and Halpern 2013; Vaccari 2013) to relying on international indexes (Åström et al. 2012; Lee et al. 2011). Regarding the latter, the UN's 'E-Participation index' (E-Part) has been established as the principal alternative.[1] However, scholars have criticized the usage of this index, referring both to conceptual problems (Potnis and Pardo 2011) as well as to irrational empirical outcomes (Grönlund 2011). Second, the constant and rapid innovations of ICTs will create extra difficulties for scholars in their ambition of reaching reliable results; the assumptions that found traditionally applied research methods will risk being violated (Karpf 2012). In works both from the USA (Bimber and Copeland 2013) and Europe (Koc-Michalska et al. 2014) that examine data of a longitudinal character it is verified that, not only are technological preconditions in rapid change but ideas on what drives online engagement appear also to be subject to constant change. Hence, coping with this technological development and how it affects society requires longitudinal data for reliable analysis.

This study will employ strategies to overcome both these caveats by drawing from a times-series cross-sectional data set that includes all recognized countries in the world from 2003 until 2014 with the aim of explaining global variations in e-democracy. The rational driving such an ambition is twofold. First, inconsistent results in previous research indicate a need for studies that can cover a longer time frame. Second, problems with validity in the measurement of e-democracy on the global level need to be minimized to accomplish a more robust test. To curtail conceptual problems, this inquiry challenges the E-Part index by applying a previously

presented modification of it that aims to strengthen conceptual validity (Lidén 2015).

9.2 The Theoretical Nature of E-Democracy

As has frequently been argued (Macintosh et al. 2009; Sæbø et al. 2008; Susha and Grönlund 2012), the theoretical underpinnings of e-democracy are vague and imprecise. Still, quantifying concepts in social sciences depends on a solid understanding of what they are made up of. In the case of e-democracy, two different aspects need to be elaborated for assuring this. First, e-democracy must be related to the wider concept of democracy. Second, the different analytical perspectives on e-democracy need to be discussed.

Regarding the theoretical foundations of e-democracy, they are rightfully described as dependent on the tradition of democratic theory (Macintosh et al. 2009). This involves how a wider understanding of democracy, commonly denoted as liberal democracy, will also be a necessary foundation for the concept of e-democracy. This approach conveys the idea that the political and civil rights that constitute the liberal parts of democracy (e.g. Dahl 1989) will also be the dimensions that are required to facilitate the political processes of e-democracy.

Turning more specifically to the conceptualization of e-democracy, such achievements are challenging since they will be characterized by the inconsistency of prior research (Macintosh et al. 2009). There are, though, some common features among the most established definitions of e-democracy (Coleman and Norris 2005). The perspective that was outlined some years ago and still prevails (e.g. Kersting 2012) is a view of e-democracy as the use of ICTs in political processes. ICTs are used in this way in a broad sense, but it should be acknowledged that current e-democratic projects will tend to draw from the increased possibilities summarized in the term web 2.0, meaning a transition to an era in which social networking sites could enable more participatory and interactive features on the Internet (Chadwick 2008; Gibson and McAllister 2014). More specifically, Vedel (2006) describes how e-democracy is the application of ICTs in three political processes: information, discussion and decision-making. This gives us an idea of a concept that is based on applying specific technological applications in a political system.

Whereas an instrumental perspective of e-democracy provides the best possibilities both for a theoretical understanding and for analytical

purposes (Vedel 2006) it need to be complemented with the features of liberal democracy previously discussed. Put more concretely, these procedures must be permeated by political and civil rights that make up the liberal parts of democracy. As democratic theorists have argued (Dahl 1989; e.g. Diamond 1999) such rights are upheld by a *Rechtsstat* and include the freedom of speech, the right to form and join associations and the existence of alternative forms of information. In relation to e-democracy, this can vigorously be expressed as 'No democracy, no e-democracy' (Lidén 2015). However, this does not mean that democracies automatically produce e-democracy but that e-democracy cannot be established in a political regime that is not democratic. Hence, e-democracy is depicted as the appliance of ICTs in political processes concerning information, discussion and decision-making, whereas these processes are characterized by their inclusion of political and civil rights.

In empirical studies, though, the relation between democracy and e-democracy has frequently been violated. Strategies to make e-democracy measurable have chiefly been oriented towards the existence and usage of specific technological artefacts (Larsson and Grönlund 2014), irrespective of their democratic qualities. To some degree this is surprising because of the vast amount of research that is carried out through in-depth studies that have the potential of delivering dense and theoretically developed concepts (Sæbø et al. 2008). As stated in overviews (e.g. Sæbø et al. 2008; Susha and Grönlund 2012), such tendencies can probably be related to the field being theoretically immature, for example theories are often applied in quite an ad hoc way without careful systematization.

Establishing democratic theory as a natural point of departure for conceptualizing e-democracy would add several advantages. First, claims for embedding the understanding of e-democracy into the history of democratic theory can bring clarity by distinguishing e-democracy as a subordinate concept of democracy (Macintosh et al. 2009). Second, research deriving from this theoretical background can successfully draw from the progress of democratic theory in terms of increasing precision further by making distinctions between different models of democracy (e.g. Held 2006). The different characteristics of democratic models and their consequences for citizens have, in some cases, transformed into novel examples in research on e-democracy (e.g. Hacker and van Dijk 2000). Nevertheless, such examples are exceptions since the predominant part of previous research has been portrayed as being incapable of establishing any valid

correspondence of e-democracy to democratic models (Susha and Grönlund 2012).

A prevailing perspective that can enhance the understanding of e-democracy is the distinction between the supply of and the demand for e-democratic services. Theoretically, such a framework has been established through a number of important contributions (e.g. Coleman and Blumler 2009; Rose 2005). The analytical value of this distinction builds upon the idea that e-democracy is symbiotically dependent on both perspectives. Without political actors maintaining or being involved in channels that enable the spread of political information or facilitate online deliberation, the point of citizen engagement will be futile. Similarly, e-democracy would be just an empty shell without citizens' participation. Being able to carry out empirical research that on a global scale simultaneously examines these perspectives would require unique data that does not exist today. Even so, these two dimensions of e-democracy have still not been sufficiently examined one at a time. As argued by Vaccari (2013, p. 14), fully comparative research on the supply side has still not been carried out.

9.3 Potential Explanations of E-Democracy

Systematized models presenting expected predictors of e-democracy at the level of nation states are rare. The work by Norris (2001) and Vaccari (2013) are particularly important since a number of broader categories on a structural level are identified. A similar approach will be employed for distinguishing between different explanations.

Starting with *development theories*, an economic focus is emphasized, stating that structural changes in societies' economies result in social and political changes. Bell's (1973) paradigmatic description of the emergence of a post-industrial society is intimately related to the information technology that today's knowledge economies are dependent on. The characteristics of a post-industrial society can be crucial as factors that explain e-democracy. More specifically, an advanced and knowledge-based economy, driven by a well-educated workforce, especially when it comes to computing and Internet skills, is strongly argued to be a determinant of e-democracy. This potential effect could be considered as having dual mechanisms in play. Affluence will increase the potential for government investment in digital politics, which can corresponds to a citizenry that is strong in resources and therefore demands additional channels for

participation (e.g. Schlozman et al. 2010). However, quantifications of such aspects report ambiguous results. On a global level, education and urbanization show as being important (Gulati et al. 2014). From a party perspective, however, Vaccari (2013) can verify that financial resources are influential for the level of e-democratic features of parties' websites.

From the viewpoint of *technical determinism*, an alternative explanation is presented. Clearly, e-democracy is dependent on the right technological conditions, that is the diffusion of infrastructure for the internet, but whether isolated societal or technological factors are the most important determinants is an empirical question, Chadwick (2006, p. 18) relates this to the Internet and notes that scholars argue that by identifying properties related to the Internet political development can also be predicted. As exemplified by Norris (2001, p. 106), countries that have the conditions that allow communication technology to progress will also create better possibilities for the development of digital politics. One assumption of the mechanism is based on how development of technology increases pressure for online political services (e.g. Katz and Halpern 2013). Empirical studies have repeatedly stressed the importance of technological aspects. Lee et al. (2011), Åström et al. (2012), Jho and Song (2015) and Katz and Halpern (2013) have proven that technology, measured through the share of Internet users, seems to have a significant effect on e-democracy. This occurs despite the fact that the concept is operationalized differently. Further, Katz and Halpern (2013) notice variety in the technological preconditions, stating that high-speed access will be of specific importance for the more advanced functions of digital politics.

Some authors both argue and find indications of empirical evidence for aspects of *democratization* as an important factor influencing e-democracy (e.g. Jho and Song 2015; Norris 2001). Claiming that virtual politics will mirror the traditional political system, Norris reveals how the existence of democracy can be seen as a factor explaining e-democracy but also, more indirectly, how the use of the extensive alternative theories that explain democracy can be seen. Although the connection between democracy and e-democracy appears to be perfectly reasonable it has not yet reported any solid empirical evidence (Åström et al. 2012; Gulati et al. 2014; Katz and Halpern 2013; Lee et al. 2011). However, confusion about the relationship between the two concepts still exists. An example of this is the analysis by Chatfield and Alhujran (2009) of Arabic countries' success in usage of ICTs in processes of governance and democracy; they state that the United Arab Emirates, Bahrain and Qatar are regional leaders, notwithstanding

that they are authoritarian states. Based on the theoretical assumption presented in this study, this indicates a violation of the quantification of e-democracy (Grönlund 2011; Lidén 2015). Consistency between the theoretical idea of e-democracy and strategies for making it measurable would imply that democratic features are more of a characterizing trademark than independent explanations.

In addition to these explanatory theories, *physical factors* have proven not only to be important in the explanation of political regimes (Dahl and Tufte 1973) but also reported crucial explanatory power of variations in e-democracy (Gulati et al. 2014; Lee et al. 2011). Studies, including the size of the population in models, unanimously report that larger societies in general are more e-democratic than smaller ones. As discussed in the literature, this could be due to the varying economic preconditions between small and large societies in which an economy of scale is influential (Viborg Andersen et al. 2007). Although not thoroughly inquired in previous research, the composition of population is also an assumingly important factor. The effect could, though, be dual, both making larger areas in more need of online services as well as their sparse populations presenting more challenges in investing in such techniques (Gulati et al. 2014).

9.4 Research Methods

The theoretical concepts discussed previously will be quantified in this section. How the theoretical concept of e-democracy can be made measurable without jeopardizing conceptual validity will be presented. Similarly, the quantification of independent variables will also be explained, and then a strategy for dealing with statistical estimations and data sources will be discussed. First, however, some potential caveats will be dealt with.

First, one important caveat with a design that aims to examine e-democracy *over time* is the on-going transformation of the Internet, which has the potential to violate assumptions about traditional methods of quantitative research (Karpf 2012). In the E-Part, the solution for making data comparable over the years is reached through normalization of the index. In essence, this implicitly means that a top score in 2003 will reflect the most successful e-democracy at that time, bearing in mind the technological preconditions, while the situation in 2014 will give the corresponding outcome. Hence, the qualitative assessment forming this index drew on features present during 2003, but, in 2012, the technological

development made it necessary to examine contemporary possibilities such as, for example, social media (United Nations 2003, 2012). Put differently, a top score in both 2003 and 2014 will still imply a development of e-democracy over the years in relation to the on-going technological development. This construction will control for the temporal technological context and will make comparisons over time meaningful. Empirical inquiries of the development denote it as curvilinear, in which countries tend to develop at a different pace due to which phase they belong in (Calista and Melitski 2013).

Second, another potential problem is more in the character of a reminder. In this study, the supply of e-democratic services is investigated. The value of this approach is that it enables, on a global scale, the identification of determinants that influence the distribution of e-democratic services. However, this will not make it possible to investigate citizens' engagement in e-democracy, nor will it be possible to assess in detail the symbiotic relationship between the supply of and the demand for e-democracy. Further, decision-makers' own motives when deciding on the creation of an e-democratic infrastructure, irrespective of actions, based on ideological or rational motives (cf. Lee 2014; Lilleker et al. 2010), cannot be assessed with this design. Instead, because it is an inquiry at the global level, this study requires the construction of measurements with great travelling capacity (cf. Sartori 1970). The advantage of a cross-national study, however, is the opportunity to assess the causal effects determining e-democracy; the downside will be the obstacles in the way of giving an in-depth explanation of the nuts and bolts of the mechanisms leading to the development of the phenomenon.

9.4.1 Measurements: Dependent Variables

In this study, e-democracy will be quantified through two related measurements. The given perspective of e-democracy is to some extent consistent with the UN's repeated method of measuring e-participation, which stresses both the supply of e-democratic functions and the procedural perspective of the phenomenon. The E-Part derives from measuring functions on government websites that allow the spreading of *information* and citizen involvement through *consultation* and *decision-making* (United Nations 2003, 2004, 2005, 2008, 2010, 2012, 2014). Qualitative judgements of these dimensions are applied through a battery of questions, for

example: does the political information distributed allow involvement in decision-making? are applications allowing two-way communications provided? and can input from citizens through these channels actually influence the decision-making? Countries are then graded on the fulfilment of each of these questions covering the three dimensions, and then the overall judgement is normalized in the interval of 0.0 to 1.0.

As stated above, this measurement has also been strongly questioned. This critique has been presented in many forms. Through an intensive analysis, Potnis and Pardo (2011) point out several weaknesses, such as not accounting for traditional democratic processes when assessing E-Part. Further, Grönlund (2011) especially argues that appropriate measurements must prove consistent to ways of measure democracy. Analogous with the discussion above, this argument sets high standards for the operationalization of e-democracy. However, in his study Grönlund finds no relation between the E-Part and applied indexes of democracy. If that were the case it would clearly violate the theoretical assumptions of e-democracy and hence highlight this index as having a low level of measurement validity. Although assessments of Grönlund's critique have considered it as exaggerated (Lidén 2015), crucial problems with the E-Part index can still be found.

To correct for potential flaws of the index, and also to truly let the theoretical foundations of e-democracy be mirrored in the quantification of the concept, an alternative measurement will also be applied as quantification of e-democracy. This measurement, denoted as the e-democracy index (E-Dem), has been proven to confirm crucial theoretical points of departure of e-democracy by precluding non-democracies from receiving high scores (Lidén 2015). More specifically, E-Dem derives from both the E-Part and one of the most established measurements of democracy, that is the combination of Freedom House's two indexes and Polity IV (FHP).[2] FHP has in previous literature been described as the most valid measurement of democracy that is accessible (Hadenius and Teorell 2004). Based on these two indexes, E-Dem is constructed simply by multiplying the E-Part index with FHP and thereby stating that both these two dimensions are essential for e-democracy. In other words, a high level of E-Part cannot compensate for a country being undemocratic, or vice versa. This creates an e-democratic index with the possibility ranging from 0.00 to 1.00. Descriptive statistics of the dependent variables are presented in Table 9.1.

Table 9.1 Descriptive statistics of dependent variables

	E-Part	*E-Dem*
Mean	0.206	0.162
Min-Max	0–1	0–1
Std. Dev.	0.241	0.223
N	1342	1336

Source: Own elaboration

9.4.2 Measurements: Independent Variables

Addressing the variation in the two dependent variables, E-Part and E-Dem, will be done through a set of independent variables that are derived from previous theoretical discussions. These are systematized in accordance with the framework presented.

In order to estimate the explanatory power of developmental factors (Norris 2001), three indicators will be applied. First, gross domestic product (GDP)/capita is used as a self-evident way of measuring development. In addition, modern and developed societies are often described in conjunction with them also being highly urbanized, making such a measurement relevant to include. The most reasonable argument would be that these aspects represent characteristics of a modern and well-developed society that could shape preconditions for e-democracy (Norris 2001). To control not only for economic prosperity *per se* but also for the potential consequences of it, socio-economic dimensions will be included. Since utilizing e-democracy could be dependent on certain educational preconditions (Gulati et al. 2014), a measurement for the level of enrolment in secondary education in countries is included.

In relation to technological preconditions, theorists argue that technologies will be a decisive force in the development of society. On the assumption that the growth and progression of ICTs will produce new forms for political processes, e-democracy is expected to be strong in technologically affluent societies. As shown by Katz and Halpern (2013), technological preconditions will positively affect e-democratic opportunities. To measure success in ICTs the share of Internet users in the population will be included.

In line with the proposed arguments, democracy and e-democracy can be assumed to go hand in hand. It therefore seems contradictory to apply democratic theories as explanations of e-democracy. However, in

explaining E-Part and to maintain consistency with earlier research (Åström 2001; Lidén 2015), the same indicator (FHP) that constitutes half of the e-democratic measurement will be used. Since the FHP is endogenous in relation to the E-Dem it cannot be applied as a determinant in estimations of the E-Dem.

Finally, the assumed importance of physical dimensions will be examined by including two variables. Population size has in prior research indicated a positive effect on e-democracy. The potential effect of population density, on the other hand, has not been addressed in previous research. Based on similar assumptions, there are theoretical arguments that imply that the linkage could be both positive, based on additional needs of e-democracy in such sparsely populated areas, as well as negative, due to representing a more challenging investment in such techniques (Gulati et al. 2014).

9.4.3 Analytical Strategy and Data

The used data is multidimensional, meaning that it is characterized by both a spatial and a temporal dynamic and measures of the used variables are collected repeatedly through time (Finkel 1995). The data set ultimately spans the years 2002–2014 for 192 of the UN member states of the world,[3] but variation exists due to both when the E-Part was conducted and because of missing data. Working with such data, often denominated as time-series cross-section (TSCS), this chapter follows the convincing arguments laid out by Beck and Katz and uses ordinary least squares (OLS) estimations combined with robust standard errors that correct for problems with heteroscedasticity (Beck and Katz 1995). The chapter concludes by estimating the TSCS data with panel-corrected standard errors together with either an AR(1)-term or a lagged version of the dependent variable (LDV) for minimizing autocorrelation. Including a LDV also makes it possible to control for additional historical circumstances that otherwise can be hard to quantify.

The E-Part index has been applied for seven years (2003, 2004, 2005, 2008, 2010, 2012, 2014). The fact that there are different time intervals for the occurrence of the index creates a need for special considerations in cases in which an LDV is included. To increase the number of cases, a time lag of two years is employed for the LDV, meaning that the dependent variable is measured on four occasions in such estimations. In general, time lags of both independent variables and the LDV are applied to

mitigate the potential problem of reversed causation by assuring that explanatory variables precede the dependent ones.

The data set is compiled from a few sources. First, country scores on the E-Part are directly collected from the UN surveys. Second, data found from the utilized measurement of democracy is gathered from Freedom House and the Polity IV project. All other data is collected from the World Bank. See Table 9.2 for more detailed references. As expected, there are significant correlations between the independent variables, see Table 9.3. Since the number of included observations is so high the *p*-values are not that robust for detecting multicollinearity. Therefore, the regression models will estimate the variance inflation factor.

9.5 Findings on the Variation of E-Democracy

The analyses are presented in turn, beginning with E-Part as a dependent variable, and then turning to E-Dem. Different models for increased comparability are conducted, see Table 9.4. In model 1 the E-Part index is examined in relation to the four types of theoretical categories. All independent variables besides GDP report influence, and together they explain more than 60% of the variation in the dependent variable. The findings are quite consistent with earlier research, even if the scope of explanatory variables is broader. Levels of democracy, education, population size and urbanization influence E-Part as well as technological conditions. The predictor concerning population density, not investigated previously, also implies the assumed effect.

In model 2 a LDV has been included that enables an estimation in line with the Beck and Katz standard (Beck and Katz 1995). The obvious drawback of this strategy is that it considerably lowers the number of cases down to 446. Compared to the previous model, three variables lose effect on the E-Part index, that is population density, the measurement of democracy and secondary enrolment. The fact that these estimations cannot prove any significant relation between the dependent variable and the level of democracy feeds doubts about the validity of the E-Part. However, similar obscurities have been reported in previous research in which levels of democracy have proven to be unable to influence the dependent variable (Gulati et al. 2014; e.g. Lee et al. 2011). The second model also reports an unsuspected finding related to economic prosperity and the dependent variable that appears to be negative.

Table 9.2 Descriptive statistics

Variable	*N*	*Mean*	*Std. Deviation*	*Years covered*	*Comments*	*Source*
UN E-Participation index	1342	0.206	0.241	2003, 2004, 2005, 2008, 2010, 2012, 2014		United Nations (2003, 2004, 2005, 2008, 2010, 2012)
Freedom House and Polity combined, with imputed values (FHP)	2485	0.668	0.311	2002–2014	Scaled down to range 0.0–1.0	Freedom House (20151027), Marshall et al. (20151027)
E-Dem	1336	0.162	0.223	2003, 2004, 2005, 2008, 2010, 2012, 2014		Constructed
GDP/cap (constant 2005 US$)	2387	10,662	17,313	2002–2014		World Bank (20151026)
Secondary education enrolment (% gross)	1636	78.6	28.9	2002–2013		World Bank (20151026)
Internet users (per 100 people)	2425	27.7	27.2	2002–2014		World Bank (20151026)
Population	2483	3.51e10^7	1.33e10^8	2002–2014		World Bank (20151026)
Urban population (% of total)	2483	54.9	23.4	2012–2014		World Bank (20151026)
Population density (people per sq. km of land area)	2483	263.8	1373.4	2012–2014		World Bank (20151026)

Table 9.3 Correlation matrix for independent variables

	FHP	GDP/cap	Enrolment	Pop. Density	Urban Pop.	Internet Users	Population
FHP	–						
GDP/cap	0.347**	–					
	0.000						
	2376						
Enrollment	0.483**	0.553**	–				
	0.000	0.000					
	1627	1608					
Pop. Density	0.055**	0.394**	0.085**	–			
	0.006	0.0000	0.001				
	2472	2387	1636				
Urban pop.	0.2476**	0.513**	0.651**	0.185**	–		
	0.000	0.000	0.000	0.000			
	2472	2387	1636	2483			
Internet users	0.471**	0.699**	0.694**	0.164**	0.589*	–	
	0.000	0.0000	0.000	0.0000	0.000		
	2417	2337	1628	2425	2425		
Population	−0.0671**	−0.048*	−0.055*	−0.013	−0.050*	−0.033	–
	0.001	0.018	0.027	0.531	0.012	0.1075	
	2472	2387	1636	2483	2483	2425	

Note: Data in each cell is correlation coefficient, *p*-value and number of observations. The time frame applied is the same as in Appendix 1. *Significant at the 0.05-level, ** Significant at the 0.01-level

Table 9.4 Time-series cross-sectional regressions for e-democracy scores

	Dependent variable: E-Part index			*Dependent variable: E-Dem*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Secondary education enrolment	0.00051* (0.0002)	0.00085 (0.0005)	0.00061* (0.0003)	0.0004* (0.0002)	0.0006 (0.0004)	0.0005** (0.0002)
Population density	4.58E-5** (1.52E-5)	4.2E-5 (2.16E-5)	0.0001** (1.84E-5)	2.13E-5** (6.17E-06)	1.52E-5 (7.95E-06)	1.9E-5 (1.06E-5)
Urban population	0.00165** (0.00020)	0.0011** (0.0004)	0.0017** (0.0003)	0.0009** (0.0002)	0.0005 (0.0003)	0.0009** (0.0002)
Internet users	0.0048** (0.0006)	0.0039** (0.0009)	0.00474** (0.0007)	0.0054** (0.0007)	0.0032** (0.0008)	0.005** (0.0008)
Level of democracy (FHP)	0.1214** (0.0344)	0.02470 (0.0324)	0.10165** (0.0377)			
Population (log)	0.04106** (0.0023)	0.0238** (0.006)	0.0408** (0.0027)	0.0331** (0.0020)	0.0157** (0.005)	0.0333** (0.0025)
GDP/cap (log)	−0.0103 (0.0076)	−0.0273* (0.0107)	−0.0108 (0.0095)	0.0043 (0.0010)	−0.0176 (0.0092)	0.0046 (0.0118)
Lag of dependent variable ($t-2$)		0.4780** (0.0128)			0.6181** (0.1119)	
AR(1)			Yes			Yes
N	939	446	939	938	445	938
R-squared	0.6197	0.7368	0.6176	0.6111	0.7926	0.6094

Note: Entries are coefficients followed by panel corrected standard errors. All independent variables are lagged one year besides the lag of the dependent variable in which two years is applied. Concerning multicollinearity, the variance inflation factor does not reach above 7. *Significant at the 0.05-level, ** Significant at the 0.01-level

The inclusion of an LDV could, though, be regarded as a problematic strategy. It risks suppressing substantive independent variables (Keele and Kelly 2006) and will also lower the number of observations. In model 3 an alternative estimation is therefore given in which an AR(1)-term is included instead. To a large extent the produced model is concordant with model 1 but does, however, represent an approach that could be expected to produce more robust findings. In general, the results both function as verification of prior research but also imply previously unseen outcomes. To name some examples, the potential effect of the education levels found is not convincingly supported by previous cross-sectional research. The only

exception is a similar pattern noticed by Gulati et al. (2014), who examined the E-Part of 2010 but did not elaborate on the role of education. Further, technological preconditions and population size show importance; the importance of the former has repeatedly been found in previous research (e.g. Åström et al. 2012; Jho and Song 2015), while the effect of the latter variable has been more ambiguous (cf. Katz and Halpern 2013; Lee et al. 2011). Finally, that not only population size but also the spatial composition of the populace indicates effect has only been implied previously (Gulati et al. 2014). These models do though emphasize that larger shares of an urban population and a higher population density appear to positively affect the E-Part.

As has been discussed throughout this study, the E-Part index is associated with some flaws that lower validity when employing it as an operationalization of e-democracy (Grönlund 2011; Lidén 2015; Potnis and Pardo 2011). Therefore, we continue with corresponding estimations of the predictors for the E-Dem index. In these estimations, the independent variable measuring the level of democracy has been omitted since the E-Dem is partly based on the very same data.

In model 4, the 938 observations that were analysed lead to an explanatory power of 61%. Five out of six independent variables yield significance. The only predictor not reporting the expected effect is the measurement of GDP. Generally, this outcome is consistent with the investigation of the E-Part and what could be theoretically expected.

In model 5, a LDV has been included that lowers the number of observations down to 445. Compared to the outcome of the previous estimation, the number of significant indicators dramatically diminishes. With the control for previous versions of the dependent variable, the share of Internet users and the measurement of population are the two remaining significant predictors. This being a strict test of the determinants of e-democracy, a technological infrastructure, measured through the proportion of Internet users, still report importance and thereby harmonizes with what has been evident in much previous research (e.g. Jho and Song 2015; Katz and Halpern 2013). Taken together, this test of the E-Dem points to relevant explanatory factors being of a more limited scope.

In model 6 the data is estimated with an AR(1)-term instead. This brings back the effect of the gross enrolment indicator as well as the measurement of urbanization. Although this model opens up for the effect of sociodemographic aspects, it also continues to stress that demography and technology stand out to influence countries' success in e-democracy.

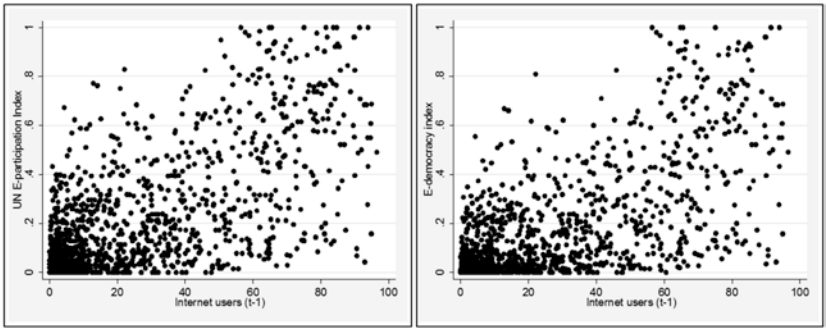

Fig. 9.1 Scatter plots of relations between E-Part (*left*) and E-Dem (*right*) and proportion of Internet users. Source: Own elaboration

On the basis of these findings, it is impossible to neglect the importance of technological conditions. A detailed understanding of these relations is presented as a scatter plot Fig. 9.1. Quite clear patterns are revealed in these plots. A higher proportion of Internet users in countries is correlated with higher levels of both the E-Part and the E-Dem. The correlation is somewhat stronger between Internet users and the E-Dem. This is, for example, revealed through the low number of observations that have a high score on the E-Dem index in combination with a low proportion of Internet users.

9.6 Discussion and Conclusion

The aim of this study corresponds to two drawbacks in previous research, counting both inconsistencies in findings of global variations of e-democracy as well as inability to reaching valid measurements of the examined concept. These challenges have been addressed by utilizing an expanded data set and, more importantly, a novel way of measuring e-democracy at the global level.

For enabling comparisons with previous research the variation of the E-Part index has been addressed. In all, three theoretically different aspects of explanations were found. Educational levels as a proxy for a developed society, the absolute size and spatial composition of the population and, finally, the proportion of users of the Internet all appear to influence governments' supply of digital politics. In relation to previous research,

educational aspects have been somewhat overseen, although exceptions exist (Gulati et al. 2014; Lee et al. 2011). That those larger societies could have better possibilities for developing online services are once again confirmed. That urbanization also appears to be working as a driver adds nuance to the general argument of size. Finally, technology remains to be one of the core pieces in an explanation of the E-part. Even if different indicators of success in modern technologies have been applied (Gulati et al. 2014; Jho and Song 2015), their general effect persists.

In this chapter more focus was, though, directed towards what is considered a more valid measurement of e-democracy, that is the E-Dem index. As explanations of the E-Dem two predictors emerge as robust, that is the indicator of population size and proportion of internet users. The consequences of these findings will be handled in turn.

In relation to the positive effect of population size, two contrasting assumptions can be made. First, the positive effect could be due to the varying economic preconditions between small and large societies in which an economy of scale is influential (Viborg Andersen et al. 2007). On the other hand, it could be expected that the measurement of economic prosperity would rather, or at least simultaneously, be the driving force. Nevertheless, GDP is without relevance in estimated models. Another expected effect would be that e-democratic services are more called for in larger societies in which the distance between citizens and decision-makers is considerable. This is particularly relevant at the local level that represents the arena for political involvement with the lowest barrier (Lidén 2016). However, it seems that this argument is less applicable when discussing nation states since the distance anyhow ought to be considered as significant, to some extent, irrespective of population size due to vertical power hierarchies. In conclusion, that a size effect exists appears to be highly plausible but the actual reasons for it are not fully known. By also taking a closer look at the role of the distribution of the population in rural and urban areas future research could enhance our understanding.

Besides size, the importance of technological preconditions needs to be underscored. The indicator of Internet users could, though, be problematized further. For example, is it even reasonable to expect any form of meaningful e-democracy without a significant proportion of Internet users? As reported in Fig. 9.1 though such combinations exist, which means that e-democracy could in some cases predate technological preconditions. Such anomalies imply an agency-based explanation in which

e-democracy is enforced on the population, reasonably without any significant demand. This could be interpreted in at least two ways. First, if e-democracy is well-developed but the number of potential users of such services is low, only an exclusive elite can engage in online democratic tools. Vaccari (2013), for example, shows how education and, to a lesser extent, income will influence citizens to be involved in e-democratic functions. Second, development of e-democracy without citizen engagement could be an example of regimes trying to establish what appears to be a successful front. Such 'Potemkin e-villages' are discussed as seemingly e-democratic tools, though without any citizen involvement (Åström et al. 2012; Katchanovski and La Porte 2005).

The education indicator loses its significance in model 5. Although the potential importance of education on e-democracy must, at this stage, be rejected, its potential mechanism can still be discussed with claims of additional inquiries due to its dubious effect. If valid, it seems reasonable to expect there to be a causal chain in which a better-educated population is more inclined to demand additional channels for political participation. If this assumption is correct, citizens should be provided with what they ask for by the government. Studies covering a large number of countries uniformly stress educational background as one of the most decisive individual factors that predicts online political engagement (e.g. Anduiza Perea et al. 2012; Vaccari 2013). Yet, as has been emphasized in the field of political participation research (Persson 2013), education *per se* may not necessarily be the causal effect but may instead be a proxy for factors such as family tradition of participation and social status. Whether the same pattern also holds true when participation is online is, however, still an unanswered empirical question.

There is no doubt that ICTs have influenced and will continue to influence political systems around the globe and that, as stated by Bessant (2014b), we could expect that such processes will produce new forms of politics with great democratic capacity. Judging by recent empirical research, it is still apparent that we are only at the early stage of comprehending the determinants of this phenomenon. This study contributes to reducing uncertainty by conducting longitudinal research through a refined measurement of e-democracy and concludes that even though technological conditions and population size are important for e-democracy, the other explanatory factors are, to a large extent, shrouded in mystery. In terms of future research, the outcome indicates that additional predictors of e-democracy ought to be elucidated. In addition

to the necessity of conducting large-N analysis, more comparative and qualitative work could bring important insights to our understanding of e-democracy.

Notes

1. Existing alternatives are for example Freedom House's *Freedom on the Net* and the *Open Net Initiative*. The basic shortcoming of these measurements is that a considerable proportion of the countries of the world are excluded.
2. FHP is based on average score between Freedom House's two indexes and Polity IV with imputed data for countries from which data is missing. The index has been scaled down, ranging from 0.0 (low democracy) to 1.0 (high democracy). Values are imputed for countries for which data on Polity IV is missing. This is done by regressing Polity IV on the average Freedom House measure.
3. This excludes South Sudan since the country joined the UN in 2011.

References

Anduiza Perea, E., Jensen, M. J., & Jorba, L. (2012). *Digital media and political engagement worldwide: A comparative study*. Cambridge: Cambridge University Press.

Åström, J. (2001). Should democracy online be quick, strong, or thin? *Communications of ACM, 44*(1), 49–51. doi:10.1145/357489.357505.

Åström, J., Karlsson, M., Linde, J., & Pirannejad, A. (2012). Understanding the rise of e-participation in non-democracies: Domestic and international factors. *Government Information Quarterly, 29*(2), 142–150. doi:10.1016/j.giq.2011.09.008.

Beck, N., & Katz, J. N. (1995). What to do (and not to do) with Time-Series Cross-Section data. *The American Political Science Review, 89*(3), 634–647. doi:10.2307/2082979.

Bell, D. (1973). *The coming of post-industrial society: A venture in social forecasting*. New York: Basic Books.

Bessant, J. (2014a). *Democracy bytes: New media, new politics and generational change*. Basingstoke: Palgrave Macmillan. Retrieved from http://www.palgraveconnect.com/doifinder/10.1057/9781137308269

Bessant, J. (2014b). The political in the age of the digital: Propositions for empirical investigation. *Politics, 34*(1), 33–44. doi:10.1111/1467-9256.12015.

Bimber, B., & Copeland, L. (2013). Digital media and traditional political participation over time in the US. *Journal of Information Technology & Politics, 10*(2), 125–137. doi:10.1080/19331681.2013.769925.

Calista, D. J., & Melitski, J. (2013). Digitized government among countries worldwide from 2003 to 2010: Performance discrepancies explained by comparing frameworks. *International Journal of Public Administration, 36*(3), 222–234. doi:10.1080/01900692.2012.721246.

Chadwick, A. (2006). *Internet politics: States, citizens, and new communication technologies*. New York: Oxford University Press.

Chadwick, A. (2008). Web 2.0: New challenges for the study of e-Democracy in an era of informational exuberance. *I/S: A Journal of Law and Policy for the Information Society, 5*, 9.

Chatfield, A. T., & Alhujran, O. (2009). A cross-country comparative analysis of e-government service delivery among Arab countries. *Information Technology for Development, 15*(3), 151–170. doi:10.1002/itdj.20124.

Coleman, S., & Blumler, J. G. (2009). *The Internet and democratic citizenship: Theory, practice and policy*. Cambridge: Cambridge University Press.

Coleman, S., & Norris, D. F. (2005). *A new agenda for e-Democracy*. (SSRN Scholarly Paper No ID 1325255). Rochester, NY: Social Science Research Network.

Dahl, R. A. (1989). *Democracy and its critics*. New Haven, CT: Yale University Press.

Dahl, R. A., & Tufte, E. R. (1973). *Size and democracy*. Stanford: Stanford University Press.

Diamond, L. (1999). *Developing democracy: Toward consolidation*. Baltimore, MD: Johns Hopkins University Press.

Dutton, W. H. (2013). Internet studies: The foundations of a transformative field. In *The Oxford handbook of Internet studies*. Oxford: Oxford University Press.

Finkel, S. E. (1995). *Causal analysis with panel data*. Thousand Oaks: Sage.

Freedom House. (20151027). *Freedom in the world comparative and historical data*. Retrieved from www.freedomhouse.org

Gibson, R. K., & McAllister, I. (2014). Normalising or equalising party competition? Assessing the impact of the web on election campaigning. *Political Studies, n/a-n/a*. doi:10.1111/1467-9248.12107.

Grönlund, Å. (2011). Connecting eGovernment to real government – The failure of the UN eParticipation index. In M. Janssen, H. J. Scholl, M. A. Wimmer, & Y. Tan (Eds.), *Electronic government* (pp. 26–37). Berlin; Heidelberg: Springer.

Gulati, G. J., Williams, C. B., & Yates, D. J. (2014). Predictors of on-line services and e-participation: A cross-national comparison. *Government Information Quarterly, 31*(4), 526–533.

Hacker, K. L., & van Dijk, J. (Eds.). (2000). *Digital democracy: Issues of theory & practice*. London: Sage.

Hadenius, A., & Teorell, J. (2004). *Same, same – But different: Assessing alternative indices of democracy*. Presented at the Annual Meeting of the American Political Science Association, Chicago.

Held, D. (2006). *Models of democracy* (3rd ed.). Cambridge: Polity Press.
Jho, W., & Song, K. J. (2015). Institutional and technological determinants of civil e-Participation: Solo or duet? *Government Information Quarterly*. doi:10.1016/j.giq.2015.09.003.
Jorba, L., & Bimber, B. (2012). The impact of digital media on citizenship from a global perspective. In *Digital media and political engagement worldwide: A comparative study*. Cambridge: Cambridge University Press.
Karpf, D. (2012). Social science research methods in Internet time. *Information, Communication & Society, 15*(5), 639–661. doi:10.1080/1369118X.2012.665468.
Katchanovski, I., & La Porte, T. (2005). Cyberdemocracy or Potemkin e-Villages? Electronic governments in OECD and post-communist countries. *International Journal of Public Administration, 28*(7–8), 665–681. doi:10.1081/PAD-200064228.
Katz, J., & Halpern, D. (2013). Political and developmental correlates of social media participation in government: A global survey of national leadership websites. *International Journal of Public Administration, 36*(1), 1–15. doi:10.1080/01900692.2012.713286.
Keele, L., & Kelly, N. J. (2006). Dynamic models for dynamic theories: The ins and outs of lagged dependent variables. *Political Analysis, 14*(2), 186–205. doi:10.1093/pan/mpj006.
Kersting, N. (2012). The future of electronic democracy. In *Electronic democracy* (pp. 11–54). Opladen: Barbara Budrich Publishers.
Koc-Michalska, K., Gibson, R., & Vedel, T. (2014). Online campaigning in France, 2007–2012: Political actors and citizens in the aftermath of the Web.2.0 evolution. *Journal of Information Technology & Politics, 11*(2), 220–244. doi:10.1080/19331681.2014.903217.
Larsson, H., & Grönlund, Å. (2014). Future-oriented eGovernance: The sustainability concept in eGov research, and ways forward. *Government Information Quarterly, 31*(1), 137–149. doi:10.1016/j.giq.2013.07.004.
Lee, B. (2014). Window dressing 2.0: Constituency-level web campaigns in the 2010 UK general election. *Politics, 34*(1), 45–57. doi:10.1111/1467-9256.12029.
Lee, C., Chang, K., & Berry, F. S. (2011). Testing the development and diffusion of e-Government and e-Democracy: A global perspective. *Public Administration Review, 71*(3), 444–454. doi:10.1111/j.1540-6210.2011.02228.x.
Lidén, G. (2015). Technology and democracy: validity in measurements of e-democracy. *Democratization, 22*(4), 698–713.
Lidén, G. (2016). Inequality in local digital politics: How different preconditions for citizen engagement can be explained. *Policy & Internet, 8*(3), 270–291.
Lilleker, D. G., Pack, M., & Jackson, N. (2010). Political parties and Web 2.0: The liberal democrat perspective. *Politics, 30*(2), 105–112. doi:10.1111/j.1467-9256.2010.01373.x.

Macintosh, A., Coleman, S., & Schneeberger, A. (2009). eParticipation: The research gaps. In A. Macintosh & E. Tambouris (Eds.), *Electronic participation* (Vol. 5694, pp. 1–11). Berlin; Heidelberg: Springer.

Marshall, M. G., Jaggers, K. R., & Gurr, K. (20151027). *Polity IV project: Political regime characteristics and transitions, 1800–2014*. Retrieved from http://www.systemicpeace.org/

Norris, P. (2001). *Digital divide?: Civic engagement, information poverty, and the Internet worldwide*. Cambridge: Cambridge University Press.

Papacharissi, Z. (2010). *A private sphere: democracy in a digital age*. Cambridge: Polity.

Persson, M. (2013). Education and political participation. *British Journal of Political Science*, 1–15 (FirstView). doi:10.1017/S0007123413000409.

Potnis, D. D., & Pardo, T. A. (2011). Mapping the evolution of e-Readiness assessments. *Transforming Government: People, Process and Policy, 5*(4), 345–363. doi:10.1108/17506161111173595.

Rose, R. (2005). A global diffusion model of E-Governance. *Journal of Public Policy, 25*(1), 5–27. doi:10.1017/S0143814X05000279.

Sæbø, Ø., Rose, J., & Skiftenes Flak, L. (2008). The shape of eParticipation: Characterizing an emerging research area. *Government Information Quarterly, 25*(3), 400–428. doi:10.1016/j.giq.2007.04.007.

Saglie, J., & Vabo, S. I. (2009). Size and e-Democracy: Online participation in Norwegian local politics. *Scandinavian Political Studies, 32*(4), 382–401. doi:10.1111/j.1467-9477.2009.00235.x.

Sartori, G. (1970). Concept misformation in comparative politics. *American Political Science Review, 64*(4), 1033–1053. doi:10.2307/1958356.

Schlozman, K. L., Verba, S., & Brady, H. E. (2010). Weapon of the strong? Participatory inequality and the Internet? *Perspectives on Politics, 8*(2), 488–509.

Susha, I., & Grönlund, Å. (2012). eParticipation research: Systematizing the field. *Government Information Quarterly, 29*(3), 373–382. doi:10.1016/j.giq.2011.11.005.

The World Bank. (20151026). *World development indicators*. Retrieved from http://www.worldbank.org/

United Nations. (2003). *UN Global E-government survey 2003*. New York: United Nations Department of Economic and Social Affairs.

United Nations. (2004). *Global e-government readiness report 2004: Towards access for opportunity*. New York: United Nations Department of Economic and Social Affairs.

United Nations. (2005). *Global e-government readiness report 2005: From E-Government to E-Inclusion*. New York: United Nations Department of Economic and Social Affairs.

United Nations. (2008). *Un e-government survey 2008: From e-government to connected governance*. New York: United Nations Department of Economic and Social Affairs.

United Nations. (2010). *E-Government survey 2010: Levering e-Government at a time of financial and economic crisis*. New York: United Nations Department of Economic and Social Affairs.
United Nations. (2012). *E-Government survey 2012: E-Government for the people*. New York: United Nations Department of Economic and Social Affairs.
United Nations. (2014). *E-Government survey 2014: E-Government for the future we want*. New York: United Nations Department of Economic and Social Affairs.
Vaccari, C. (2013). *Digital politics in Western democracies: A comparative study*. Baltimore, MD: Johns Hopkins University Press.
Vedel, T. (2006). The idea of electronic democracy: Origins, visions and questions. *Parliamentary Affairs, 59*(2), 226–235. doi:10.1093/pa/gsl005.
Viborg Andersen, K., Henriksen, H. Z., Secher, C., & Medaglia, R. (2007). Costs of e-participation: The management challenges. *Transforming Government: People, Process and Policy, 1*(1), 29–43. doi:10.1108/17506160710733689.

Gustav Lidén is an associate professor of political science at Mid Sweden University, Sweden. His research is comparative and focused on public usage of digital politics. His most recent studies are published in *Policy and Internet* and *Journal of Information Technology & Politics*.

CHAPTER 10

Public Value Co-creation via Gov2.0 Complexity Cube

Mohammed Aladalah, Yen Cheung, Vicent C.S. Lee, and Sultan Alamri

10.1 Introduction

Globally, the use of social media has significantly increased as reported recently. For instance, Facebook and Twitter have more than one-seventh of the world population as monthly active users as of the second quarter of 2016 (Statista 2016). According to a report from the Australian Bureau of Statistics, the second most popular online activity in Australia was social networking with 72% of Internet users (ABS 2016). Social media is increasingly becoming the main channel for information seeking and social interactions.

Following these trends, many government agencies have adopted social media technologies as they provide a powerful means of communication, allowing them to reach citizens and stay relevant (Mergel 2012a). Others

M. Aladalah (✉) • Y. Cheung • V.C.S. Lee
Monash University, Clayton, VIC, Australia

S. Alamri
Saudi Electronic University, Dammam, Saudi Arabia

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_10

were under pressure to fulfil citizens' expectations (Nam 2012). According to the Center for Technology in Government report (2009) many government agencies are using social media in order to be perceived as being "in touch" and for the "coolness factor"; this could be viewed as responding quickly to emerging technologies and at the same time relating to the younger generation, thus improving the public image of the agency and government in general.

Mainly, the current Gov2.0 use from the government side is manifest in two types. The first are reluctant to use and use only a single platform. The second are using multiple platforms without hesitation in order to be everywhere, extending their reach and visibility (Mergel 2012a). The latter group seems to be affected by the "coolness factor". However, government agencies are acknowledging the popularity of Web 2.0 tools and are gradually beginning to use Gov2.0. Although government agencies' use of Gov2.0 comes with many challenges and risks, the benefits outweigh the negatives. Gov2.0 offers rich capabilities such as citizen empowerment, participation, and satisfaction (Aladalah et al. 2015b).

While there is still no agreement regarding the terms used in the literature, in this chapter we use the term Gov2.0 to encompass the government agencies' use of Web2.0 technologies and social media tools. Unsurprisingly, Australian government agencies have widely embraced Gov2.0, especially Twitter and Facebook. According to the australia.gov.au website, which is the most updated list of government sector social media accounts, there are more than 400 official Twitter accounts and around 370 Facebook accounts at different levels of the Australian government agencies. These numbers show the popularity of Twitter and Facebook among different levels of Australian government agencies. Consequently, the use of Gov2.0 from the citizens' side as a means to contact government agencies has increased in popularity. According to the research conducted by Sensis in 2016, the number of people in Australia who use social media to engage with government agencies has doubled from less than 5% in 2011 to more than 10% in 2016. The same report revealed that no real differences emerge in terms of gender and age. Thus, we were interested to theorize and compare different citizen groups when co-creating public value via Gov2.0.

As Tim O'Reilly argued, Gov2.0, is about "what we do together that we can't do alone" (2011). Thus, we proposed that citizen engagement is crucial for Gov2.0 (Aladalah et al. 2016b), and is key to public value

co-creation. In spite of the growing interest in Gov2.0 among researchers and practitioners, there has been little work done to conceptualize the government-citizen-community interaction via Gov2.0, and the conditions under which it is most likely to co-create public value. This chapter views Gov2.0 as the means to enable public value co-creation.

Much of the academic research on public value co-creation via Gov2.0 has sought to understand the design, execution and monitoring of these systems (Bovaird 2007; Linders 2012). This body of work tends to focus on the government-citizen relationship, and as such describes them as demand versus supply dimension, government-to-citizen (G2C) and citizen-to-government (C2G) collaborations (Jaeger 2003). Gov2.0 provides interactive platforms whereby multi-dimensional sharing and co-creation of public value may exist. Therefore, this chapter introduces the Gov. 2.0 complexity cube to cover possible current and future multi-faceted challenges of government-citizen-community interaction via Gov2.0.

Little is known about the underlying nature of public value co-creation in such settings. This is a significant gap in our understanding. For researchers, this means that little systematic work has been done to understand the extent to which Gov2.0 facilitates the co-creation of public value. For instance, recent theoretical work on how Gov2.0 can encourage the development of ecosystem networks (Ceccagnoli et al. 2012) would benefit from empirical validation of the public value co-creation via the proposed Gov. 2.0 complexity cube. For practitioners, Gov2.0 currently has no systematic means of determine the way it should be used to achieve public value. In addition, efforts of government agencies to use citizen engagement as a vehicle for public value will have meaning only if citizens know how such a relationship is likely to benefit both parties.

This chapter is structured as follows. First we review the relevant concepts of the proposed Gov2.0 complexity cube (Sects. 10.2 to 10.4), then we describe and discuss the proposed Gov2.0 complexity cube (Sect. 10.5). This is followed by an overview of our case study and the research method (Sect. 10.6). Next, the analysis and results are discussed in the context of the proposed Gov2.0 complexity cube (Sect. 10.7). Finally, drawing on key themes emerging from our analysis, the discussion section emphasizes the theoretical understanding gained and outlines some future research directions (Sect. 10.8).

10.2 Citizen Engagement

The World Bank group defined citizens as: the ultimate client of government and/or public–private partnership (PPP) in a country (World Bank 2014, p. 4), and citizen engagement as: the two-way interaction between citizens and governments or PPP which give citizens a voice in the decision-making process to improve the immediate output and final outcomes (World Bank 2014, p. 5). Similarly, OECD (2014) proposed three types of citizen engagement starting from the one-way interaction (information dissemination), to the two-way interaction initiated from the government side (consultation), and finally, the highest form of engagement, the two-way interaction from citizens to governments and vice versa (active participation), which enables an equal citizen-government relationship.

Citizen engagement via ICT has become a concept that is widely used, but also has extensively different instantiations. Some of these terms are e-democracy, e-participation, e-voting and e-inclusion. The UK Cabinet Office (2002), on the other hand, published a consultation paper that argued that e-democracy could be divided into two areas: e-voting and e-participation. E-voting refers to the use of ICT to facilitate participation in elections or other ballots under legislative control. However, voting is certainly not the only mechanism whereby citizens can influence democratic decision-making. E-participation refers to the use of ICT-enabled methods and tools enhancing the interactions between citizens, politicians and public sector officials that take place between elections (Andersen et al. 2010).

Islam (2008) extended e-participation as a self-managed concept to indicate that it does not have to be offered and managed by the government. Rather, as an informal activity by an organization or group of people. Macintosh (2004) developed three levels of e-participation that can be used to distinguish initiatives. E-enabling refers to supporting citizens who would not usually access the Internet and take advantage of the available information. E-engaging refers to consulting a wider audience to deepen contributions on policy issues. E-empowering refers to supporting active participation and facilitating bottom-up ideas to influence the administration agenda.

E-inclusion, on the other hand, refers to the active participation of individuals and communities in all dimensions of society through their access to ICT. Further, e-inclusion in the e-government context promotes

participation at all levels of government (Sahraoui 2007). The digital divide evaluates the gap between those who are empowered to participate, and those who are not (Kaplan 2005). E-inclusion is considered as a transcendental objective of e-government, which is to narrow the digital divide gap.

In this chapter, citizen engagement is broadly defined as citizen involvement in any organized activity to achieve a common objective (Zimmerman and Rappaport 1988). We propose the term as a continuum, spanning from individual action such as simply discussing policies with one's followers, to collective action, such as an activity within a Facebook group. Citizen engagement has been seen as a zero-sum game: citizens gain power and responsibility whenever government relinquishes it (Arnstein 1969). However, we argue that citizen engagement via Gov2.0 creates a win-win situation; citizen input provides the government with justifications at the end of the decision-making process (Aladalah et al. 2015a).

Citizen engagement should not be taken for granted. Gov2.0 face many challenges such as citizens' lack of interest in public affairs and the perception of "pseudoparticipation", where governments are going through the motions of listening, with little intention of following up (Detert and Burris 2016). Even though Gov2.0 makes it easier to reach more citizens, simply offering a platform for people to voice their ideas, issues and concerns does not ensure that they will use it (Burris 2016). In fact, several e-government researchers suggest that citizens are unlikely to use it unless the government explicitly states the kind of citizen participation they are seeking and then spell out what actions should be taken in response to it (Sandoval-Almazan and Gil-Garcia 2012). Building on this understanding of citizen engagement, we view citizen engagement as complementary, not an alternative, to representatives or expertise.

Citizens are sharing more of their personal lives on Facebook and Twitter and are more digitally connected; thus, they expect government agencies to be the same. Gov2.0, if properly managed, can encourage citizen engagement. These platforms can facilitate interaction far better than traditional methods. Nevertheless, Gov2.0, as any other network, needs to attract a sufficient number of users in order to be more valuable to its users, the so-called network effects (Choudary et al. 2016). "Network effects" refers to the positive impact that the number of users of a platform has on the value created for each user of the platform. Positive network effects are the main source of value in a platform. Citizens attract government agencies, and government agencies attract citizens; thus, the primary

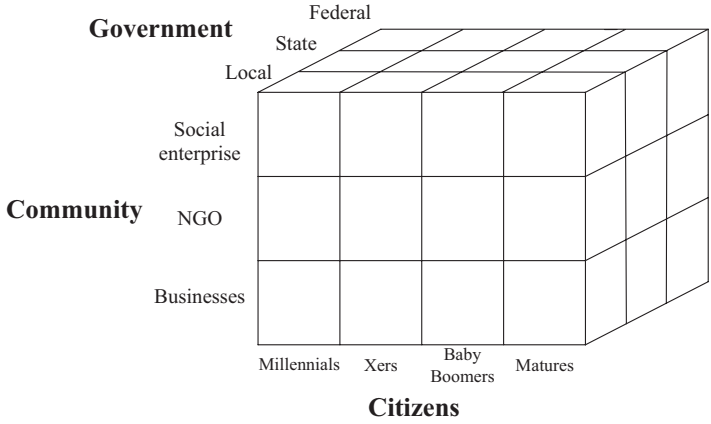

Fig. 10.1 Gov2.0 complexity cube

venue for interaction in which public value is created for participant shifts from being only internal on the government side to being a collection of external resources as depicted in the Gov2.0 complexity cube in Fig. 10.1 (i.e. citizens, community). Hence, there is a need for an integrated approach that involves citizens, allowing them to co-create public value, which is discussed in the following section.

10.3 Co-creation

Prahalad and Ramaswamy (2004) defined co-creation as the process in which consumers take an active role and co-create value together with the producers (Aladalah et al. 2014). The distinctive nature of co-creation has been mentioned and highlighted by Kohli and Grover (2008) among others, who argued that in many contexts, it is unclear who creates the value, and how the value is jointly created (i.e., co-created). Moreover, value co-creation initiatives usually result in failure (Sarker et al. 2012). Thus, given the challenges in public value co-creation via Gov2.0, an investigation of this phenomenon is necessary. It goes without saying that government agencies are far more complex, often involving multiple stakeholders (Rowley 2011), which can make co-creation even more challenging. Sarker et al. (2012) identified three types of co-creation: exchange, additive, and synergy. Exchange is about offering resources that the other party needs. Additive is about building on the

Table 10.1 A Typology of public value co-creation via Gov2.0

Co-creation type	*How it works*	*Examples*
Exchange	Offering resources that the other party needs	Government posts regular information about policy and regulation
Additive	Building on the contributions of the other party to develop value for both	Government posts open data that citizens can use to build apps
Synergy	Working collaboratively and using resources harmoniously	Government and citizen mutually solve common issues (i.e. crowdsourcing)

Source: Own elaboration

contributions of the other party to develop value for both. Synergy is about working collaboratively and using resources harmoniously, which is the highest level of co-creation. In synergy both parties can potentially create more value than if working separately. Researchers and practitioners interested in the synergy concept use a variety of terms, including strategic relationship (Grover and Kohli 2012) and positive emergent capabilities (Nevo and Wade 2010). The three types of co-creation are not mutually exclusive, but present a distinct pattern. Of these three types, synergy is the ultimate goal when co-creating, as suggested by earlier findings (Venkatesh and Bala 2012). Table 10.1 presents a typology of public value co-creation via Gov2.0.

Gov2.0 connectivity may be the next evolutionary stage of co-creation. Gov2.0 technologies are seen as enabling platforms for co-creation for two main reasons. First, combining the latest technological and behavioural/social advances into the co-creation process enhances existing methods by enabling simultaneous, media-rich and extremely interactive collaboration between governments and citizens. Second, Gov2.0 technologies herald open innovation initiatives (e.g. crowdsourcing) that build on a new mode of co-creation where governments can facilitate citizen empowerment and satisfaction (Aladalah et al. 2016a). Supporting the US federal government agencies in implementing the Open Government Initiative, a platform called Challenge.gov was built to bring new ideas to support major breakthroughs and help address social, science and technology challenges (White House 2010). It was based on the private sector's open innovation approach that had proven to be successful (Mergel and Desouza 2013).

Because crowdsourcing draws input from the collective communities, it has the potential to be a useful digital tool to supplement traditional citizen participation (Brabham 2009). And as mentioned previously, involving citizens in the process can lead to widely accepted outcomes by users (Burby 2003). The unlimited possibilities of Gov2.0 have become more visible, and as the boundaries between governments and citizens dissolve, citizens could use their creativity to co-create public value (Bryer and Zavattaro 2011). These platforms provide the freedom to experiment, and encourage citizens to iteratively create and share the action of creation with others. In this chapter, we explore how co-creation experiences via the Gov2.0 complexity cube evolve. We discuss which co-creation mode (i.e. exchange, additive and synergy) is dominant via the Gov2.0 complexity cube to develop theoretical and practical implications as well as directions for future research.

10.4 Public Value

Public value has been attracting growing interest among public practitioners and researchers around the globe since its introduction by Mark Moore in his seminal book *Creating Public Value* (Moore 1995). He proposed the public value strategic triangle with three components: substantively valuable for the public, legitimate and politically sustainable, and operationally and administratively feasible with available capabilities. The UK Cabinet Office has extended the concept of public value by applying it to the UK context (Kelly et al. 2002). They developed three key dimensions of public value: trust in government; services; and outcomes. *Trust* refers to the legitimacy and confidence levels in government. Services refer to the methods used to deliver public value, whilst outcomes refer to higher objectives. For example, police *services* deliver benefits for specific individuals, and at the same time help to ensure public safety and security *outcomes* for the wider society. This view dismisses the idea of aggregating individual preferences to represent public value as it clearly distinguishes between one's value, and public value. Thus, public value is delivered from governments to its citizens as opposed to individuals (Alford and O'Flynn 2009). Kelly et al. (2002) argued that the failure of any of the three dimensions (i.e. trust, services and outcomes) would demolish public value.

Stoker (2006) echoed the view of Kelly et al. (2002) and proposed that public value was more than the sum of individuals' preferences: it is

collectively created through citizen engagement. Citizens can precisely express the public value they desire (Alford and O'Flynn 2009). The UN report (2003) put forward that public value is embedded in the citizens' preference. This suggests that the public value concept can be co-created via citizen engagement. We defined public value as collectively expressed preferences by citizens, created through processes and outcomes of achieving trust and commitment (O'Flynn 2007). Despite the relevance of citizen engagement via Gov2.0 to co-create public value, our understanding is quite limited. One of the challenges of public value research has been the lack of clarity between its drivers, and outcomes, which make these concepts overlapping. Even though there are strong indications of the importance of citizen engagement to public value, there is no agreement about the nature of their relationship. *Does citizen engagement create public value? Is citizen engagement public value? Or is citizen engagement an effect of public value?* For example, O'Flynn (2007) among others argued that citizen engagement is a driver of public value. Benington (2009) on the other hand, claimed that citizen engagement is a dimension of public value. While a detailed discussion about public value is essential, it is beyond the scope of this chapter. This chapter complements the e-government literature by investigating the relationships between citizen engagement and public value.

Public value is more complex than private sector value because, although partially indirect, it serves all citizens. For some public services (e.g. fire brigade, police) citizens have no choice but to rely on the government. The complexity of public value is driven by many reasons such as the direct chain of command establishing the rules and regulations in accordance with political decisions (Peristeras et al. 2009). Furthermore, government agencies often operate in an obligatory situation where there is no exit (Lindgren and Jansson 2013). Other reasons for public value complexity include, but are not limited to, transparency and accountability, and the long-term vision (Ndou 2004). A growing body of literature called for a shift away from government-led to citizen-led models of public value (Benington 2009; Le Grand 2009). Therefore, we argue that engaging citizen via Gov2.0 could lead to changes, because it challenges the status quo. Gov2.0 provides the infrastructure to support greater citizen engagement to co-create public value. Thus, this chapter proposes that the Gov2.0 complexity cube could be a token of public value co-creation. In the following sections, we describe our Gov2.0 complexity cube, which allows us to explore co-creation experiences.

10.5 Gov2.0 Complexity Cube

According to Rapoport (1966), a system is comprised of interrelated entities connected by behaviour and includes a set of identifiable elements and their relations. As these relations become complex at a given time, this implies a certain complexity of the system at a later time. Government agencies are looking for solutions to their problems and interests; at the same time, citizens and other stakeholders are looking for better services and accountability tools, which produce continuous pressures for e-government requirements (Gil-Garcia and Martinez-Moyano 2007). Consequently, e-government is evolving toward more sophisticated and complex systems. Initially, e-government systems are shaped by governments' concerns. Ultimately, citizens, businesses and other stakeholders gain more control over what e-government should be, and what services they want. However, it is important to clarify that the demand side's (citizens' and other stakeholders') expectations may or may not have a direct effect on e-government functionality but will definitely have a more complex indirect influence (Reddick 2004).

According to Scholl (2008), one reason for e-government complexity is the related problems and the scope of the phenomenon itself, which goes beyond a single academic discipline. Previous e-government classifications have generally overlooked the complexity of Gov2.0 and the added communication layer. For example, all of them ignored the social complexity of the citizens and dealt with this aspect as a whole. There is no reference to several actors and their conduct but only to the overall practice of e-government. Furthermore, not many classifications considered the different levels of government (local, state and federal) and how their different powers and obligations might affect the e-government system. On the basis of this discussion of the literature, we developed a cube that consists of three dimensions: (1) citizen, (2) government and (3) community. This chapter takes a novel approach to conceptualize the relationships, and proposes a new classification that takes into account the range of possibilities for interactions and incorporates them into the Gov2.0 complexity cube as shown in Fig. 10.1.

As seen from Fig. 10.1, the multi-layered challenges of the current Gov2.0 need a complex way to manage these interactions and require stakeholders' participation. This chapter proposes the Gov2.0 complexity cube for understanding the range of possibilities for citizens' interactions and ultimately public value co-creation. The cube consists of three

important dimensions: the participants (type of citizens), the government (level of government) and the wider community. These three dimensions constitute a space in which any particular interaction is possible. For example, a two-dimensional view of this space is when only two parties are involved. However, in the case of Gov2.0, at least two parties will be involved: government agencies as suppliers, and citizens, businesses or other stakeholders as demanders.

The three-dimensional interaction is the holy grail of the Gov2.0 complexity cube, probably the most challenging to implement but most impactful if successful (Chang and Kannan 2008). This involves government agencies giving up power and control over the content and applications to deliver and co-create public value. Furthermore, the potential for superior, efficient, customized public value is enhanced.

The use of Gov2.0 to experiment with co-creation and to attain citizen input also falls into this category of multi-dimensional interaction. To date, there are not many government exemplars in this field; however, several reports lately suggest potential scenarios. For example:

- Banks file taxes for their customers by combing the government data with their customers' data internally to make the process more efficient and effective (Di Maio 2007).
- The beverage industry links inspection data with foodies' online reviews and recommendations to co-create and enhance value for the public (eC3 2007).
- Travel agents could combine their services with government immigration and health systems to provide "visa" services to their customers (Di Maio 2007).
- Healthcare information could be linked to patient feedback and cost comparisons (eC3 2007).

The possibilities are numerous, but it requires government agencies to provide information in a readable and accessible format and to trust and give authority to other stakeholders to create and provide public value. This reduces the overall cost of government operations. Although the use of third parties could offer a wider reach and more tailored services at lower costs, the issue of discrepancy in service quality for all stakeholders can be problematic. At the same time, the privacy and security concerns about citizen data in government control, whether it is transferred or shared amongst stakeholders, is also another area of concern. These issues

need special attention from the government, in order to safely guarantee privacy, security and legality of citizens' data. All these challenges show that there are many concerns that need to be addressed before the full utilization of the Gov2.0 complexity cube on a large scale. Kaplan and Haenlein (2010) stressed that any classification scheme for social media must consider applications that may be forthcoming. Thus, the Gov2.0 complexity cube provides a novel but parsimonious framework for classifying existing co-creation modes, and for identifying more possible combinations of the three dimensions (citizen, government and community) to potentially co-create public value (see Fig. 10.1).

10.5.1 Dimension 1: Citizens

The first dimension covers the social complexity of the participants. The recent proliferation of Gov2.0 applications and tools has been a game changer, enabling the active role of users, who proactively participate in the service design and delivery, in both the public and private sectors (Ferro and Molinari 2010). August et al. (2007) have suggested that individuals use social media in three ways: consuming, participating and producing. Consuming is about the individuals who only read, view or watch but never participate. Participating includes both user-to-user interaction and user-to-content interaction (e.g. ranking the content, posting comments). It does not include one's actual production. Producing involves the creation of one's personal content by writing or posting text, images, audio and video. Moreover, different uses are driven by different motivations: people consume the content for information and entertainment, participate for social interaction and sense of community, and produce their own content for self-expression and self-actualization (Shao 2009). We argue that co-creation via Gov2.0 offers different motivations for different types of citizens (e.g. millennials use it for self-expression, matures for sense of community etc.).

This chapter suggests that practitioners and scholars could use the Gov2.0 complexity cube as a guide when investigating Gov2.0. The Gen Xers can be exploited through the crowdsourcing of ideas and concepts, which leads to social innovation. The Millennials can be listened to and their opinions known, by using systematic collection of feedback from the "crowd". This leads to improving the design of content and services and, consequently enhances citizens' trust in their government. The Baby Boomers who are connected (to the Internet, not Gov2.0) can be offered

incentives to use Gov2.0. Finally, the digital divide can be reached by mobile Internet, which is more widely diffused. Furthermore, mobile government (m-government) can also help governments to find citizens where they are using GPS features, and keep them continuously updated. Also, to push them to socialize and interact more, involve them more in the public decision-making process, and exploit new ways of providing public services (e.g. through co-production with users). Mergel (2012b) has stressed the importance of classifying citizens based on their demographics as a success metric when measuring Gov2.0 performance. Table 10.2 presents citizens' different characteristics when participating via Gov2.0.

10.5.2 Dimension 2: Government

The second crucial dimension of the Gov2.0 complexity cube specifies who will serve the stakeholders amongst the different levels of government. The vast majority of government levels can be classified into: local

Table 10.2 Citizens' characteristics via Gov2.0

Dimension	*Millennials*	*Xers*	*Baby boomers*	*Matures*
Technology orientation	Digital natives	Assimilated	Acquired	Digital divide
Age	13–24	25–41	42–60	61–75
Interactive style	Participative	Entrepreneur	Team player	Individual
Involvement in decision-making	Collaborative	Efficient	Equal opportunity	Conservative
Typical activity	Create communities and social network of peers	Create, critique, and propose own views	Join, read, and use social networking sites	Lack of access and motivation
Perceived benefits	Relaxed	Unimpressed	Impressed	Respectful
Average percentage	Medium number of the population	Small number of the population	The remaining part of the Internet population	The rest of the unconnected population
Response to participation	Low interests to participate	Respond to government calls to participate	Do not respond to government calls to participate	Cannot respond to government calls to participate

Source: Own elaboration

Table 10.3 Government levels and responsibilities (adapted from AEC 2014)

Government level	*Responsibilities*
Federal government	Foreign affairs, social security, industrial relations, trade, immigration, currency, defence
State government	Justice, consumer affairs, health, education, forestry, public transport, main roads
Local government	Local road maintenance, garbage collection, building regulations and land subdivisions, public health and recreation facilities such as swimming pools

Source: Own elaboration

(municipality), state (regional) and federal (national). Table 10.3 presents the three levels and examples of their responsibilities.

The municipality is the first point of contact between the government, citizens and private sector, and is often the most used because it deals mainly with everyday tasks. Many scholars share the view that government is closer to citizens at the local level, and as a consequence, the degree of responsiveness and accountability needs to be greater in local governments (Hand and Ching 2011; Holden et al. 2003). Indeed, research on decentralization has identified that the state and local governments are more responsive to citizens' needs and theoretically more accountable to them (Thompson and Riccucci 1998; West 2004). Once government agencies began offering Gov2.0 at different levels (i.e., federal, state and local), and stakeholders (citizens, businesses and other governments) start realizing its usefulness (e.g. for transparency and accountability purposes), then they will began demanding more (Bertot et al. 2012; Gil-Garcia and Martinez-Moyano 2007). The fact that more agencies are providing Gov2.0 creates pressure on other governmental agencies to follow suit and become part of the e-government characterization (Gil-Garcia and Martinez-Moyano 2007).

10.5.3 Dimension 3: Community

The third important dimension of the Gov2.0 complexity cube identifies the community-based groups as supporters of the supply or as participants of the demand. This dimension includes businesses and NGOs as previous classifications, but the cube proposes social enterprise as a new concept to this classification. Social enterprise has emerged as a business-like contrast

Table 10.4 Social enterprise criteria (adapted from Borzaga and Defourny 2004)

Economic criteria	*Social criteria*
High degree of autonomy	Explicit aim to benefit the community
Continuous activity producing goods and/or services	Initiative launched by a group of citizens
Significant level of economic risk	Decision-making power not based on capital ownership, and participatory nature, which involves the persons affected by the activity
Minimum amount of paid work	Limited profit distribution

Source: Own elaboration

to the classic non-profit organization and has been around for a while, first appearing around 1990 in the USA and Western Europe. Defourny (2001) defined it as "a business with primarily social objectives whose surpluses are principally reinvested for that purpose in the business or in the community, rather than being driven by the need to maximise profit for shareholders and owners" (p.18). The social enterprise can be identified on the basis of economic and social criteria as depicted in Table 10.4. Borzaga and Defourny (2004) considered it as a bridge between the businesses (corporate) and NGO objectives.

Social enterprise was originally developed as a way of encouraging collaborative public and private enterprise. This allowed addressing a variety of social issues using social enterprise as a tool (Dart 2004). According to the UK Department of Trade and Industry (DTI) "social enterprises have the potential to play a far greater role in the delivery and reform of public services. Entrepreneurial behaviour combined with a continuing commitment to delivering public value, can lead to local innovation, greater choice, and higher quality of service for users" (DTI 2002, p. 24). Therefore, it is included as a part of the community dimension of the cube.

Previous research has largely focused on well-known models of information system research to explain individuals' attitude and behaviour when it comes to Gov2.0. The community dimension has received limited attention in research and practical implications. However, the concept of community needs to be addressed differently compared to the aforementioned. The concept is not used in a political sense, rather as a bundle of entities, which can share a degree of activeness and interest as a social

entity to enhance public value via Gov2.0. Kavanaugh et al. (2012) demonstrated that the role of community via Gov2.0 has changed with the unique opportunities to inform, and be informed by, citizens, elected officials and government service providers. In addition, Bonsón et al. (2012) called for more empirical research and the need to develop a set of methods and tools for evaluating the usage and impact of communities on Gov2.0.

Thus far, the dimensions were analysed independently. To identify interactions between the dimensions, we analysed whether certain combinations of perspectives were more likely to co-create public value than others. We examine the different levels of government (federal, state, local) as our starting point against the co-creation modes (exchange, addition, synergy) in the follow case study.

10.6 Case Study

10.6.1 Twitter

Few studies have argued that the government agencies' use of Twitter is only constrained to broadcasting information and connecting groups of people in critical situations (Yin et al. 2012). Nevertheless, growing numbers of people are using Twitter to interact with others and extended exchanges, although it was not designed primarily for such use. Lately, Twitter use has evolved from being just an online platform where users answered questions to a "new platform of sharing and connectivity" (Sarno 2009).

For example, the Victorian Government's Twitter policy states that the use of Twitter is to supplement, not compete with, their information channel and to better communicate with their citizens. Recently, Twitter has become one of Gov2.0 tools that increases hopes with regard to transparency, participation and public value enhancement (Aladalah et al. 2016a).

Even though the literature on the use of Twitter has increased, there is still a lack of studies on the use of Gov2.0 in general, and Twitter in particular, by governments for public value co-creation. Hence, this chapter aims to provide a snapshot of the use of Twitter as a co-creation tool by Australian government agencies, using content analysis and tweet categorization. In accordance with the main theme of this publication, our study,

in the context of citizen engagement via Gov2.0, analyses whether Twitter is used to co-create public value. Moreover, this study also aims to determine the purposes of Twitter use by different levels of government agencies. In this context, we examine and analyse Twitter use via the lens of the Gov2.0 complexity cube (Fig. 10.1).

From a study of the literature on Twitter, it can be argued that the literature on the government use of Twitter is still nascent. Also, most studies aim to answer the questions of *how* (i.e. process) and *what* (i.e. results) Twitter is used by both in the government-citizen context. Further, many studies usually focus on the use of Twitter at the local government level. Thus, there is a need for studies that investigate the *why* (i.e. purpose) of different levels of government agencies' use of Twitter. Based on these observations, we focus on an empirical case study that aims to investigate whether Twitter provides a means for public value co-creation. In the next sub-section, we provide a brief description and discussion of our adopted methodology.

10.6.2 Methods

Australia has a federal system with three tiers of government: the first level is the national government based in Canberra; the second is the state level comprising six states each with its own state parliament and two mainland territories; and the third level is the local governments (councils). In order to determine whether Australian government agencies use Twitter to co-create public value, the accepted method of tweet content analysis and categorization was employed (Golbeck et al. 2010; Honeycutt and Herring 2009; Java et al. 2007). Because the three types of co-creation (Table 10.1) have been discussed only conceptually in relation to Web2.0 tools (e.g. Criado et al. 2013), it was necessary to review the existing literature to identify potential characteristics for how each type could be represented on Twitter. Table 10.5 presents the tweet categories with tweet samples framing each respective category.

Once the items for the proposed classification scheme have been derived from the literature, it was revised based on an initial analysis of a sample of 100 tweets. Multiple iterations by two coders were conducted on the categories listed to refine and adjust in order to achieve clarity and consistency. Each tweet was grouped under one or more categories. Therefore, the tweets were coded and analysed in terms of their content.

When developing the categories, earlier studies that had adopted the method of tweet categorization were used (Golbeck et al. 2010; Honeycutt and Herring 2009; Java et al. 2007). Moreover, when developing categories, tweets were subjected to a random preliminary examination.

To create a sample, the researchers randomly selected 10 official accounts of government agencies at each government level (local, state and national) from the Australia.gov.au website, .which is the most updated list of government sector social media accounts including Twitter. Once the 30 accounts had been chosen, using a random number generator, the researchers randomly selected 30 of their tweets from the previous six months (February–July 2016). For each account, the total number of tweets made during the six months was tabulated; the results varied from a low of 60 to a high of 3281. A total of 900 tweets from the selected Australian government official accounts between February 1, 2016 and July 30, 2016 were grouped under the identified categories (Table 10.5). Additional data, such as the number of people following the account and the number of tweets, were recorded to help provide additional information on government agencies' Twitter usage.

Table 10.5 Tweet categories and their descriptions

Tweet categories	*Descriptions*
Exchange	Under this category, we find tweets of the government agency that include exchange of information, news or events organized by the government agency. For example: "Hi @ it's @VicRoads property: we have sought meeting with them next week to discuss cleaning & maintenance" (May 12, 2016)
Additive	Under this category, we find tweets of the government agency that include additive effects. For example: "Hi @ Pity as we have dog *xxx* bag dispensers there. Will see if rangers can increase patrols & speak to people doing wrong thing" (June 16, 2016).
Synergy	Under this category, we find tweets of the government agency that include synergy effects. For example: "@Engagement collaborator. #publicengagement # #digitalengagement" (June 28, 2016).

Source: Own elaboration

10.7 Analysis of Results

The 30 randomly sampled government agencies represented a broad range of government departments including the Department of Education and Training and the Department of Finance, Victoria Police, Department of Health, the City of Melbourne and Monash City Council, to name a few. At the time of coding, the local government agencies had an average of 21,421 people following their accounts [standard deviation (SD) = 55,383.6], which ranged from a minimum of 1738 followers (i.e. followers are people who receive other people's Twitter updates) to a high of 179,000 followers. The state government agencies had an average of 32,353 people following their accounts [standard deviation (SD) = 46,636.7], which ranged from a minimum of 1739 followers to a high of 152,000 followers. The national government agencies had an average of 11,921 people following their accounts [standard deviation (SD) = 10,665.8], which ranged from a minimum of (1763) followers to a high of (33,700) followers. The results show that the state government agencies had the highest average (32,353) and local government had the highest single (179,000) number of followers. This is in line with previous research where the local governments usually attracted the largest number of followers (Hand and Ching 2011).

The local government agencies followed an average of 815 other Twitter users (SD = 531.6), which ranged from following 340 other Twitter users to a high of following 2020. The state government agencies followed an average of 1301 other Twitter users (SD = 1837.2), which ranged from following 160 other Twitter users to a high of following 5837. The national government agencies followed an average of 907 other Twitter users (SD = 1623.9), which ranged from following 29 other Twitter users to a high of following 5290. Of the 90 accounts, the profile information about the account had a link to the agency's website most of the time (84.6%). The first adopter from the list was from the state government level dating back to October, 2008. Tables 10.6, 10.7 and 10.8 illustrate the general information about the three levels of government Twitter accounts analysed.

From Fig. 10.2, we observe that during the period between February 1, 2016 and July 30, 2016, the national government agencies used Twitter mostly for none of the three types of co-creation with a total of 126 tweets (42%). Thus, nearly half of the tweets sent by the national government agencies during the study period was not related to co-creation. In the study period, out of the three categories, "additive" mode tweets ranked

Table 10.6 National government in Australia and Twitter

	Account	*Year joined*	*Tweets (n)*	*Follower (n)*	*Following (n)*
1	@AFPmedia	Jun-2013	662	10,800	132
2	@Eduspokesperson	Aug-2011	3092	11,900	5290
3	@AusGovFinance	May-2013	181	2895	29
4	@healthgovau	Mar-2010	5295	33,700	31
5	@DIBPAustralia	Dec-2012	4423	11,900	117
6	@CommsAu	Jul-2010	11,800	11,300	1525
7	@EmploymentGovAU	Sep-2012	944	1763	248
8	@envirogov	Sep-2010	682	4335	418
9	@DVAAus	Sep-2010	3408	3422	111
10	@business_gov_au	Apr-2009	5888	27,200	1177

Source: Own elaboration

Table 10.7 Victoria state government in Australia and Twitter

	Account	*Year joined*	*Tweets (n)*	*Follower (n)*	*Following (n)*
1	@CultureVictoria	Nov-10	1345	1739	372
2	@businessvic	Aug-09	8503	12,800	5837
3	@justice_vic	Feb-09	4194	7577	253
4	@ParksVictoria	Nov-10	3587	10,700	488
5	@VicRoads	Dec-08	52,500	70,000	160
6	@ZoosVictoria	Mar-09	7548	14,400	1359
7	@VicHealth	Mar-09	3903	16,000	919
8	@AmbulanceVic	Feb-09	3085	35,000	176
9	@InvestVictoria	May-09	1961	3315	3158
10	@VictoriaPolice	Oct-08	31,300	152,000	293

Source: Own elaboration

first, with a total of 93 tweets (31%). Thus, almost one out of each three tweets was related to building on the contributions of the other party to develop value for both. Ranked second, the "exchange" mode category counted for (19%) with 57 tweets. Of all the tweets sent by the national government agencies, only 24 (8%) are in the category of "synergy" mode. This significant category regarding the purpose of this study ranked last.

From Fig. 10.3 regarding Victorian state government agencies, we observe that 99 tweets (33%) from the state government agencies were used for purposes other than co-creation. During the study period, a total of 85 tweets (28%) in the "additive" category were sent. Therefore, this

Table 10.8 Victoria local government in Australia and Twitter

	Account	*Year joined*	*Tweets (n)*	*Follower (n)*	*Following (n)*
1	@Boroondara	Feb-09	3322	4444	990
2	@cityportphillip	Mar-09	6603	6238	553
3	@MaribyrnongCC	Apr-09	3950	4347	550
4	@BaysideCouncil	Apr-09	1557	4582	2020
5	@MonashCouncil	Jul-09	3181	4388	1386
6	@kingstoncc	Sep-09	1345	3351	340
7	@StonningtonNews	Nov-10	879	1831	719
8	@cityofmelbourne	Jan-11	4735	179,000	816
9	@HobsonsBayCC	Nov-11	6684	1738	383
10	@YarraCouncil	May-12	4148	4295	397

Source: Own elaboration

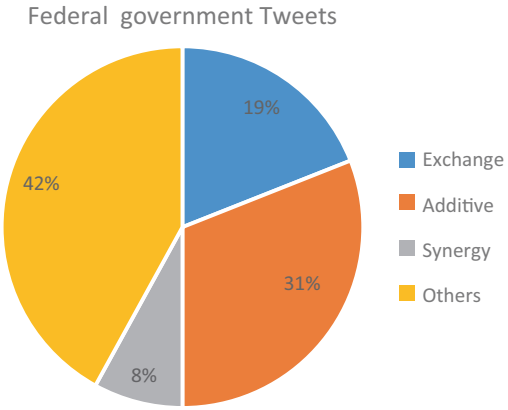

Fig. 10.2 Tweet contents of National government agencies in Australia. Source: (February 1, 2016–July 30, 2016)

category of "additive" tweets ranked first. This is similar to the national government agencies. The second co-creation type was "exchange" with 67 tweets (22%). Again, this was similar to the national level agencies. However, the important category of "synergy", which ranked last, counted for only 49 tweets (16%). The number of tweets in this category for the state government agencies has doubled compared to the national government agencies. This suggests that the state governments are utilizing the synergetic integration far better than national government agencies.

Finally, from Fig. 10.4 regarding Victorian local government agencies, the numbers were less encouraging, although we expected the opposite.

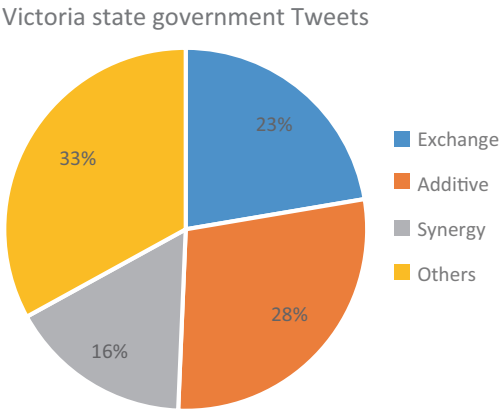

Fig. 10.3 Tweet contents of Victoria state government agencies in Australia. Source: (January 1, 2012–June 30, 2016)

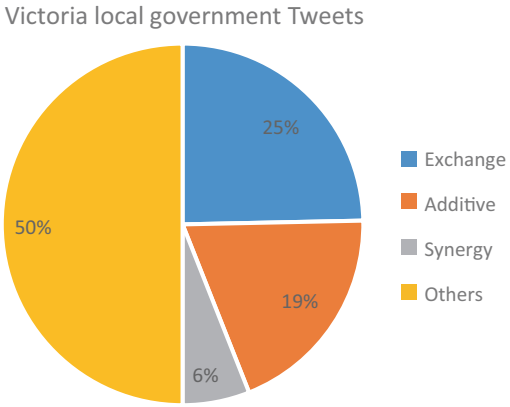

Fig. 10.4 Tweet contents of Victoria local government agencies in Australia. Source: (January 1, 2012–June 30, 2016)

We observed that 150 tweets (50%) from the local government agencies were used for purposes other than co-creation, i.e. half of all the tweets were not related to public value. A total of 74 tweets (25%) in the "exchange" category were sent. So, this category of "exchange" ranked first. This was in contrast to the previous two levels of government (national and state). It is justifiable as usually local governments use this category for exchange of information, news or events. The second co-creation type was additive with 58 tweets (19%). Again, similar to the national and state level agencies, the category of "synergy" ranked last with only 18 tweets (6%). The number of tweets in this category for the local government agencies is

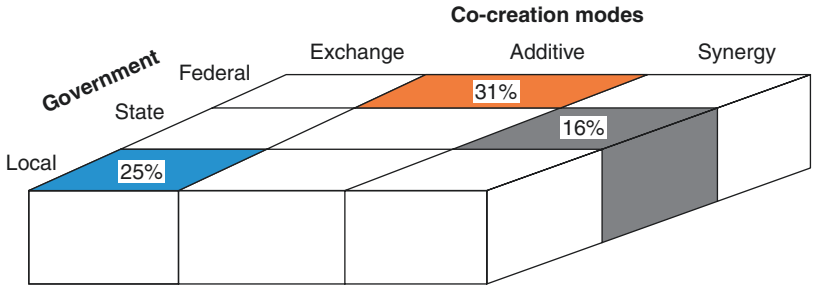

Fig. 10.5 Gov2.0 complexity cube co-creation mode results

the lowest compared to the national and state government agencies. This suggests that the local governments need to examine their co-creation approaches and aim towards synergetic integration.

Based on the analysis of the results, Fig. 10.5 shows *why* the different levels of government used Gov2.0 to co-create public value. The results presented above can now be linked to the Gov2.0 complexity cube with empirical data.

Figure 10.5 shows that the Gov2.0 complexity cube block containing the most "exchange" mode was the local government block with 25% of all results found in this block. The second block at the centre of the cube is the "additive" mode, which appears to be dominant in federal government with 31% of all interaction. This shows that there are more possibilities for participants to build on the contribution of others to enhance public value for both. Finally, and perhaps more importantly, the "synergy" mode scored only 16% in the state level block and even below 10% in the other two levels of government (federal, and local). One can thus safely conclude that the synergy mode of co-creation is currently underutilized, and this is not particularly due to lack of rewarding capacities. The application of the co-creation modes highlighted that the Gov2.0 complexity cube was most useful for mapping and identifying possible interactions between the cube dimensions.

10.8 Discussion and Future Work

The objective of this chapter is to understand how Gov2.0 facilitates citizen engagement to co-create public value using the theoretical lens of the proposed Gov2.0 complexity cube. We conducted an extensive literature

review of various concepts (including citizen engagement, co-creation and public value) and synthesized it with prior e-government research to develop the Gov2.0 complexity cube as an ecosystem. The complexity of public value co-creation requires a multi-dimensional approach. The proposed framework is intended to contribute to a better understanding of the complex citizen-government relationship. The cube encompasses all three dimensions—the type of citizens, the level of government and the wider community—and treats them separately. Using the case study, we have demonstrated how the Gov2.0 cube can be used to trace co-creation processes empirically. We tested the government dimension of the Gov2.0 complexity cube in a content analysis of tweets and demonstrated how the co-creation process could be used to map the dominance of certain modes and the neglect of others by different levels of governments.

To the best of our knowledge, this chapter is the first attempt that focuses exclusively on the conceptualization of co-creation modes via Gov2.0. Although the three dimensions can be measured separately, it is more useful if they are discussed together. This requires a multi-dimensional presentation of the results. Further, as mentioned earlier, the Gov2.0 complexity cube is not a yardstick in itself but can be used to empirically examine public value co-creation in general. As we have argued, it is anticipated that the proposed Gov2.0 complexity cube will benefit the e-government field by providing insights into citizen engagement via Gov2.0 to co-create public value. Important contributions of the chapter include the proposed Gov2.0 complexity cube, drawing attention to public value co-creation as a new approach to studying e-government, and theorizing citizen engagement via Gov2.0. This chapter contributes to both theory and practice. From a theoretical perspective, it introduces a new theoretical lens: co-creation. From a practical viewpoint, the Gov2.0 complexity cube can be considered by government agencies when utilizing Gov2.0 for engagement purposes.

Due to little empirical research in this field, more studies are needed in order to understand the relationship between citizens and governments via Gov2.0. The Gov2.0 complexity cube can serve as a theoretical foundation for examining citizen engagement via Gov2.0. It is anticipated that the validation of the Gov2.0 complexity cube will provide evidence to help governments and policymakers to enhance public value via Gov2.0 to meet citizens' expectation, which should lead to higher levels of engagement. With this theoretical introduction to public value co-creation via Gov2.0, there are avenues for future research.

First, we have identified citizen engagement as an important concept that enables public value co-creation between citizens and governments. Investigating other possible concepts such as citizen satisfaction and empowerment in the context of Gov2.0 are also critical research directions. Second, we have proposed the Gov2.0 complexity cube and tested the co-creation types only on one dimension of the cube—the government levels. Future research could empirically validate the other two dimensions, i.e. community and citizens, to reveal other types of co-creation. Further, we used a relatively reduced sample size and we collected data from Twitter only; more studies could address larger sample sizes and other platforms such as Facebook. This would provide a holistic view of Gov2.0 and offer more insights into the phenomenon. As these Gov2.0 platforms appear quickly in government agencies, it would be meaningful to investigate their similarities and differences to reach conclusions. Qualitative methods such as interviews with government agency managers and citizens could provide further insights into related issues. This would provide a better understanding of their interactions via Gov2.0 and what they expect from government agencies.

References

Aladalah, M., Cheung, Y., & Lee, V. (2014). *Towards sustainability of Emarket places*. Proceedings of the 18th Pacific Asia Conference on Information Systems, (PACIS 2014, 24–28 June), Chengdu, China.

Aladalah, M., Cheung, Y., & Lee, V. (2015a). *GOV2.0: A service science perspective*. Proceedings of the 19th Pacific Asia Conference on Information Systems, (PACIS 2015, 5–9 July), Singapore.

Aladalah, M., Cheung, Y., & Lee, V. (2015b). Enabling citizen participation in Gov 2.0: An empowerment perspective. *Electronic Journal of e-Government, 13*(2), 77–93.

Aladalah M., Cheung, Y., & Lee, V. (2016a). *Delivering public value: Synergistic integration via Gov 2.0*. Paper presented at the 49th Hawaii International Conference System Sciences (HICSS 2016, January 5–8), Hawaii.

Aladalah, M., Cheung, Y., & Lee, V. (2016b). *Winning digital citizens: A model and instrument*. Paper presented at the 20th Pacific Asia Conference on Information Systems, (PACIS 2016, June 27–July 1), Chiayi, Taiwan.

Alford, J., & O'Flynn, J. (2009). Making sense of public value: Concepts, critiques and emergent meanings. *International Journal of Public Administration, 32*(3–4), 171–191.

Andersen, K. N., Henriksen, H. Z., Medaglia, R., Danziger, J. N., Sannarnes, M. K., & Enemærke, M. (2010). Fads and facts of e-government: A review of impacts of egovernment (2003–2009). *International Journal of Public Administration, 33*(11), 564–579.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners, 35*(4), 216–224.

August, K., Kern, T., & Moran, E. (2007). *Are you ready for the future of media? Highlights from Deloitte's 2007 state of the media democracy survey*. Retrieved July 15, 2016, from http://www.org.id.tue.nl/IFIP-TC14/documents/DELOITTE-report-2007.pdf

Australian Bureau of Statistics (ABS). (2016). *Household use of information technology, Australia, 2014–15*. Retrieved July 15, 2016, from http://www.abs.gov.au/ausstats/abs@.nsf/mf/8146.0

Australian Electoral Commission AEC. (2014). *Three levels of government*. Retrieved July 15, 2016, from http://www.aec.gov.au/indigenous/files/iepp-factsheet-three-levels.pdf

Bannister, F., & Connolly, R. (2014). ICT, public values and transformative government: A framework and programme for research. *Government Information Quarterly, 31*(1), 119–128.

Benington, J. (2009). Creating the public in order to create public value? *International Journal of Public Administration, 32*(3–4), 232–249.

Bertot, J. C., Jaeger, P. T., & Grimes, J. M. (2012). Promoting transparency and accountability through ICTs, social media, and collaborative e-government. *Transforming Government: People, Process and Policy, 6*(1), 78–91.

Bonsón, E., Torres, L., Royo, S., & Flores, F. (2012). Local e-government 2.0: Social media and corporate transparency in municipalities. *Government Information Quarterly, 29*(2), 123–132.

Borzaga, C., & Defourny, J. (2004). *The emergence of social enterprise* (Vol. 4). London and New York: Routledge.

Bovaird, T. (2007). Beyond engagement and participation: User and community coproduction of public services. *Public Administration Review, 67*(5), 846–860.

Brabham, D. C. (2009). Crowdsourcing the public participation process for planning projects. *Planning Theory, 8*(3), 242–262.

Bryer, T. A., & Zavattaro, S. M. (2011). Social media and public administration. *Administrative Theory & Praxis, 33*(3), 325–340.

Burby, R. J. (2003). Making plans that matter: Citizen involvement and government action. *Journal of the American Planning Association, 69*(1), 33–49.

Burris, E. R. (2016). Can your employees really speak freely? *Harvard Business Review, 94*(1), 80–87.

eC3. (2007). *Government in the age of YouTube: The implications of internet social networks to government*. eC3 Symposium White Paper, presented at the 2007 eC3 Annual Conference, December 3–5, Austin, Texas.

Ceccagnoli, M., Forman, C., Huang, P., & Wu, D. J. (2012). Co-creation of value in a platform ecosystem: The case of enterprise software. *MIS Quarterly, 36*(1), 263–290.

Center for Technology in Government. (2009). Exploratory social media project. Retrieved August 4, 2017, from https://pdfs.semanticscholar.org/78b0/3369cd084a638a640710e0f4e350abd6de3b.pdf

Chang, A.-M., & Kannan, P. K. (2008). *Leveraging Web 2.0 in government.* E-Government/Technology Series, IBM Center for the Business of Government, Washington, DC.

Choudary, S. P., Van Alstyne, M. W., & Parker, G. G. (2016). *Platform revolution: How networked markets are transforming the economy—And how to make them work for you.* New York: WW Norton & Company.

Criado, J. I., Sandoval-Almazan, R., & Gil-Garcia, J. R. (2013). Government innovation through social media. *Government Information Quarterly, 30*(4), 319–326.

Dart, R. (2004). The legitimacy of social enterprise. *Nonprofit Management and Leadership, 14*(4), 411–424.

Defourny, J. (2001). *From third sector to social enterprise.* The emergence of social enterprise.

Department for Trade and Industry (DTI). (2002). *Social enterprise: A strategy for success.* London: Department for Trade and Industry.

Detert, J. R., & Burris, E. R. (2016). Can your employees really speak freely? *Harvard Business Review, 94*(1–2), 80–87.

Di Maio, A. (2007). *Gartner publication. What does Web 2.0 mean to government?* Retrieved October 15, 2016, from https://www.gartnercom/doc/501956/does-web-mean-government

Ferro, E., & Molinari, F. (2010). Making sense of Gov 2.0 strategies: "No citizens, no party". *JeDEM-eJournal of eDemocracy and Open Government, 2*(1), 56–68.

Gil-Garcia, J. R., & Martinez-Moyano, I. J. (2007). Understanding the evolution of egovernment: The influence of systems of rules on public sector dynamics. *Government Information Quarterly, 24*(2), 266–290.

Golbeck, J., Grimes, J. M., & Rogers, A. (2010). Twitter use by the US Congress. *Journal of the American Society for Information Science and Technology, 61*(8), 1612–1621.

Grover, V., & Kohli, R. (2012). Cocreating IT value: New capabilities and metrics for multifirm environments. *MIS Quarterly, 36*(1), 225–232.

Hand, L. C., & Ching, B. D. (2011). "You have one friend request": An exploration of power and citizen engagement in local governments' use of social media. *Administrative Theory & Praxis, 33*(3), 362–382.

Holden, S. H., Norris, D. F., & Fletcher, P. D. (2003). Electronic government at the local level: Progress to date and future issues. *Public Performance & Management Review, 26*, 325–344.

Honeycutt, C., & Herring, S. C. (2009). *Beyond microblogging: Conversation and collaboration via Twitter*. Paper presented at the 42th Hawaii International Conference System Sciences (HICSS, January), Hawaii.

Islam, M. S. (2008). Towards a sustainable e-Participation implementation model. *European Journal of ePractice, 5*(10), 1–12.

Jaeger, P. T. (2003). The endless wire: E-government as global phenomenon. *Government Information Quarterly, 20*(4), 323–331.

Java, A., Song, X., Finin, T., & Tseng, B. (2007). Why we twitter: Understanding microblogging usage and communities. In *Proceedings of the 9th WebKDD and 1st SNA-KDD 2007 workshop on Web mining and social network analysis* (pp. 56–65).

Kaplan, D. (2005). *e-Inclusion: New challenges and policy recommendations*. Brussels: eEurope Advisory Group.

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons, 53*(1), 59–68.

Kavanaugh, A. L., Fox, E. A., Sheetz, S. D., Yang, S., Li, L. T., Shoemaker, D. J., Natsev, A., & Xie, L. (2012). Social media use by government: From the routine to the critical. *Government Information Quarterly, 29*(4), 480–491.

Kelly, G., Mulgan, G., & Muers, S. (2002). *Creating public value: An analytical framework for public service reform*. London: Strategy Unit, Cabinet Office.

Kohli, R., & Grover, V. (2008). Business value of IT: An essay on expanding research directions to keep up with the times. *Journal of the Association for Information Systems, 9*(1), 23.

Le Grand, J. (2009). *The other invisible hand: Delivering public services through choice and competition*. Princeton, NJ: Princeton University Press.

Linders, D. (2012). From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Government Information Quarterly, 29*(4), 446–454.

Lindgren, I., & Jansson, G. (2013). Electronic services in the public sector: A conceptual framework. *Government Information Quarterly, 30*(2), 163–172.

Macintosh, A. (2004). *Characterizing e-participation in policy-making*. Paper presented at the 37th Annual Hawaii International Conference the System Sciences, 2004.

Mergel, I. (2012a). *Social media in the public sector: A guide to participation, collaboration and transparency in the networked world*. San Francisco, CA: John Wiley & Sons.

Mergel, I. (2012b). Measuring the impact of social media use in the public sector. *Public Service, Governance and Web 2.0 Technologies: Future Trends in Social Media*, 48.

Mergel, I., & Desouza, K. C. (2013). Implementing open innovation in the public sector: The case of Challenge. gov. *Public Administration Review, 73*(6), 882–890.

Moore, M. H. (1995). *Creating public value: Strategic management in government*. Cambridge, MA: Harvard University Press.

Nam, T. (2012). Suggesting frameworks of citizen-sourcing via Government 2.0. *Government Information Quarterly, 29*(1), 12–20.

Ndou, V. (2004). E-government for developing countries: Opportunities and challenges. *The Electronic Journal of Information Systems in Developing Countries, 18*, 1–24.

Nevo, S., & Wade, M. R. (2010). The formation and value of it-enabled resources: Antecedents and consequences. *MIS Quarterly, 34*(1), 10.

O'Flynn, J. (2007). From new public management to public value: Paradigmatic change and managerial implications. *Australian Journal of Public Administration, 66*(3), 353–366.

O'Reilly, T. (2011). Government as a Platform. *Innovations, 6*(1), 13–40.

OECD. (2014). *The organisation for economic cooperation and development. Citizens as partners*. Retrieved July 15, 2016, from http://www.ecnl.org/dindocuments/214_OECD_Engaging%20Citizens%20in%20Policy-Making.pdf

Peristeras, V., Mentzas, G., Tarabanis, K. A., & Abecker, A. (2009). Transforming E-government and E-participation through IT. *Intelligent Systems, IEEE, 24*(5), 14–19.

Prahalad, C. K., & Ramaswamy, V. (2004). Co-creating unique value with customers. *Strategy & Leadership, 32*(3), 4–9.

Rapoport, A. (1966). Mathematical aspects of general systems analysis. *General Systems, 11*(3), 1–28.

Reddick, C. G. (2004). A two-stage model of e-government growth: Theories and empirical evidence for US cities. *Government Information Quarterly, 21*(1), 51–64.

Rowley, J. (2011). e-Government stakeholders—Who are they and what do they want? *International Journal of Information Management, 31*(1), 53–62.

Sahraoui, S. (2007). E-inclusion as a further stage of e-government?. *Transforming. Government: People, Process and Policy, 1*(1), 44–58.

Sandoval-Almazan, R., & Gil-Garcia, J. R. (2012). Are government internet portals evolving towards more interaction, participation, and collaboration? Revisiting the rhetoric of e-government among municipalities. *Government Information Quarterly, 29*, S72–S81.

Sarker, S., Sarker, S., Sahaym, A., & Bjørn-Andersen, N. (2012). Exploring value co-creation in relationships between an ERP vendor and its partners: A revelatory case study. *MIS Quarterly, 36*(1), 317–338.

Sarno, D. (2009). Twitter creator Jack Dorsey illuminates the site's founding document. Part I. *Los Angeles Times*, 18.

Scholl, H. J. (2008). Discipline or interdisciplinary study domain? Challenges and promises in electronic government research. In *Digital government* (pp. 21–41). Boston, MA: Springer.

Sensis. (2016). *Social media report 2016. How Australian people and businesses are using social media*. Retrieved July 15, 2016, from https://www.sensis.com.au/assets/PDFdirectory/Sensis_Social_Media_Report_2016.PDF

Shao, G. (2009). Understanding the appeal of user-generated media: A uses and gratification perspective. *Internet Research, 19*(1), 7–25.

Statista. (2016). *Statistics and facts about social networks*. Retrieved July 15, 2016, from http://www.statista.com/topics/1164/social-networks/

Stoker, G. (2006). Public value management a new narrative for networked governance? *The American Review of Public Administration, 36*(1), 41–57.

Thompson, F. J., & Riccucci, N. M. (1998). Reinventing government. *Annual Review of Political Science, 1*(1), 231–257.

UK Cabinet Office. (2002). In the service of democracy – A consultation paper on a policy for electronic government.

United Nations. (2003). *World public sector report 2003: E-Government at the crossroads*. Retrieved July 15, 2016, from http://unpan1.un.org/intradoc/groups/public/documents/un/unpan012733.pdf

Venkatesh, V., & Bala, H. (2012). Adoption and impacts of interorganizational business process standards: Role of partnering synergy. *Information Systems Research, 23*(4), 1131–1157.

West, D. M. (2004). E-Government and the Transformation of service delivery and citizen attitudes. *Public Administration Review, 64*(1), 15–27.

White House. (2010). *Open government initiative*. Challenge.gov. Retrieved July 15, 2016, from https://www.whitehouse.gov/open/innovations/Challenge

World Bank. (2014). *Strategic framework for mainstreaming citizen engagement in World Bank group operations*. Retrieved July 15, 2016, from https://consultations.worldbank.org/Data/hub/files/consultation-template/engaging-citizens-improved-resultsopenconsultationtemplate/materials/finalstrategicframeworkforce.pdf

Yin, J., Lampert, A., Cameron, M., Robinson, B., & Power, R. (2012). Using social media to enhance emergency situation awareness. *IEEE Intelligent Systems, 27*(6), 52–59.

Zimmerman, M. A., & Rappaport, J. (1988). Citizen participation, perceived control, and psychological empowerment. *American Journal of Community Psychology, 16*(5), 725–750.

Mohammed Aladalah is a Ph.D. candidate in Information Systems at the Faculty of Information Technology, Clayton, Monash University, Melbourne, Australia. His research interests include e-Government, Citizen-governmental collaboration and co-creation, citizen participation and empowerment, and social media. After completing his B.Sc. degree in 2001, he worked as a public servant for nearly a decade. Prior to commencing his Ph.D., he completed a master's degree in Business Information Systems with first class honours, at Monash University.

Yen Cheung is a Senior Lecturer in the Faculty of Information Technology at Monash University. She started her academic career at the Warwick Manufacturing Group, (WMG) University of Warwick, teaching and supervising projects in the areas of IT and Artificial Intelligence (AI) for manufacture. She has supervised to completion over 24 M.Sc. dissertations at the University of Warwick. At Monash, Yen was involved in designing and developing subjects such as Management Information Systems, Database Systems, Systems Analysis and Design, Intelligent Decision Support Systems, Business Process Modelling, Simulation and Design, and Business Information Systems and Processes.

Vincent C. S. Lee is currently Associate Professor at Clayton School of IT, Monash University, Australia. He has published 61 peer-reviewed international (high impact factor SCI and SSCI) journal articles and 136 papers in peer-reviewed international conference proceedings. Also, he has been awarded 15 internationally competitive research grants in signal processing, decision support systems, and financial engineering research projects. Lee's current research interests are multidisciplinary spreading across signal processing; adaptive knowledge representation and information engineering; data, text, and graph mining for knowledge discovery; decision theory; information system research based on a design science paradigm; and Neuro-financial engineering.

Sultan Alamri received his Bachelor degree in Computer Science from King Khalid University, Saudi Arabia in 2007, and his Master degree in Information Technology from the School of Engineering & Mathematical Sciences, La Trobe University, Australia in 2010. Also, in 2014, he received his Ph.D. from Clayton School of Information Technology at Monash University, Australia. He is currently an assistant professor with the College of Computing and Informatics, SEU, Saudi Arabia. His research interests include moving objects databases, query processing and spatial databases.

CHAPTER 11

Learning from Opening Data in the Context of E-Governance: Finland, with Special Reference to Government Location Data

Pertti Ahonen

11.1 Introduction

In this article "e-governance" refers to institutional arrangements and activities within the bounds of these arrangements, such as analyzing, planning, deciding, organizing, implementing, managing, controlling, communicating, cooperating, and collaborating with the mediation of information and communication technologies (ICTs) (Milakovich 2012). The actors may be comprised of public governments, supra- and multi-national organizations, businesses, non-profit private organizations, and individual citizens, clients, or customers. It is possible to subdivide e-governance further, for instance, into e-government, e-democracy, e-business, e-commerce, e-management, and so on, and into components in which priority lies with individuals, institutional sectors, institutional structures, data, or decision-making (Veljković et al. 2014).

The purpose of this chapter is to adopt and modify conceptual elements to construct a framework to examine e-governance and its change, to try

P. Ahonen (✉)
Faculty of the Social Sciences, University of Helsinki, Helsinki, Finland

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_11

this framework out in a one-country case study on the opening of government location data, and draw conclusions from the results. The research purpose is general, whereas the empirical focus is delimited in order to examine actual actions by actual actors and the results of these actions, rather than generalities or official plans. The ambiguity of e-governance notions became evident during the research process. For instance, in the Finnish language and in this chapter, the empirical subject matter examined is comprised of *paikkatieto* or literally "location data" instead of "spatial data" or "geodata", for instance.

In order to be open, data must be primary, complete, timely, accessible, capable of machine processing, offered without discrimination towards the users, unbound to any proprietary data format, available under an open license, and accompanied with possibilities to review the depth and extent of the openness (Kitchin 2014, 49–66; OpenGovData 2016). More specific requirements have been outlined for "open data ecosystems" with "infomediaries" that process the opened data, the formats for data packaging, and the availability of source code in open data repositories (Zuiderwijk et al. 2014). "Open data" may extend towards "open information" and "open knowledge" by means of linked data accessible by means of semantic queries concerning the data contents (Berners-Lee 2007; MF 2015a, b).

Despite appearances, the scope of e-governance in the open data domain is often confined to aspects of e-government only. This is also true of widespread global indexes of open data performance. Therefore Finland's comparatively good record (see the OUR open data index in OECD 2015, 201–203; GODI 2016; ODB 2016) says as little about actual open data performance in this country as it does in other countries.

Systematic generation of location data started in Finland during the period that Finland was part of Sweden, whose government launched systematic land surveying in the seventeenth century. After Finland was separated from Sweden in 1809, a national land survey administration was established in the autonomous Finnish grand duchy of the Russian empire. The present-day Finnish government agency, the National Land Survey, and its predecessor agencies since 1809 have been situated in the administration sector of a specific ministry or equivalent organization, meaning today the Ministry of Agriculture and Forestry.

With global influences and national interpretations interacting, opening data in Finland has not been without contradictions. Instead of an

e-governance emphasis upon opening data irrespective of ownership, the e-government emphasis has predominated. The priorities have been on the unilateral opening of government data for domestic and international users motivated by generating societal benefits. However, emulation of international models rather than ideology (see, e.g., Bates 2014) has been the driver of developments in the Finnish case.

Systematic Finnish e-government policies of opening location data started in the early 2010s at the same time as other open data policies. The opening of location data has primarily provided for web access to maps for domestic and international individuals and corporate users on condition of user registration (Maanmittauslaitos 2015; RI 2015, 2016.)

Representing multi-disciplinary political and social research rather than any confined discipline (see, e.g., Bannister and Connolly 2015), a conceptual framework is elaborated in Sect. 11.2. In the subsequent sections (Sects. 11.3 to 11.5), working hypotheses are proposed, and the research methodology is introduced. Next, the empirical results are presented in three major sections (Secs. 11.6 to 11.8), and in the final section (Sect. 11.9) conclusions and implications for practice and future research are drawn.

11.2 Theory and Working Hypotheses

11.2.1 Theory

Like e-governance in general, policies on opening data have widely diffused globally. However, decisions concerning the opening of data may not take place in the same way in all countries nor lead to similar results everywhere. In this chapter an effort is made to explain the opening of data with reference to contributing influences and preventing obstacles. This article shares the neo-institutional idea first elaborated by Meyer and Rowan (1977) that institutions—including those influencing the opening of data—may not be merely rational tools to ensure performance, but may also have characteristics of political and social legitimation. This indicates examination of "e-governance", "e-government" and "open data" with attention to the possibility that the mere indication of the ends and the means to these ends may not exhaust the "words" uttered to deliver the "things" announced, but legitimatory language may be employed in addition. Neo-institutional research has also pointed out that not every policy-making cycle smoothly advances from initiation to implementation and

ultimate results (Brunsson 2009), but may be incomplete, and many of the stages of policy-making processes may be coupled with each other in a loose rather than tight way. Interestingly, these imperfections have not gone unnoticed in the Open data barometer (ODB 2016) ranking of achieved data openness.

It is also relevant to refer to the work of Tilly and Tarrow (2012) on "contentious agency", which grounds the actions of agents that try to utilize existing opportunities to generate change that would not otherwise occur. As a related development within neo-institutional research proper, Meyer and Hammerschmid (2006) have offered evidence that successful persuasion pursued by actors skillfully wielding their agency may effectively contribute to fundamental institutional change.

For quite a while neo-institutional research, first arising in the late 1970s, was weak in addressing questions of fundamental institutional change. The above emphasis upon the agency of actors helps approach such institutional change properly. However, change does not imply that everything necessarily changes. New institutional elements, first diffused from the outside into a new context, are commonly modified rather than applied as such, and are sedimented amongst earlier elements. The ultimate results of institutionalization and re-institutionalization may represent heterogeneity despite common tendencies towards isomorphism of structures and other institutional elements (Lee and Strang 2006; for an application, see Lee et al. 2011). This type of neo-institutional research is well in accordance with e-governance research examining developments in stages (Kalampokis et al. 2011; Heimstädt et al. 2014).

The above considerations indicate the importance of historically, politically, and socially specific contextual mechanisms that enable or constrain change, and demarcate opportunities for actors to generate change (Blatter and Haverland 2012). This depends on the competence of these actors to utilize the available opportunities for change until change actually takes place. Zuiderwijk et al. (2014) credibly argue that despite the proliferation of open data policies, there has been a dearth of widely different frameworks to examine these policies. While recognizing the value of their conceptual framework, for the purposes of chapter article a different framework has to be applied.

Given the emphasis upon historical, political, and social contextual characteristics of institutionalization and institutional change, "empirical generalizations" presented as valid over all empirical cases and satisfying statistical criteria will not be drawn in this chapter as they cannot. Insofar

as generalizations will be drawn, they represent "possibilistic generalizations" (Blatter and Haverland 2012) from the initial case to other cases in other contexts, after necessary contextual adjustments have been made to the assumptions concerning the mechanisms examined in the initial study.

11.2.2 Working Hypotheses

Four working hypotheses are formulated on conditions for and obstacles to opening data to guide the study. These working hypotheses are formulated in a more general way than putting the focus upon opening data in order to make the hypotheses potentially relevant in later other e-governance research. These hypotheses can be spelled out as follows:

1. Sufficient political or other will must accumulate and possibly be expressed in general or more specific programmes or plans including blueprints for actual implementation.
2. Benefits to society and other wide-reaching impacts must be legitimately accounted for.
3. The cost incurred must be calculated and included in relevant plans and accounts.
4. "Infomediaries" and other facilitators, from organizations to individuals to analogies to social movements for change, may play important roles.

11.3 Methodology

The research material is comprised of documents and results of semi-structured interviews. Because the opening of data is comprised of processes that have spread only relatively recently, many documents available on the web could be utilized. Six people were interviewed in 2015 and three more in 2016 (Appendix 1). In the interviews a specific series of questions were used (Appendix 2), and at the beginning of each interview the interviewee was told that his or her identity would not be revealed. Following good practice for qualitative empirical research, data collection was continued until saturation was indicated by the surfacing of themes and details that had been acquired in earlier data collection. Saturation also represents data triangulation in this study (Fusch and Ness 2015).

Valuable feedback was received on conference papers delivered in the Permanent Study Group (PSG) on e-Government in the 2015 and 2016

conferences of the European Group of Public Administration (EGPA). Anonymous reviewers for this book and the editors of the book also contributed with suggestions for revision.

11.4 Overcoming Institutional Obstacles to Opening Government Data

It is a common complaint that many governments are comprised of "stovepipes" or "silos" of functionally specialized domains that are "joined up" deficiently (see, e.g., OECD 2010; Uusikylä 2013). Insofar as digitalization does not make the stovepipes and silos disappear, these formations comprise some of the historically, politically, and socially specific mechanisms that either increase or decrease actors' opportunities to influence e-governance developments.

Finland adheres to entrenched Nordic traditions of government openness and transparency, with their earliest roots in eighteenth-century Sweden, prescribing that government documents shall be public except for those documents that are explicitly classified or not yet public at the current stage of their preparation (Erkkilä 2012). Analogous principles apply to electronic public documents. The 2008–2011 Finnish government led by PM Matti Vanhanen of the Centre party had considered removing some of the fees imposed for data collected by government agencies. The 2010–2011 successor government led by PM Mari Kiviniemi from the same party made a decision-in-principle on 3 March 2011 on opening government data. However, the government of PM Jyrki Katainen, a Conservative, nominated on 22 June 2011, was the first government to make the opening of data a point in its political programme (Katainen 2011, 86, official English translation):

> Information resources produced using public funding will be opened up for public and corporate access. The goal is to make digital data materials managed by the public sector available to citizens, companies, enterprises and organisations, authorities, and for research and education purposes in an easily reusable format via information networks.

The opening of Finnish governmental location data became a suspense story during 2011 (RI 2015, 2016). The Ministry of Agriculture and Forestry had agreed with its subordinate agency, the National Land Survey, that customer fees be moderated to advance the opening of data.

However, the Ministry of Finance, preparing the decisions taken by the statutory Ministerial Committee on Finance (chaired by the PM and other ministers in its membership), opposed the revision. Seeing that the opening of location data might fail, during the regular MPs' questioning hour to the government ministers, MP Oras Tynkkynen of the Green League (at that time a member of the government coalition) asked the Finance Minister, Jutta Urpilainen of the SDP, if her ministry indeed opposed the implementation of the government programme on opening the location data of the National Land Survey. The minister, who had been informed that the question would be raised, smoothly replied that the issue would be taken care of.

The Ministerial Committee on Finance decided against the opinion of the Ministry of Finance and, consequently, legislation enabling the National Land Survey to open location data was passed at the end of 2011. Finance Minister Urpilainen had thus agreed with the proposal and the government programme rather than with the expert civil servants of her own ministry and their ethos of austerity. However, the fact that the National Land Survey had promised to absorb the cost of opening its location data (1.5 million euros, or 10 per cent of the annual production cost of the data) without compensation from the government budget, possibly also facilitated resolving this issue.

In 2013–2014 the Katainen government and in 2014–2015 the successor government, headed by PM Alexander Stubb of the same party as Katainen, implemented a specific government programme on opening data (MF 2015a, b). With the 2012 opening of the National Land Survey location data as the starting point, during the programme implementation steps were taken to open weather data, climate data, maritime data, and climate model data. The programme foresaw continuation with the opening of several other types of data. During the programme implementation, a national open data portal was launched in September 2014 (Open Data Finland 2015). Developing an "open location data ecosystem" comprised a specific pilot project within the programme in 2014–2015. By 2015, more than 1400 government datasets had been opened, and by 2020, all government data that can be opened in the first place should be open.

According to the Finnish government programme nominated on 29 May 2015, headed by PM Juha Sipilä of the Centre party, the opening of government data should continue as an aspect of the government's wider emphasis upon the digitalization of government, governance, and society. The digitalization of government is supposed to enable a considerable part

of the cost savings to which the government aims, or up to one half, the other mostly comprised of budgetary cutbacks (RI 2015, 2016). The Sipilä government programme states (Sipilä 2015, 28; official English translation; see also MF 2015c):

> Innovation and service platforms will be promoted in sectors where the public administration plays a role in terms of the functioning of the markets. Such sectors include mobility as a service, health care, learning and the Industrial Internet. The introduction of new technologies, digitalisation and new business concepts will be promoted by legislative means. With the help of open data and the better use of data resources, favourable conditions will be provided for new business ideas.

We can envisage countries in which full coordination prevails in e-governance developments in the federal or national government and in local government. However, the Finnish municipalities both have a constitutional political autonomy and comprise an influential political interest sector that does not necessarily yield to government demands. This means that in the Finnish case, local government open data developments are pronouncedly separate from those in national government. Several Finnish municipalities have been opening their data, most extensively in the Helsinki metropolitan region. Relevant institutionalization includes, for instance, the open data net service Helsinki Region Infoshare of the local cities, and the digital services development company Forum Virium Helsinki Ltd. owned by the city of Helsinki but with important public-private-partnership characteristics (Jaakkola et al. 2015).

11.5 Legitimating the Opening of Location Data

Institutional elements introduced in Finland to open data have global rather than domestic origins. However, these elements typically have not been transferred from their original contexts to the Finnish context as such, but have been modified.

The EU legislation on infrastructures for spatial information apparently represents substantially more than general legitimation for member state measures concerning location data. However, the fact that this legislation consists of EU Directive 2007/2, best known under the acronym INSPIRE, gives the member states leeway in implementing it in their national legislation (Directive 2007). Moreover, the Commission has

passed a good number of implementing regulations concerning the INSPIRE directive, adding further complexity. The INSPIRE directive also addresses no fewer than 34 spatial data themes, which hardly promotes simplicity, either. Finland implemented the INSPIRE directive by passing an Act of Parliament on location data infrastructure (Laki paikkatietoinfrastruktuurista 2009), and participates in the EU network set up to support and follow up the national implementation experiences of the directive (EU 2016). According to an evaluation, the INSPIRE directive has by and large served its purpose despite certain implementation problems (EC 2016).

From among the international organizations in which Finland is a member, the OECD sponsors measures to open government data and to follow up these measures (Ubaldi 2013; OECD 2015). Looser international cooperation also exists, such as the Open Government Partnership (OGP) comprising 65 countries in mid-2015, Finland joining in April 2013 (RI 2015, 2016).

References to other countries and organizations in these countries have been common sources of ex post rather than ex ante legitimation of opening government data in Finland (RI 2015, 2016). These references have included, for instance, the open data policies of the British 2010–2015 coalition government, the Obama administration in the United States since 2008, the Spanish opening of the location data of the General Directorate of the Cadastre, and opening the location data of Britain's Ordnance Survey and the Dutch Cadastre, Land Registry and Mapping Agency.

Calculations of the costs of opening governmental location data in Finland have also served ex post legitimation purposes rather than ex ante financial planning (RI 2015, 2016). In the ex post legitimation indicated, arguments have been common concerning the public interest, the societal benefits, and the importance of free-of-charge collective goods funded by taxpayers.

The first major study on the effects of the opening of the National Land Survey data in 2012 (Ahonen-Rainio et al. 2014) built on a questionnaire survey to examine the uses of location data and the benefits of these data to their users. The economic effects were assessed in a qualitative way without monetizing these effects. According to the results, companies had drawn benefits from open location data insofar as these data had enabled new services and products, better operative efficiency, or improved domestic or international competitive advantage. However,

the opening had failed to give rise to substantial new markets because of the limited demand for Finnish location data. The Finnish Ministry of Finance also commissioned a study on the impacts of open data from an outsourced provider, including economic impacts (Koski 2015), but the study was only a preliminary rather than a true empirical account of the economic impacts.

Concerning the opening of governmental location data in Finland, business interests have hardly directly influenced the opening decisions. The foremost paying customer for the National Land Survey open location data had been the Finnish subsidiary of the American company ESRI of Redlands, California, which was practically unknown to the Finnish public. Finns have had few strong opinions on opening government data, as they characteristically see only the end products such as printed maps or newer digital location data applications, or utilize location data acquired by companies that resell these data once built into motor vehicle navigators or personal navigators, or made available in free applications that public transportation providers supply. However, issues have been raised, asking if opening data is always value-neutral and beneficial to everybody (Kitchin 2014, 62–64; RI 2015, 2016). In the Finnish case, rather than common citizens, smaller developer communities including those with linkages to startup companies and principled activists for opening government data have played roles as representatives of the beneficiaries (RI 2015, 2016).

11.6 Accounting for the Costs of Opening Location Data

While the benefits weigh heavily in the scales in the ex ante and ex post assessment of opening government data, so to do the costs (RI 2015, 2016). Opening location data in 2012 represented a modest annual reduction of 1.5 million euros in operational revenue to government generated at the Finnish National Land Survey, or about 10 per cent of the cost of generating these data. Moreover, the increased demand for the data after their opening—with 50 times more users and 50 times greater data demand—incurred costs for the National Land Survey. However, as indicated (Sect. 11.4), the fact that the National Land Survey was ready to absorb the costs of opening its location data without compensation from the annual government budget probably facilitated its ultimate opening.

Gaps have been identified in the Finnish location data opening procedures (RI 2015, 2016). The data have been opened for citizens, companies, local governments, and other users groups, but not within the Finnish national government administration itself so that different authorities could tap a common topographical database. Many functions exist in which location data are not utilized, such as awarding permits for measures influencing the environment or fire and rescue services, but instead traditional address data are used (RI 2015, 2016).

11.7 Opening Government Location Data in Stages

Some of the roots of opening government data in Finland derive from the historical Nordic principles and practices of openness and transparency in the dealings of government authorities. More recent roots grow from the Finnish political interest in creating a world-class information society since the 1990s, and from the diffusion of global institutional models and scripts of opening governmental data into this country.

In Finland in the first decade of the second millennium, the legal norms applied to numerous government services frequently posed obstacles to the use of government-generated data that satisfy socio-economic efficiency. The "suspense story" told in Sect. 11.4 above indicates contradictions between the Ministry of Finance as the guardian of government austerity on the one hand and a government with a clause in its political programme on opening government data.

The examination in this chapter reveals certain institutional and other obstacles to opening data (RI 2015, 2016; see also Barry and Bannister 2014; Dulong de Rosnay and Janssen 2014). Frequently, despite the fact that data could in principle be opened and the opening decisions receive substantial political support, a single legal norm may prevent the opening or limit its scope. Norms restricting the opening have been issued to protect the privacy of citizens, business secrets, copyright, and national security. According to one of the interviewees (RI 2015, 2016, my translation), the "protected interests of one per cent of the population may prevent opening government data for the benefit for the remaining ninety-nine per cent". In the specific case of location data in Finland, the protection of the privacy of ownership has constrained the opening of real estate location data, which is in certain respects more detailed than other location

data. Moreover, sales of real estate data comprise a revenue source for many Finnish local governments, of which some have not been willing supporters for the more extensive opening of location data.

What has been opened may reveal better what is still closed. We might expect that the post office codes, related to all addresses in Finland, would have been made available given the importance and widespread utilization of these codes as a specific type of location data. However, the postal services are run by a joint-stock company that despite its national government ownership operates like a private enterprise (and in some respects even more so), and the opening of the post office code data has been lagging (RI 2015, 2016).

11.8 Facilitators in Opening Government Data: Organizations, Events, Networks, and Individuals

The Finnish government has three times, in 2010, 2013 and 2016, nominated a consultative commission on location data and the national location data infrastructure (Paikkatietoasioiden neuvottelukunta) for a three-year term. In 2014, this commission published a national strategy on location data (MAF 2014). A more informal institution, the Location Data Network, connects 120 organizations and 350 individual members from the public, commercial, and private non-profit sectors. The Finnish National Land Survey also actively promotes the elaboration of its user interface by means of organizing the annual *paikkatietomarkkinat* (the "location data marketplace").

In its turn, ProGIS is a non-profit organization promoting the utilization of geographic information (GI) and geographic information systems (GIS) for the benefit of Finnish society in the capacity of a link between producers and users of GI and vendors of GI services and software. Moreover, commercial providers of location data services, infrastructures and technology have established the Finnish Location Information Cluster (FLIC) of about 30 members (FLIC 2016). The National Land Survey, ProGIS, and FLIC cooperate in organizing the annual location data marketplace.

Individual experts have been invited to Finland in connection with the opening of the location data of the Finnish National Land Survey (RI 2015, 2016). Peter ter Haar of the British Ordnance Survey visited the annual "location data marketplace" of the Finnish National Land Survey on 2–3 November 2011, explaining the British process of opening loca-

tion data. The following year, Ton Zijlstra from the Netherlands visited the Apps4Finland competition and demonstrated the Dutch case of opening governmental location data.

Besides the Ministry of Agriculture and Forestry and the Ministry of Finance, the Ministry of Transport and Communications has also been active in matters related to opening governmental data, and has commissioned a guidebook on the subject (Poikola et al. 2010). The first author, Antti Poikola widely known as "Jogi" (Yogi) Poikola, later became the chair of Open Knowledge Finland in the capacity of a social activist promoting the case of opening government data.

From among civil servants, the catalytic role of Antti Rainio must be mentioned (RI 2015, 2016). Rainio, moving between functions in the Finnish National Land Survey and the Ministry of Finance, played key roles in catalysing the opening of the location data of the Finnish National Land Survey in 2011–2012. A pioneer in opening location data since the 1980s and the civil servant head responsible for preparing Finland's information society strategy in the late 1990s, Rainio was a member of the 2010–2011 working group of the Ministry of Transport and Communications that prepared the 2011 Finnish government decision-in-principle on opening government data.

11.9 Conclusions and Implications for Future Research and Practice

11.9.1 Conclusions

Driven by four working hypotheses, in this chapter the e-governance and e-government case for opening governmental location data in Finland has been examined. In respect of the first working hypothesis, accumulation of political will definitely affect the opening of location data accumulated by the Finnish National Land Survey. A crucial turning point was the decision-in-principle on opening data taken by the 2010–2011 government led by Mari Kiviniemi of the Center party. The participation of a civil servant, Antti Rainio, moving between the National Land Survey and the Ministry of Finance in the preparatory group of the decision-in-principle, functioned as an important catalyst to open governmental location data. Opening government data in general was first explicitly written into the political programme of the subsequent 2011–2014 government led by Jyrki Katainen of the Conservatives, and reference to this programme in

late 2011 clearly contributed to the opening decision concerning governmental location data at the end of the same year.

Referring to the second working hypothesis, the broader socio-economic framing was also found to be important. Many arguments in favour of opening government data have been presented as ex post legitimation rather than as ex ante motivation for opening governmental data in Finland. And as concerns the third working hypothesis, the decision to open the location data of the Finnish National Land Survey hinged on overcoming the resistance of the Ministry of Finance despite the fact that the fiscal cost of opening was negligible.

The fourth working hypothesis directed attention towards organizations, regular or extraordinary events, networks, and individuals with roles in catalysing the opening of government data. Nothing less than a short-lived, single-purpose, social movement arose in support of the opening of governmental location data.

11.9.2 Implications for Future Research

Broadly speaking, this chapter implies the need for future studies on the same aspects as those emphasized by the four working hypotheses: the will for change, accounting for benefits to society and other wide-reaching impacts, accounting for economic costs, and the facilitation of change by change agents. As indicated in Sect. 11.2.1. above, using this study in future research requires "possibilistic generalizations" (Blatter and Haverland 2012) from the case examined to other cases with suitable modifications to the contextual conditions that prevailed in the initial study object. In the other cases, the subject matter may be different, and different mechanisms may influence this subject matter. The more the subject matter diverges from opening governmental location data and the more different the contextual conditions are from those in Finland, the heavier the modifications must be. Some of these modifications become necessary insofar as e-governance in developing countries is examined, in particular.

During the research process the author became aware of possible blind spots in e-governance research. Possibly too many researchers of e-governance, e-government, opening data, and opening governmental location data have repeated "grand narratives" of technological advancement, human improvement, and economic growth by means of technology, and almost unlimited progress. However, technology also has its risky and contingent downside, including the availability of networked

ICT not only for honest businesses, ethically behaving governments, and citizens of integrity, but businesses that are fraudulent or worse, government authorities overstepping their mark, groups envisaging violent attacks, and hostile foreign powers. Keeping to location data, these data can certainly be utilized for improving the supply of basic necessities and other commodities, societal equality, and the quality of individuals' lives. However, these data can alternatively be used for negative purposes. This implies that e-governance research should by no means consign to silence the fragility of corporate social responsibility, the vulnerability of political freedom and other citizens' rights, and the pressure on local, national, and global peace.

11.9.3 Implications for Practice in Developed and Less Developed Countries

To consider the practical lessons in countries with different levels of development we need to take into consideration the specific situation of each individual country (see also Dey et al. 2016). The accumulation of political will may, for example, take place in a developing country with only weak support from democratic decision-making majorities and with lower acceptance of political opposition groups than in many highly developed countries. In such circumstances, accomplishing e-governance changes rather than official declarations may be particularly difficult. These difficulties are aggravated insofar as the institutions of implementation suffer from weakness, fragility, or lack of integrity. Highly developed countries may have a substantial tolerance towards failure in e-governance policies, whereas developing countries may not be able to afford similar let alone higher failure rates. The adverse effects of gaps between official policies and actual implementation rates, and actual policy impacts, may therefore be more serious in developing than in highly developed countries.

However, lower levels of development also offer certain e-governance advantages. One of these is the latecomer's advantage, enabling learning from the mistakes of early adopters (Nugroho et al. 2015). Examples also exist of the particularly favourable effects of ICTs in developing countries, compensating for the lesser development of infrastructures that have been taken for granted in highly developed countries for decades. In developing countries, for instance, ICTs may compensate for the relative underdevelopment of fixed telecommunication lines, land transportation, and banking and finance (van der Boor et al. 2014). Last but not least, the

introduction of innovations in developing countries may support the elaboration of stronger social networks of the civil society and better political inclusion (see, e.g., Holden and Van Klyton 2016), although risks are also involved, including the expansion of political and social dissatisfaction with movements that lack peaceful outlets to articulate their demands.

Appendix 1 Persons Interviewed for the Article

Kauhanen-Simainainen, Anne, Senior Councilor, Ministry of Finance, Public Sector ICT, Helsinki, 9 April 2015
Kosonen, Antti, Director of Development, The National Land Survey, Helsinki, 26 May 2015
Poikola, Antti, Chair, Open Knowledge Finland, 12 June 2015
Rainio, Antti, retired civil servant (previously, e.g., Ministry of Finance, the National Land Survey), Kauniainen, 15 June 2015
Nykänen, Mika, Director-General, Geological Survey, Espoo, 25 June 2015
Kahra, Antti, Chief of Data Management, Geological Survey, Espoo, 25 June 2015
Ahonen-Rainio, Paula, Aalto University, Espoo, 2 June 2016
Rissanen, Olli-Pekka, Senior Councilor, Ministry of Finance, Public Sector ICT, 7 June 2016
Vertanen, Antti, Head of Information Services, Ministry of Agriculture and Forestry, 1 July 2016

Appendix 2 Framework for Questions in the Semi-Structured Interviews

The framework was heuristically used in the interviews as a source of prompts to the interviewees rather than questions posed to the interviewees.

1. When efforts to open data evolved, did problems emerge threatening the opening project?
2. Did the problems derive from the characteristics of the case?
3. Did the actors intending to open data commit mistakes?
4. Did or did not they ultimately gain control over the situation?

5. To resolve the problems indicated, what kinds of measures did the actors take or attempt?
6. How well did these measures succeed?
7. Were alternative courses of action to those originally pursued considered and, possibly, followed?
8. What, if any, procedures were used to learn from the mistakes made?
9. What lessons were possibly learned?
10. Can these lessons be generalized beyond the specific case, such as to other cases in the same country?
11. What theoretical or other generally valid ideas and pieces of practical advice if any emerged from the case?
12. How do the experiences of the case fit in with any of the existing theories or other established views of ICT success of failure?

Bibliography

Ahonen-Rainio, P., Mäkelä, J., & Virrantaus, K.. 2014. *Menetelmä avoimen maastotiedon vaikuttavuuden arvioimiseksi.* Publication on a method to assess the effectiveness of open terrain data, in Finnish. Espoo: Aalto University.

Bannister, F., & Connolly, R. (2015). The great theory hunt: Does e-Government really have a problem? *Government Information Quarterly, 32*, 1–11.

Barry, E., & Bannister, F. (2014). Barriers to open data release: A view from the top. *Information Polity, 19*, 129–152.

Bates, J. (2014). The strategic importance of information policy for the contemporary neoliberal state: The case of open government data in the United Kingdom. *Government Information Quarterly, 31*, 388–395.

Berners-Lee, T. (2007). Linked data. Retrieved July 5, 2015, from http://www.w3.org/DesignIssues/LinkedData.html

Blatter, J., & Haverland, M. (2012). *Designing case studies: Explanatory approaches in small-N research.* Basingstoke: Palgrave Macmillan.

van der Boor, P., Oliveira, P., & Veloso, F. (2014). Users as innovators in developing countries: The Global sources of innovation and diffusion in mobile banking services. *Research Policy, 43*, 1594–1607.

Brunsson, N. (2009). *Reform as routine: Organizational change in the modern world*. Oxford: Oxford University Press.

Dey, B., Sorour, K., & Filieri, R. (Eds.). (2016). *ICTs in developing countries.* Berlin: Springer.

Directive. (2007). Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 Establishing an Infrastructure for Spatial Information

in the European Community (known under the acronym INSPIRE). Retrieved June 20, 2015, from http://inspire.ec.europa.eu/inspire-legislation/26

Dulong de Rosnay, M., & Janssen, K. (2014). Legal and institutional challenges for opening data across public sectors: Towards common policy solutions. *Journal of Theoretical and Applied Electronic Commerce Research, 9*, 1–14.

EC. (2016). Report from the Commission to the Council and the European Parliament on the implementation of Directive 2007/2/EC of March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) pursuant to article 23. Retrieved October 14, 2016, from http://inspire.ec.europa.eu/news/commissions-inspire-report-and-refit-evaluation-published

Erkkilä, T. (2012). *Government transparency: Impacts and unintended consequences*. Basingstoke: Palgrave Macmillan.

EU. (2016). EU Share-PSI 2.0. 2016. Web pages of the network for innovation in European public sector innovation. Retrieved June 20, 2016, from https://www.w3.org/2013/share-psi/lg/

FLIC. (2016). The Finnish location information cluster. Retrieved July 15, 2015, from http://www.flic.fi

Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report, 20*, 1408–1416.

GODI. (2016). Global open data index. Retrieved July 2, 2016, from http://index.okfn.org/place/

Heimstädt, M., Saunderson, F., & Heath, T. (2014). From toddler to teen: Growth of open data ecosystem. A longitudinal analysis of open data developments in the UK. *Journal of eDemocracy, 6*, 123–135.

Holden, K., & Van Klyton, A. (2016). Exploring the tensions and incongruities of internet governance in Africa. *Government Information Quarterly, 33*. electronic preprint. Retrieved October 15, 2016, from doi: 10.106/j.giq.2016.08.00g.

INSPIRE. See Directive 2007.

Jaakkola, A., Kekkonen, H., Lahti, T., & Manninen, A. (2015). Open data open cities: Experiences from the Helsinki metropolitan area, case Helsinki region Infoshare www.hri.fi. *Statistical Journal of the IOS, 31*, 117–122.

Kalampokis, E., Tambouri, E., & Tarabanis, K. (2011). Open government data: A stage model. In M. Janssen, H. J. Scholl, M. A. Wimmer, & Y. H. Tan (Eds.), *Electronic government* (pp. 235–246). Heidelberg: Springer.

Katainen, J. 2011. *Programme of Prime Minister Jyrki Katainen's government*. Official English translation. Helsinki: Prime Minister's Office.

Kitchin, R. (2014). *The data revolution: Big data, open data, data infrastructures & their consequences*. London: Sage.

Koski, H. (2015). *The impact of open data*. Helsinki: Ministry of Finance.

Laki paikkatietoinfrastruktuurista. (2009). Parliament act on location data infrastructure. 12 June 2009, no. 421. In Finnish.

Lee, C. K., & Strang, D. (2006). The international diffusion of public-sector downsizing: Network emulation and theory-driven learning. *International Organization, 60*, 883–909.

Lee, C., Chang, K., & Berry, F. S. (2011). Testing the development and diffusion of e-Government and e-Democracy. *Public Administration Review, 71*, 444–454.

Maanmittauslaitos. (2015). *Digitaaliset tuotteet*. Web pages of the National Land Survey, Finland, concerning its digital products. Retrieved April 11, 2015, from http://www.maanmittauslaitos.fi/aineistot-palvelut/

MAF. (2014). *Kansallinen paikkatietostrategia 2016. The Finnish national location data strategy until 2016*. Helsinki: Ministry of Agriculture and Forestry.

Meyer, R., & Hammerschmid, G. (2006). Changing institutional logics and executive identities: A managerial challenge to public administration in Austria. *American Behavioral Scientist, 49*, 1000–1014.

Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology, 83*, 340–363.

MF. (2015a). Avoimen tiedon ohjelma. Open data program, in Finnish. Ministry of Finance. Retrieved April 11, 2015, from http://vm.fi/avointieto

MF. (2015b). *Avoimesta datasta innovatiiviseen tiedon hyödyntämiseen: Avoimen tiedon ohjelman 2013–2015 loppuraportti*. Final report of the Finnish open data program, in Finnish. Ministry of Finance. Retrieved April 11, 2015, from http://vm.fi/julkaisu?pubid=6902

MF. (2015c). Digitalisaatio. Web pages on digitalization. Retrieved July 12, 2015, from http://vm.fi/digitalisaatio

Milakovich, M. E. (2012). *Digital governance: New technologies for improving public service and participation*. New York: Routledge.

Nugroho, R. P., Zuiderwijk, A., & Janssen, M. (2015). A comparison of national open data policies: Lessons learned. *Transforming Government: People, Process and Policy, 9*, 286–308.

ODB. (2016). Open data barometer. Retrieved July 7, 2016, from http://opendatabarometer.org/

OECD. (2010). *Finland: Working together to sustain success*. Paris: OECD.

OECD. (2015). *Government at a glance*. Paris: OECD.

Open Data Finland. (2015). Open data Finland. Finnish government open data portal. Retrieved June 21, 2015, from https://www.opendata.fi/en

OpenGovData. (2016). The eight principles of open government data. Retrieved July 7, 2016, from http://opengovdata.org

Poikola, A., Kola, P., & Hintikka, K. A. (2010). *Public data – An introduction to opening information resources*. Helsinki: Ministry of Transport and Communications.

RI. (2015). Research interviews for this study by the author, April to June 2015.

RI. (2016). Research interviews for this study by the author, June to July 2016.

Sipilä, J. (2015). *Programme of Prime Minister Juha Sipilä's Government. Official English translation*. Helsinki: Prime Minister's Office.

Tilly, C., & Tarrow, S. (2012). *Contentious politics* (2 fully Rev. and updated ed.). Oxford: Oxford University Press.
Ubaldi, B. B. (2013). *Open government data: Towards empirical analysis of open data initiatives*. Paris: OECD.
Uusikylä, P. (2013). Transforming silo-steering into a performance governance system: The case of the Finnish Central Government. *New Directions for Evaluation, 21*, 33–43.
Veljković, N., Bogdanović-Dinić, S., & Stoimenov, L. (2014). Benchmarking open government: An open data perspective. *Government Information Quarterly, 31*, 278–290.
Zuiderwijk, A. M. G., Janssen, M. F. W. H. A., & Davis, C. B. (2014). Innovation with open data: Essential elements of open data ecosystems. *Information Polity, 19*, 17–33.

Pertti Ahonen is Professor of Political Science at the University of Helsinki. In 2015–2017 he led the research project Digital Humanities of Public Policy Formation, funded by the Kone Foundation of Finland. He has had recent articles in *Sage Open, Big Data & Society, Annals of Public and Cooperative Economics, Evaluation*, and *International Journal of Critical Accounting*.

CHAPTER 12

E-Government Implementation: Transparency, Accessibility and Usability of Government Websites

Francisco J. Alcaraz-Quiles, Elena Urquia-Grande, Clara I. Muñoz-Colomina, and Antti Rautiainen

12.1 Introduction

The implementation of innovations in Internet technologies have become a key objective in political agendas (Rodríguez Bolívar et al. 2013; Jaeger and Bertot 2010). Different governments and supranational organizations have incorporated into their agendas of public policy the promotion and development of the advances of the information society (Katz and Rice 2002). So, the adoption of information and communication technologies (ICTs), have caused a significant change in the relationships between

F.J. Alcaraz-Quiles (✉)
University of Granada, Granada, Spain

E. Urquia-Grande • C.I. Muñoz-Colomina
University Complutense of Madrid, Madrid, Spain

A. Rautiainen
Jyväskylä University School of Business and Economics, Jyväskylä, Finland

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_12

governments and their different stakeholders (Osborne and Gaebler 1992). This process of modernization has enabled greater information accessibility and transparency. In this sense, initiatives such as websites for public entities, data portals, social media tools, online meetings and public feedback on public policies are playing a crucial role in order to promote government transparency, participation and collaboration (Jaeger and Bertot 2010). Moreover, as highlighted by International Transparency (IT 2015), ICTs have contributed to the adoption and dissemination of government transparency, providing relevant information in a timely, useful and comparable way and in an accessible format. In this regard, Bannister and Connolly (2014) affirm that ICTs are a powerful tool to improve transparency.

In this context, different stakeholders and international institutions, in particular the European Union (EU) in their Directive 2011/85/EU (Council of Europe 2011), are requiring public bodies to introduce information systems capable of providing the necessary transparency at all government levels: central, regional and local. Additionally, as pointed out (Lourenço et al. 2014) the promotion of sustainability activities and the publication of sustainability reports is recognized as a source of competitive advantage for corporations.

Following the World Commission (1987), we can define sustainability as "equity between generations, i.e. meeting the [human] needs of the present without compromising the ability of future generations to meet their own needs". Internationally, the Global Reporting Initiative (GRI) guidelines are considered the standard of sustainability reporting, and are widely used as a means of transparency on sustainability matters. In our study, transparency means the disclosure of agendas and conditions, accompanied by the availability of full information required for collaboration, cooperation and collective decision making of regional managers. Sustainability can be defined as the capability of local government to maintain, promote and preserve the social well-being of its citizens through the resources it has available, bearing in mind that this definition is suitable for measuring the degree to which a government fulfils the responsibilities for which it was established.

In addition, accessibility to sustainable information from RGs is defined in this chapter as the time used for achieving the sustainability information disclosed in government websites. We understand usability as the ease of use of governments' webpages by users. In this sense, usability is measured by 12 items in line with Pina et al. (2007), embedding issues such as

whether the RG webpage has a section for frequently asked questions, information in another language, a current news section and glossary terminology, for example.

Contributing to earlier research methodologically, we have used the Pina et al. (2009) model to measure usability and the Alcaraz-Quiles et al. (2014) model to measure GRI items' disclosure, joined these models and added accessibility variables in order to analyse transparency in RGs. Our combined or global model facilitates stakeholders to observe, compare and analyse the transparency information of RGs, in order to improve the accountability of management and access to information for citizens.

Therefore, this chapter seeks to enhance the sustainability and accountability of Spanish Regional Government management and, secondly, to evaluate whether the reporting of the Spanish Regional Governments is transparent in terms of citizens' accessibility and usability. To this end, we have run a multivariate analysis. The conclusions obtained could help politicians and mangers to improve their process of developing e-government.

This chapter is structured as follows. Section 12.2 presents a bibliography revision about these issues. Section 12.3 shows the sample selection and describes the methodology. Finally, the last sections (Sects. 12.4 to 12.6) cover the empirical results and conclusions.

12.2 Transparency of Sustainable Information in Regional Governments

Concepts of sustainability and transparency are key issues for companies and for public entities to demonstrate their committment towards society (Rodríguez Bolívar et al. 2013; Jaeger and Bertot 2010). The concept of transparency means making something visible, instead of hiding, for example, the decision-making principles or performance indicator scores (see Roberts 2009). Transparency is generally accompanied by a belief that it reveals the bad and helps to discover the good organizations, subunits and managers (Roberts 2009). For example, Angluin and Scapens (2000) suggest that a high degree of transparency supports the perceived fairness of resource allocation. Focusing on transparency in websites may facilitate analyses of information about internal work, decision processes and procedures (Pina et al. 2009). However, even clearly presented information is not necessarily fair, and transparency has limits because the data presented may be inaccurate or symbolic, because there are often several

ways to present accounting data and account for costs, such as depreciation (Hines 1988). In this vein, Roberts (2009) suggests that full transparency is often a fantasy, especially if there is an attached belief that a high degree of transparency automatically leads to increased accountability and effectiveness. Further, transparency may be used to produce guilt or blame in order to gain benefits in some personal or sub-unit power game, which leads to deterioration of the organizational or societal performance as a whole (Hood 2007; Hopwood 1972; Roberts 2009). Thus, transparency is relatively difficult to assess: it is not just the visibility of information, we may need to consider the quality (e.g. relevance, comparability and timeliness) of the information presented and its accessibility. For example, disclosing information according to some standard, such as the GRI, can be considered relatively objective and value-neutral, improving both relevance and comparability as well as diminishing the potential to deliberately manipulate the presentation of sustainability information (see also Angluin and Scapens 2000).

Further, the concept of accessibility refers to the ease with which different stakeholders can get their hands on the information. Accessibility may be judged based on whether the information is made visible, or access is denied (e.g. without a password), or if information is deliberately hidden, for example in the myriad of internet pages of a company (see also Angluin and Scapens 2000). Thus, regarding data on the internet we might analyse the time it takes for an educated internet user to find appropriate data from the internet pages of the organization in question. Thus a few key aspects, such as comparability and accessibility, may be assessed and then given a score or grade. For example, Angluin and Scapens (2000) used grades or categories of low, medium or high financial transparency. Such grades or overall scores may serve as a measure of the transparency of the information disclosed.

Following Pina et al. (2009), we measure usability using 12 items related to the ease of use of RG webpages. These items assess diverse aspects such as the existence of sitemaps, the availability of the website in foreign languages or the existence of a FAQ section in government websites. Three of the items are specifically designed to assess the online facilities for people with some kind of disability, for example, if the website provides audio access for the visually impaired. The results obtained for each RG website about usability, give us a measure of how easy it is to use from the standpoint of the citizens who use the government website as a source of public information.

Considering sustainability analysis, several researchers have proposed analysing the disclosure of government information about sustainability based on the GRI framework (Alcaraz-Quiles et al. 2014). The GRI includes 75 parameters divided into general, economic, social and environmental areas which aid measuring RG sustainability. The GRI guidelines aim to advise organizations on how to provide comparable information about their activities in general, economic, social and environmental areas for the exchange of reliable and transparent information on sustainability.

Currently, Spanish RGs are making improvements in both informing citizens about their initiatives, activities and achievements, and attaining more interaction with citizen suggestions. However, it is not known what kind of information, and with what kind of transparency, this is disclosed, for example, by the RGs in Spain regarding sustainability. In this chapter sustainability information will be measured by items selected from the GRI index in Spain.

Bearing all this in mind we define the following research questions:

RQ1: Has the implementation of e-government improvd transparency about sustainability in Spanish regional governments?

RQ2: Do citizens perceive the advantages of implementation of e-government in terms of accessibility and usability of RGs websites?

RQ3: Is there any relation between transparency, accessibility and usability of RGs websites?

12.3 Sample Description and Methodology

The European Union is developing active policies to promote innovation strategies under the new place-based approach characterizing regional development interventions. In this context, the role of government institutions in this phase is to provide adequate incentives for the development of effective collaborations among all stakeholders in the innovation system, setting the conditions for an "inclusive" approach (Rodríguez-Posé et al. 2014). Specifically, in the sphere of RGs, authors such as Charron (2016) affirm that in the EU, regions with greater autonomy have greater lobbying power and are better equipped to manage funds and to promote transparency.

The particular case of Spain, with 17 RGs is intriguing because it is a country with a relatively recent and on-going process of decentralization. The Spanish RGs have a high grade of autonomy, self-government and resources managed (Colomer 1998). The process carried out on territorial reform has, over time, exerted important "feedback effects" of decentralization. In this sense, the devolution of competences had not been accompanied by an adequate transfer of fiscal resource (Verge 2013). On the other hand, the process of decentralization increases the incentives of regional leaders to follow differentiated regional agendas by diminishing their potential costs (León 2014).

In addition to the above, the Spanish RGs have suffered more markedly a crisis of public finances, maintaining high levels of debt and deficit. In this sense, the IGAE report (2013) shows that 22.47% of the total deficit is due to RGs, this being 1.5% of GDP. Moreover, all Spanish RGs accounted for 31.8% of non-financial public expense.

Finally, Spanish RGs have a peculiarity: they are, at the same time, providers and funders of services. In this sense, they are responsible for managing important services as health, education, environment or social issues. On the other hand, the RGs finance some services provided by local governments, such as culture, sports and the provision of infrastructures and equipment (León 2014; Bäck et al. 2013).

Therefore, the position of the Spanish RGs, dovetailing their proximity to stakeholders with their position as funder of local governments, the volume of public expenditure managed and the scarcity of studies on e-government at the regional level are the reasons that led us to research the 17 Spanish RGs (León 2014; Bäck et al. 2013; IGAE 2013; Colomer 1998). In addition, the conclusions obtained by studying the implementation of e-government in RGs within a short period and with deep financial difficulties could help politicians and managers to improve their process of developing e-government.

As affirmed by authors such as Bertot et al. (2010), Jaeger and Bertot (2010), Meijer (2007) and La Porte et al. (2002), the web offers a wide variety of advantages as a transparency channel. First, the vast majority of government information is now born digital, and many users want access to it in electronic form. Second, the web also increased interest in accessing government information. Third, the information disclosed via the web has greatly reduced the cost of collecting, distributing and accessing government information. Fourth, websites have made it much easier to

create channels for interaction between stakeholders and administration. And in the end, government information must survive in an accessible format and location. So, following previous research (Alcaraz-Quiles et al. 2015; Navarro-Galera et al. 2016; Ortiz-Rodríguez et al. 2015) we have tested the websites of 17 Spanish RGs using a list of 75 items based on GRI guidelines.

The levels of information disclosure can be calculated based on total GRI items or, in more detail, divided according to four GRI areas: Strategic and general information, Economic, Social and Environmental. Internationally, the GRI guidelines are the standard report of sustainability.

The level of accessibility is measured by the time a citizen (or a researcher) consumes in finding (accessing) the information disclosed. However, we have assumed that the user (citizen or researcher) is not a specialized one and therefore does not have an economic and financial education but has an average cultural education. The levels of usability are measured within 12 parameters in line with Pina et al. (2009).

So, we have carried out a content analysis to assess, first, the information about sustainability disclosed; second, the accessibility of information; and third, the usability of websites. This system of scoring give us a measure of the degree of publication in an objective and transparent manner, and has been used in previous studies (Bastida and Benito 2007; Pina et al. 2007).

Once we obtained the scores for transparency, accessibility and usability, we carried out a Spearman correlation rank analysis. This technique has been used for similar cases and samples in many studies, as the best statistical means to test variables where a rank order exists (Sánchez 2004; Rodríguez Bolivar and Navarro Galera 2007).

12.4 Analysis of Results

Table 12.1 shows the results of information disclosed, accessibility and usability. We can observe that the RGs' strategic, general, economic, social and environmental information is above 60% of disclosure. The majority of the social and economic indicators are disclosed while the environmental ones have the least disclosure (42.08%). The RGs that publish the most information relating to the GRI list of items are Andalusia (72%), followed

Table 12.1 Descriptive analysis of GRI items disclosed

	Information disclosed (%)				
	Total	Strategic and general	Economic	Social	Environmental
Average	57.25%	60.08%	60.05%	62.35%	42.08%
Std. deviation	0.0997	0.1350	0.1113	0.1147	0.2055

Source: Own elaboration

by Catalonia (70.67%). The lower percentages are for the Balearic Islands and Murcia (44% and 40%). In this sense, it seems than the implementation and development of e-government has a positive impact on transparency, specifically on transparency about sustainability, with an average disclosure of 60%. Nevertheless, it is necessary to achieve an upper average of information disclosed in order to increase the sustainability of transparency.

In the case of accessibility (Table 12.2), the information that is the most accessible is economic: we have to spend 6.33 minutes by item in this category. On the other hand, to obtain environmental information we have to spend 8.5 minutes by item, followed by social information (7.1 minutes by item). We realize that a standard citizen takes more than an hour to search for any information. Concerning strategic and general information, which includes a total of 28 items including RGs' commitment, strategic lines and similar issues, 60%, was available but it took an average of three hours to find the information. Regarding economic information, where there are 24 items, this entailed an average of two and a half hours to find it. With respect to social information, it took an average of one hour and 11 minutes to find it. It is interesting to observe that this information is the easiest to access, possibly because it embeds the easiest information for a standard citizen to find. Regarding environmental information, which includes 12 items, there is little information disclosed and it consumes two hours approximately to find it. If we observe the usability by RGs, the most accessible are Valencia and Extremadura (50 and 75 minutes), while the citizens of the Basque Country and Castilla La Mancha have to spend the most time looking for information (140 and 130 minutes).

The average usability indicates than users of webpages appreciate their ease of use by just over half (62.75%). By RGs, the two most usable websites are Andalusia and Galicia (83.00%). On the other hand, the websites

Table 12.2 Descriptive analysis of accessibility

	Accessibility (minutes)				
	Total	Strategy and general	Economic	Social	Environmental
Mean total time	514	180	152	71	110
Minutes by item	6.8533	6.4286	6.3333	7.1	8.4615
Std. deviation	66.6591	24.6477	31.8478	15.7331	21.5355

Source: Own elaboration

Table 12.3 Descriptive analysis of usability

	Usability
Average	62.75%
Std. Deviation	2.0346

Source: Own elaboration

with a lower usability are Extremadura, the Balearic Islands and Castilla Leon (33.33%). The average and standard deviation have been calculated in Table 12.3.

In short, the perception by citizens of the advantages of implementation of e-government in terms of accessibility and usability of government websites depends on the location of the RGs. In general, accessibility is low, and we have to spend, on average, eight and a half hours in finding all the information required. The kind of information that we are looking for affects accessibility: we have to spend longer in order to access environmental information than economic information. Nevertheless, the perception by citizens of websites' usability achieved two-thirds of the requirements established in our study.

As a starting analysis, Andalusia is the most transparent RG, and holds the first position in usability, with an intermediate position in accessibility. On the other hand, the Balearic Islands is the least transparent RG, and holds the last position in usability, and is positioned in the fourth quartile for accessibility. Additionally, Extremadura ranks second in time used in searching for information (accessibility), but has a low perception of usability. So, in view of these results, it seems that a direct relation between transparency and usability exists. The more transparent RGs are those who

Table 12.4 Scores obtained by RGs in transparency, accessibility and usability

	Transparency (%)	*Accessibility*	*Usability (%)*
Andalusia	**72.00**[a]	116	**83.33**[a]
Catalonia	**70.67**[a]	120	75.00
Aragón	69.33	117	58.33
La Rioja	68.00	99	66.66
Valencia	64.00	**50**[a]	75.00
Madrid	62.67	124	75.00
Navarra	61.33	100	75.00
Basque Country	61.33	***130***[b]	75.00
Castilla la Mancha	58.67	***140***[b]	58.33
Galicia	56.00	121	**83.33**[a]
Canary islands	52.00	127	75.00
Castilla Leon	49.33	121	***33.33***[b]
Asturias	48.00	118	58.33
Cantabria	48.00	103	50.00
Extremadura	48.00	**75**[a]	***33.33***[b]
Balearic Islands	***44.00***[b]	103	***33.33***[b]
Murcia	***40.00***[b]	109	58.33

[a]In bold are the more transparent, accessible and usable RGs.
[b]***In italic and bold are the less transparent, accessible and usable RGs.***

have more usable websites, and the RGs with a lower level of usability also have a below average in transparency.

The statistical data analysis was made with SPSS 22 (see Tables 12.4, 12.5 and 12.6). Due to the size of the sample, we have done two complementary tests: Spearman and Kendall. In both of them the results are similar. We have carried out the test comparing, individually, the percentages of transparency obtained, both total and for each information category determined, with the total value obtained in accessibility, and the values obtained in accessibility in each block of information. The test generates only one significant relation: the level of general information disclosure is inversely related to citizens' accessibility to the RG website. This means that information about strategic and main objectives is published, but citizens have to spend a lot of time in looking for it. On the other hand, the percentage of total (cumulative) information disclosed about GRI items is positively related to web usability, as we have pointed out in the preliminary test. Citizens perceive the more usable websites to be those that are more transparent. Although the time spent accessing information is high, citizens perceive that the website is easy to use. The results show that the remaining relations are not significant, including the relation between accessibility and usability.

Table 12.5 Spearman correlations among GRI indicators for disclosure and accessibility

	Spearman R	*T(N−2)*	*p-level*
Total	−0.4093	−1.7376	0.1027
Strategy and general	−0.5626	−2.6357	**0.0187***
Economic	−0.1105	−0.4308	0.6726
Social	−0.3519	−1.45632	0.1659
Environmental	0.0519	0.2015	0.8429

Asterisk symbol and bold represent the relations that are statistically significative.

Table 12.6 Spearman correlations among GRI indicators

	Spearman R	*T(N−2)*	*p-level*
Total information disclosed: Usability	0.6407	3.2320	**0.0056***
Accessibility: Usability	−0.4743	−2.087	0.0544

Asterisk symbol and bold represent the relations that are statistically significative.

12.5 Discussion

Regional Governments' accountability is doubtful because although an average of 60% of the information searched from the strategic, economic social and environmental contexts was found it took an average of three hours to access it. The complexity of understanding both the strategic and economic information increased the complexity of accessing it, so the time taken to access these two areas cannot be related to the time consumed in accessing the social and environmental areas. In general, the GRI issues have a high component of complexity which justifies the high consumption time it took to find many of the issues.

We have had real difficulty in finding the environmental information, which is the opposite to Alcaraz-Quiles et al. (2014), who found many environmental indicators at an international level. This difficulty may be due to a greater increase of environmental information, establishing RG-specific websites for this type of information, and disclosing in the RG official website only a small part of the total environmental information. Moreover, in line with the results obtained by Navarro-Galera et al. (2016), social information is the most widely disclosed, highlighting the

commitment of the regional administration to this type of information. The priority for disclosing social information could in response to demands of stakeholders with specials needs.

In general, and with the exception of environmental information, the time spent finding information well exceeds the amount of this kind of information published on the website. In addition, environmental information is that which has a greater ratio of time spent by item. Therefore, although the information exists on the website, one has to spend too much time finding it.

As regards the usability of websites, users generally perceive that they are easy to use, and this perception increases when the volume of information disclosed is greater. In this sense, our findings corroborated the results obtained by authors such as Pina et al. (2007), who have associated high degrees of transparency with high website usability.

12.6 Conclusions

Governments worldwide recognize that ICT is a way of enhancing citizen trust in government. Most of the websites analysed disseminate a great amount of information. In this chapter, we attempted to find out if the implementation of e-government initiatives in the application of ICT, has some effect on transparency, accessibility and usability regarding Spanish RGs' websites.

Contributing to earlier research methodologically, we have taken the Pina et al. (2009) model to measure usability and the Alcaraz-Quiles et al. (2014) model to measure GRI item disclosure, joined these models and added accessibility variables in order to analyse transparency in RGs. Our combined or global model allows stakeholders to observe, compare and analyse the transparency of RG information, in order to improve management accountability and access to information for citizens.

The implementation of e-government is an opportunity and has huge potential to contribute to the modernization of government. It could increase the contribution of websites as a way to increase transparency, accessibility and usability.

Our results show that the transparency of RG websites is inversely related to accessibility. The information is available but one has to spend too much time finding it. Nevertheless, transparency is positively related to usability, so the users of websites with a greater percentage of information disclosed, perceive that websites achieve the standards of usability;

anyone could easily navigate them. The RG websites offer an easy method of access and navigation.

In general, the efforts of politicians and managers of Spanish RGs could be directed to improve the accessibility of websites. While Andalusia and Catalonia have higher levels of transparency and usability, their levels of accessibility are lower. On the other hand, Murcia and the Balearic Islands have lower levels of transparency and usability (specifically the Balearic Islands), and their level of transparency is in the mid-range. Finally, Valencia takes the fifth position on transparency, the first on accessibility and the third on usability.

The main limitation to the research work is that accessibility was measured in minutes taken to find the different GRI issues but this should be reclassified in a Likert way. So that the highest punctuation is allocated to the lowest rank of time taken to access any GRI items, while the lowest punctuation would be given to the highest time consumption in accessing the GRI items.

For further research in this area, we believe it is necessary to extend the scope of the statistical study, complementing it with the analysis of other variables such as population, and political and financial nature, and comparing these results with those obtained in other fields. It would also be interesting to compare these results with those for other levels of government, both local and national.

References

Alcaraz-Quiles, F. J., Navarro-Galera, A., & Ortiz-Rodríguez, D. (2014). A comparative analysis of transparency in sustainability reporting by local and regional governments. *Lex Localis - Journal of Self-Government, 12*(1), 55–78.

Alcaraz-Quiles, F. J., Navarro-Galera, A., & Ortiz-Rodríguez, D. (2015). Factors determining online sustainability reporting by local governments. *International Review of Administrative Sciences, 81*(1), 79–109.

Angluin, D., & Scapens, R. (2000). Transparency, accounting knowledge and perceived fairness in UK universities' resource allocation: Results from a survey of accounting and finance. *British Accounting Review, 32*(1), 1–42.

Bäck, H., Debus, M., Müller, J., & Bäck, H. (2013). Regional government formation in varying multilevel contexts: A comparison of eight European countries. *Regional Studies, 47*(3), 368–387.

Bannister, F., & Connolly, R. (2014). ICT, public values and transformative government: A framework and programme for research. *Government Information Quarterly, 31*(1), 119–128.

Bastida, F., & Benito, B. (2007). Central government budget practices and transparency: An international comparison. *Public Administration, 85*(3), 667–716.

Bertot, J. C., Jaeger, P. T., & Grimes, J. M. (2010). Using ITCs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Government Information Quarterly, 27*, 264–271.

Charron, N. (2016). Quality of government, regional autonomy and cohesion policy allocations to EU regions. In S. Piattoni & L. Polverari (Eds.), *Handbook on cohesion policy in the EU* (pp. 92–106). Cheltenham: Edward Elgar Publishing Limited.

Colomer, J. M. (1998). The Spanish "State of autonomies": Non-institutional federalism. *West European Politics, 21*(4), 40–52.

Council of Europe. (2011). *Council Directive 2011/85/EU of 8 November 2011 on requirements for budgetary frameworks of the Member States*. Retrieved from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:306:0041:0047:en:PDF

Hines, R. (1988). Financial accounting: In communicating reality, we construct reality. *Accounting, Organizations and Society, 13*(3), 251–261.

Hood, C. (2007). What happens when transparency meets blame avoidance? *Public Management Review, 9*(2), 191–210.

Hopwood, A. (1972). An empirical study of the role of accounting data in performance evaluation. *Journal of Accounting Research, 10*, 156–182.

IGAE. (2013). *Avance actuación económica y financiera de las Administraciones Públicas*. Madrid: IGAE. Retrieved from http://www.igae.pap.minhap.gob.es/sitios/igae/es-ES/ContabilidadNacional/infadmPublicas/Documents/Informes%20Anuales/Avance_AAPP_2013.pdf.

International Transparency (IT). (2015). *Índice de Transparencia de las CCAA*. Retrieved from http://www.transparencia.org.es/

Jaeger, P. T., & Bertot, J. C. (2010). Transparency and technological change: Ensuring equal and sustained public access to government information. *Government Information Quarterly, 27*, 371–376.

Katz, J. E., & Rice, R. E. (2002). *Social consequences of internet use: Access, involvement, and interaction*. London: The MIT Press.

La Porte, T. M., Demchak, C. C., & de Jong, M. (2002). Democracy and bureaucracy in the age of the web. Empirical findings and theoretical speculations. *Administration & Society, 34*, 411–446.

León, S. (2014). How does decentralization affect electoral competition of statewide parties? Evidence from Spain. *Party Politics, 20*(3), 391–402.

Lodhia, S., Jacobs, K., & Park, Y. J. (2012). Driving public sector environmental reporting. *Public Management Review, 14*(5), 631–647.

Lourenço, I. C., Callen, J. L., Branco, M. C., & Curto, J. D. (2014). The value relevance of reputation for sustainability leadership. *Journal of Business Ethics, 119*(1), 17–28.

Meijer, A. J. (2007). Publishing public performance results on the Internet. Do stakeholders use the Internet to hold Dutch public service organisations to account? *Government Information Quarterly, 24*, 165–185.

Navarro-Galera, A., Alcaraz-Quiles, F. J., & Ortiz-Rodríguez, D. (2016). Online dissemination of information on sustainability in regional governments. Effects of technological factors. *Government information Quarterly, 33*(1), 53–66.

Ortiz-Rodríguez, D., Navarro-Galera, A., & Alcaraz-Quiles, F. J. (2015). The influence of administrative culture on sustainability transparency in European local governments. *Administration and Society*. doi:10.1177/0095399715616838.

Osborne, D., & Gaebler, T. (1992). *Reinventing government: Go to the entrepreneurial spirit is transforming the public sector*. New York: Penguin.

Pina, V., Torres, L., & Royo, S. (2007). Are ICTs improving transparency and accountability in the EU regional and local governments? An empirical study. *Public Administration, 85*(2), 449–472.

Pina, V., Torres, L., & Royo, S. (2009). E-government evolution in EU local governments: A comparative perspective. *Online Information Review, 33*(6), 1137–1168.

Roberts, J. (2009). No one is perfect: The limits of transparency and an ethic for 'intelligent' accountability. *Accounting, Organizations and Society, 34*(8), 957–970.

Rodríguez Bolivar, M. P., & Navarro Galera, A. (2007). Could fair value accounting be useful, under NPM models, for users of financial information? *International Review of Administrative Sciences, 73*(3), 473–502.

Rodríguez Bolívar, M. P., Alcaide Muñoz, L., & López Hernández, A. M. (2013). Determinants of financial transparency in government. *International Public Management Journal, 16*(4), 557–602.

Rodríguez-Posé, A., di Cataldo, M., & Rainoldi, A. (2014). *The role of government institutions for smart specialisation and regional development*. Luxembourg: Joint Research Centre.

Sánchez, J. (2004). *Introducción a la Estadística Empresarial*. Retrieved from http://www.eumed.net/cursecon/libreria/index.htm

Verge, T. (2013). Party strategies on territorial reform: State-wide parties and the state of autonomies in Spain. *West European Politics, 36*(2), 317–337.

World Commission. (1987). *Report of the world commission on environment and development: Our common future*. Retrieved from http://www.un-documents.net/our-common-future.pdf

Francisco José Alcaraz Quiles is Assistant Professor of Financial Accounting (Department of Accounting and Finance) at University of Granada in Spain. He is a member of the Spanish Association of Accounting University Teachers and of European Accounting Association. He has written on diverse topics, and his works have appeared in international journals such as *Administration & Society*,

Government Information Quarterly, and *International Review of Administrative Sciences*. He has assisted and presented research works in several global conferences. His research interests include public administration, sustainability, accountability, and transparency.

Elena Urquía Grande is Associate Professor in Accounting at Complutense University of Madrid. She received her PhD degree in economics from Complutense University of Madrid and MBA degree from the University of Houston (USA). She is the Vice Dean of International Affairs and Cooperation for Development, and has undertaken several teaching and research works in Finland, Berlin, Ethiopia, Congo, and USA. Her primary research interests lie in the field of management accounting, balanced scorecard, cooperation for development and higher education, and her works have been published on several high-impact international research journals. She is a member of the INTERLICA (La internacionalización de la educación superior en los grados bilingües: Análisis de los retos lingüísticos, culturales y académicos) research group with a national competitive research project, and a coordinator of the REEADEE (Research in Economics Europe-Africa for the Development of Emerging Economies) project.

Clara I. Muñoz-Colomina is Associate Professor in Accounting, Faculty of Economics and Business, Complutense University of Madrid. She received her PhD degree in economics from Complutense University. She is also the Vice Dean and Director of Department in this Faculty. She has undertaken several teaching and research works in Brazil, Mexico, and others universities in Spain. She works primarily on management accounting, higher education, and public accounting, and have been Published on several high-impact international research journals. She is also the Director of the IPGEEP (Información contable para la gestion de las entidades públicas y privadas) research group.

Antti Rautiainen is Professor in Accounting at the University of Jyväskylä School of Business and Economics, Finland. He received his PhD degree in 2010 and has worked in various positions at the University of Jyväskylä since 1998. Currently he guides students on both master's and Bachelor's theses as well as teaches financial accounting, research methodology, valuation, and Enterprise Resource Planning (ERP) system use. His current areas of research include case research, performance measurement, and public sector accounting. Rautiainen is also a docent of the University of Tampere Faculty of Management.

CHAPTER 13

Concluding Remarks: The Path for Solving E-Government in Developing Countries

Laura Alcaide Muñoz
and Manuel Pedro Rodríguez Bolívar

13.1 Introduction

The content of this book highlights that the introduction of new technologies and the implementation of e-government favour public sector services and improve the engagement of citizens in political and managerial participation. The Organization for Economic Co-operation and Development (OECD) (2005) considers that e-government helps establish citizen-centric services, greater service innovation and access, a better approach to common business processes, a reduction of duplication of public services and economies of scale. It can help governments to improve their internal managerial efficiency, the quality of public service delivery, citizens' access to government information and, thus, increases citizen participation and satisfaction with government (OECD 2005). At all levels of government, administrations are striving to address the challenge of achieving transparency, effectiveness and efficiency, and information and communication technologies (ICTs) provide an invaluable means of doing

L. Alcaide Muñoz (✉) • M.P. Rodríguez Bolívar
University of Granada, Granada, Spain

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1_13

so. Also, e-government initiatives help to reduce corruption, increases openness and trust in government, and thus contributes to economic policy objectives.

However, according to the *United Nations E-Government Survey 2016* (UNDESA 2016), due to a number of factors—lack of IT technical skills, lack of infrastructures, unclear objectives, lack of financial resources, among others—there are wide disparities among regions and countries in their status of their e-government development. In this regard, this book provides the most up-to-date information on important developments regarding maturity stages in government and action plans on e-government around the world.

E-government projects have always been presented in the action plans and policies of international organizations, such as the World Bank, United Nations (UN), International Monetary Fund (IMF) and the OECD, which have assumed a leadership role in the reform of political institutions. For example, the UN, under the auspices of its Development Programmes section, set up a public administration and civil service management reform project. This project coordinated external assistance in promoting a professional civil service, transparency, the use of ICT and other areas of government reform in more than 90 United Nations development programme (UNDP) countries.

In this way, ICTs have been considered by the World Bank and OECD as not just another factor of production, but rather a unique opportunity for achieving higher standards of living and greater economic and social empowerment for millions of citizens around the world. The World Bank Group has had an important role to play in this area: as a catalyst in improving access to information and communication technologies and in promoting their use for stimulating economic growth, promoting equal rights and reducing poverty.

Meanwhile, the UN has declared that the paradigm of development requires a review of the way countries consider ICTs and e-government. It needs innovative approaches to government and the public sector, to business and the citizen, and to culture and society: in other words, a holistic approach which fully exploits the centrality of ICT for the vision of a future knowledge society. Thus, these institutions consider that development is principally about policy reform in which ICTs are the strategic tool for implementing organizational and institutional consolidation.

In this regard, the international organizations have developed extensive programmes offering financial resources, although governments need to

continue their reinvention efforts and work in close cooperation with societal actors. Even though alternative visions and models for governance are emerging around the world, particularly within the developing countries, there are some basic principles of good governance that all countries must promote or achieve.

13.2 International Organizations' E-Government Programmes

This book offers a vision of the policies implemented by international organizations, and analyses the results obtained from those policies and initiatives. To begin with, it is first necessary to analyse the current situation of e-government development in a specific country using appropriate methodologies that enable us to measure this issue. To achieve this aim, guidelines and best practices codes to evaluate e-service, disclosure of online information and e-participation development have been issued by relevant international bodies (UN 2012; OECD 2013).

Alcaide Muñoz and Rodríguez Bolívar (2017) in Chap. 1 highlight that the main challenge to introducing e-government in developing countries is the lack of a well-planned strategic plan, as well as understanding the advantage of structural tools, the scarcity of financial resources and the adjustment of institutional contexts. Also, they consider that these challenging situations require global measures—a systemic thinking approach—which could help developing countries to implement ICTs successfully.

The findings of Chap. 1 provide valuable practical insights to help developing countries define, evaluate and enhance their e-government initiatives. This means acting in three different scopes at the same time: (a) organizational structure and processes; (b) investment in IT infrastructure; and (c) investment in education to make citizens ready to use IT. In order to apply a systemic thinking approach, strategic planning in the implementation of e-government applications is essential.

In Chap. 2, Arkalgud Ramprasad et al. (2017) point out that infrastructure in local governments, the political will to develop citizens' participation, interoperability of web platforms and project management in central government are challenges that the public managers and political leaders must face. Similarly, their chapter show the need to support more collaborative research between researchers in developed and developing

countries, and among different continents, in order to share their experiences and replicate the best practices.

On the other hand, Marco Velicogna (2017) in Chap. 3 shows several lessons to help policy makers and practitioners involved in the planning or implementation of e-justice systems. In this sense, firstly, e-justice is not just about the development of a technological layer to improve the efficiency of the system. Technology needs to be authorized and regulated at the normative level to produce 'legal' effects. At the same time, while single, simple, legal procedures may be 'quickly' redesigned to 'accommodate' the new technologies, such as in the Money Claim Online (MCOL) case, the development of complex e-justice systems such as in the Austrian infrastructure can only take place over time and through mutual adaptation at the legal and technological level. Furthermore, even in the case of MCOL, the system is assembled and built on the existing legal, technological and organizational framework and from its components.

The examples provided Chap. 3 show how e-justice has clear implications as far as traditional organizational borders and the logic of actions are concerned. Political, legal and operational consequences of the institutional reconfigurations that take place as off-line procedures go on-line needs to be not only carefully considered, but also monitored, as many of the consequences are emergent and not easily predictable. Another important element which emerged from the cases, is the partial nature of the on-line systems. While MCOL shows how this on-/off-line nature can be used to simplify the provision of e-justice services, the off-line component is part of all systems described. Cross-border procedure forms can be filled and printed from the EU e-justice portal, paper originals are scanned and attached to structured messages by the Austrian lawyers, and so on. This on-/off-line possibility allows limiting the complexity of the e-justice systems to a manageable level.

Finally, in Chap. 4, the last chapter in Part I, Nina David (2017) analyses the shortcoming and caveats of citizen engagement via e-government. In this sense, the public managers and political leaders need training to deal with citizens, as well as facing up to the fact that citizens might not be interested, certain populations are typically underrepresented, and it takes time, patience and resources. In this sense, this chapter suggests that technical, personnel and fiscal capacity have a tremendous impact on the development of e-government initiatives broadly. Further, the success of the

use of ICTs to encourage citizen engagement will depend on the extent to which such technologies are fully embraced by administrators and decision makers. But, if quality control measures are followed there is the possibility that the use of ICT for civic engagement will produce all the benefits that are commonly attributed to communication, consensus building and collaboration, in addition to ICT specific benefits.

13.3 Action Plans in Specific Countries: CaseStudies

Once e-government programmes have been analysed, this book offers a current overview of the implementation and improvement of e-government projects around the world in Part II. The implementation of these projects requires a technological complexity and needs to overcome incompatibility difficulties. One of the major problems is initiating a project without a strategy, clear objective and a clear description of the role of government. Also, a lack of IT technical skills, experience and security issues are some challenges that can potentially affect e-government development. Finally, the implementation initiatives of e-government are blocked by the lack of funding policies and support from the main leaders. This part provides an overview of findings obtained from e-government initiatives in different countries such as China, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, Brazil and Zambia.

In this sense, Christopher Reddick and Yueping Zheng (2017) in Chap. 5 show how data integration and analysis puts personal information privacy at risk. In China, this situation is even worse due to the lack of comprehensive laws and regulations for privacy protection in e-government in this country. Privacy lawas are not keeping up with the fast-paced development of e-government in China. City level governments need to have stronger privacy protection in place and take further steps to improve individuals' privacy protection, which will create a more favourable environment and citizen support for further e-government development. Finally, they found evidence that economic, budgetary and locational factors had a role to play in predicting greater performance in privacy statement adoption.

In Chap. 6, Ulan Brimkulov and Kasmy Baryktabasov (2017) affirm that Central Asia States are on the path of e-government development although there is no homogeneous pattern. Kazakhstan, for example, is

the leader in e-government development as it has a more powerful economy compared to the other states in the region. Kazakhstan can fund many of the e-government development initiatives itself, whereas Kyrgyzstan and Tajikistan rely on the help of international organizations. The weak economy of Kyrgyzstan and Tajikistan do not make ICT services such as Internet connection affordable for most citizens. From this point of view, this chapter confirmed that e-government development depends on the level of economic and ICT development. Therefore, the authors highlight that the digital divide, corruption, insufficient ICT development, Internet penetration, and a lack of political leadership are the most common obstacles to e-government development in the Central Asian Countries.

Also, Valeria Musafir (2017) in Chap. 7 analyses the strategic direction of Brazilian e-government policy and implementation from 2008 to 2016. The chapter shows that the Brazilian digital government strategies have become much more aligned with international organizations' guidelines, like those of the United Nations, OECD and UNESCO. The various governments have implemented strategies and initiatives which have favoured transparency and publication of the data from all agencies. However, there are still many issues regarding what data should be public and what to do with that data, as well as problems in e-government implementation.

In this sense, there are problems about 'organizational culture'—the size of the federal government; the fragmentation of organizations; constant political change; the appointment of government executives based on politics rather than technical or meritocratic considerations; and 'integration challenges' where many agencies act independently rather than together to simplify processes. Integration across levels of government is critical, but very difficult, and 'financial problems' are also a major issue in developing e-government projects—all of the government ministries are facing budget cuts that are substantially affecting the IT budget.

Finally, in Chap. 8, the last chapter in Part II, Bwalya Joseph (2017) seeks to analyse the major factor that need to be considered when designing responsive e-government solutions, especially in a developing world context. To achieve this aim, the author used the case of Zambia, and proposes a conceptual framework that can be used as a reference point to guide e-government design in contextually similar environments. Specifically, he highlights the following principles in the design of e-government: (1) active involvement of the government in the

e-government design so that priority needs of the society are embedded into the design; (2) efficiency and effectiveness as key pillars guiding the design; (3) availability of adequate funding with a clear understanding of the costs involved; (4) effervescent and responsive coordination between government departments; (5) unique legal requirements need to be carefully considered; (6) there should be requisite ICT infrastructure; (7) reliable leadership and long-term political leadership; and (8) public engagement to ensure that there is real collaborative engagement in the design.

13.4 Initiatives Undertaken, Good Practices and Lessons Learned in Other Countries

After examining experiences in developing countries, this book shows in Part III the initiatives undertaken by other developed countries so that developing countries can take note of the good practices and lessons learned. Gustav Lidén (2017), for example, in Chap. 9, shows that there is inconsistency in findings of global variations of e-democracy as well as an inability to reach valid measurements of ICT development. In this sense, there is no doubt that ICTs have influenced and will continue to influence political systems around the world, and that we could expect such processes to produce new forms of politics with great democratic capacity. This chapter concludes that even though technological conditions and population size are important for e-democracy, other explanatory factors are, to a large extent, shrouded in mystery.

In addition, Mohammed Aladalah et al. (2017) in Chap. 10 highlight how Gov2.0 facilitates citizen engagement to co-create public value using the theoretical lens of the propose Gov2.0 complexity cube. First, they identified citizen engagement as an important concept that enables public value co-creation between citizens and governments. Second, they proposed the Gov2.0 complexity cube and tested the co-creation types only on one dimension of the cube—the government levels. Also, they identified that future research should empirically validate the dimensions such as community and citizens to reveal other types of co-creation. Finally, the researchers analyze the similarities and differences between Gov2.0 platforms.

Then Pertti Ahonnen (2017) in Chap. 11 shows lessons that could be put into practice in developing countries when e-government is

implemented. One of these is the latecomer's advantage, enabling learning from the mistakes of early adopters. In developing countries, for instance, ICTs may compensate for the relative underdevelopment of fixed telecommunication lines, land transportation and banking and finance. Besides, the introduction of innovations in developing countries may support the elaboration of stronger social networks of civil society and better political inclusion, although risks are also involved, including the expansion of political and social dissatisfaction with movements that lack peaceful outlets to articulate their demands.

Finally, Francisco Alcaraz Quiles et al. (2017) in Chap. 12 affirm that governments worldwide use ICTs as a way of enhancing citizens' trust in them. The implementation of e-government is an opportunity and has a huge potential to contribute to the modernization of government. It could increase the contribution of websites as a way to increase transparency, accessibility and usability. The findings of the chapter show that the transparency of governments websites is inversely related to accessibility. The information is available but you have to spend too much time finding it. Nevertheless, transparency is positively related to usability, so, users of websites with a greater percentage of information disclosed have the perception that the websites achieve the standards of usability; anyone can easily navigate around them. The websites of governments offer an easy way to access and navigate information, but politicians and managers must make further efforts to improve their accessibility, and improve transparency.

13.5 Conclusions

This book collects studies about the perceptions of stakeholders, such as public managers and politicians, regarding the need to implement e-government projects as a way to improve efficiency, participation, transparency and accountability in governments, specifically in developing countries. In addition, the book analyses and shows different experiences, in a comparative way, regarding e-government projects. Thus, it highlights a benchmark analysis which is useful for governments as it identifies the key aspects to enable e-government projects to be successful.

In sum, this book offers a current overview to provide a roadmap that leads from problem definitions to problem-solving methods and innovations for future progress.

Acknowledgments This research was carried out with financial support from the Regional Government of Andalusia (Spain), Department of Innovation, Science and Enterprise (Research project number P11-SEJ-7700).

References

Ahonnen, P. (2017). Learning from opening data in the context of e-Government: Finland, with special reference in governments location data. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-government development policy, implementation and best practices.* Basingstoke: Palgrave Macmillan. forthcoming.

Aladalah, M., Cheung, U., Lee, V. C. S., & Alamri, S. (2017). Public value co-creation via Gov 2.0 complexity cube. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices.* Basingstoke: Palgrave Macmillan. forthcoming.

Alcaide Muñoz, L., & Rodríguez Bolívar, M. P. (2017). Experiences of e-Government development implementation in developing countries: Challenges and solutions. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices.* Basingstoke: Palgrave Macmillan. forthcoming.

Alcaraz Quiles, F. J., Urquía Grande, E., Muñoz Colomina, C. I., & Rautiaihen, A. (2017). E-Government implementation: Transparency, accessibility and usability in governmental web. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices.* Basingstoke: Palgrave Macmillan. forthcoming.

Brimkulov, U., & Baryktabasov, K. (2017). E-Government development in the Central Asian states. Best practices, challenges and lessons learned. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices.* Basingstoke: Palgrave Macmillan. forthcoming.

David, N. (2017). Democratizing government: What we know about e-Government and civic engagement. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices.* Basingstoke: Palgrave Macmillan. forthcoming.

Joseph, B. K. (2017). Designing effervescent e-Gov solutions: Lesson from a developing world context. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices.* Basingstoke: Palgrave Macmillan. forthcoming.

Lidén, G. (2017). Progress in global assessment of e-Democracy: Refined measurements and new findings. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices.* Basingstoke: Palgrave Macmillan. forthcoming.

Musafir, V. E. (2017). Brazilian e-Government policy and implementation. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices*. Basingstoke: Palgrave Macmillan. forthcoming.

OECD. (2005). *E-government for better government*. Paris, France: OECD.

OECD. (2013). OECD principles on digital government strategies: Bringing governments closer to citizens and businesses. Retrieved July, 2017, from http://www.oecd.org/governance/eleaders/Draft-OECD-Principles-for-Digital-Government-Strategies.pdf

Ramprasad, A., Sánchez-Ortiz, A., & Syn, T. (2017). Comparative analysis e-Gov services: An ontology-based approached. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices*. Basingstoke: Palgrave Macmillan. forthcoming.

Reddick, C. G., & Zheng, Y. (2017). Online privacy protection in Chinese city governments: An analysis of privacy statements. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices*. Basingstoke: Palgrave Macmillan. forthcoming.

United Nations (UN). (2012). *E-government survey 2012. E-government for the people*. New York: United Nations.

United Nations Department of Economic and Social Affairs (UNDESA). (2016). *United nations e-government survey 2016. E-government in support of sustainable development*. New York: United Nations.

Velicogna, M. (2017). E-Justice in Europe: From national experiences to EU cross-border services provision. In L. Alcaide Muñoz & M. P. Rodríguez Bolívar (Eds.), *International e-Government development policy, implementation and best practices*. Basingstoke: Palgrave Macmillan. forthcoming.

Laura Alcaide Muñoz is Associate Professor in Accounting and Finance in the Department of *Financial Economy and Accounting* at the *University of Granada*. She is interested in E-government, E-Participation and Smart Cities. She has been author of numerous articles in leading SSCI journals (Business, Economics, Information Science and Public Administration) and has written book chapters in prestigious publications for IGI Global, Springer and Routledge-Taylor & Francis.

Manuel Pedro Rodríguez Bolívar is Professor in Accounting at the University of Granada. He has authored numerous articles in leading SSCI journals and several book chapters published for Routledge, Kluwer Academic Publishers, Springer, Nova Publishers and IGI Global. He is author of full-length books and editor of books for Springer, Palgrave and IGI Global. In addition, he is a member of the Editorial Board of *Government Information Quarterly* and Associate Editor in other leading international journals.

Index[1]

[1]Note: Page numbers followed by "n" refers to notes.

L. Alcaide Muñoz, M.P. Rodríguez Bolívar (eds.), *International E-Government Development*, DOI 10.1007/978-3-319-63284-1