# E-GOVERNMENT

## Strategy Process Instruments

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# E-Government

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# Imprint

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# Preface

Fundamental characteristics of the digitizing world are its increasing dynamics and complexity. While this development first had a game-changing impact on the private sector, the public sector is increasingly experiencing pressure to adopt easy to use, useful, and secure e-government solutions that provide convenient data access and interaction possibilities to public stakeholders.

Therefore, the public sector needs to move away from traditional bureaucracy and move on to conducting business in a way that satisfies the needs and requirements of public stakeholders. For this reason, this textbook takes a public management and administration-oriented perspective to better understand the e-government concept and to provide helpful insights as well as strategic advice for successfully implementing and maintaining e-government systems.

In preparing this book, we received a variety of conceptual and substantive support. Special thanks go to the staff and doctoral students of the chair, especially Mr. Jan C. Weyerer (M.Sc.) and Mr. Daniel A. Schmitt (MPA). They have done a great job, demonstrating outstanding commitment and team spirit.

The scientific development of a subject area thrives through the critical analysis and discussion of concepts and content. Given this, and the still inchoate state of knowledge regarding e-government, we are grateful for any recommendations or comments.


Speyer, September 2015

Bernd W. Wirtz & Peter Daiser

# 1   Introduction

In the modern information society, innovations in information and communication technology have influenced citizens' behavior as well as their desired information requirements by having fundamentally changed the way how people work and communicate. This information technology-induced development alters social and cultural as well as commercial and administrative structures. Especially the Internet, which allows various forms of information access, interaction opportunities, as well as knowledge creation and sharing, has intensified this digital transformation.

Digitalization, networking, and globalization connect individuals and organizations on a worldwide level and reduce the importance of geographical boundaries. The consequences affect both the private and the public sector. Concerning the latter, the rapid evolvement from simple information access to providing complex processes and powerful tools and networks change the public service provision and process landscape (Chen, Gibson, and Geiselhart 2006; Dawes 2008). Thus, governments worldwide pursue e-government solutions, which are particularly relevant for themselves and their stakeholders (Wirtz, Mory, and Ullrich 2012).

Citizens, for instance, demand a more flexible and more transparent administration as well as an increasing range of services that are provided online via the Internet. From a business perspective, a consistent, sustainable implementation of e-government is highly relevant for the economy since an unrestricted online availability of public services is regarded as an essential factor in international competitiveness. In this regard, e-government reflects an important starting point for satisfying these requests. And apart from that, governments aim at optimizing efficiency and effectiveness through increased administrative productivity as well as substantial cost reductions (Wirtz et al. 2014).

As already pointed out, governments need to consider multiple stakeholder relationships when implementing e-government. Wirtz and Piehler (2010) identified four relevant groups: (1) Government-to-Government (G2G) refers to the linkage of government and public sector bodies for collaboration and cooperation. (2) Government-to-Business (G2B) reflects the provision of information and services as well as interaction between governmental and profit-oriented non-governmental organizations. (3) Government-to-NPO (G2N) relates to the interaction between governmental and non-profit non-governmental organizations. (4) Government-to-Citizen (G2C) considers the relationship between the government and its citizens

with respect to public service provision and e-democracy. In this context, Milakovich (2012) also mentions employees, which leads to a fifth group, Government-to-Employee (G2E) representing the digital relationship between agencies and their employees as well as non-governmental contractors.

Meeting these challenges is a key task of the e-government concept. The following discussion therefore explains the reasons why e-government has become so important today and addresses its main features and potentials.

## 1.1 E–Government Importance

A key reason for the importance of e-government is the tremendous influence of the Internet as a global networking and communication system. Its rapid spread on a worldwide level (see Figure 1, which illustrates the development of worldwide Internet hosts, namely domain names that are assigned to an IP address) connecting state, economy, society, and citizens also across national borders made it an unprecedented medium. From this point of view, the Internet seems to be an ideal technology to interact and collaborate with all kinds of public stakeholders.

Figure 1 Development of the Number of Internet Hosts since 1993
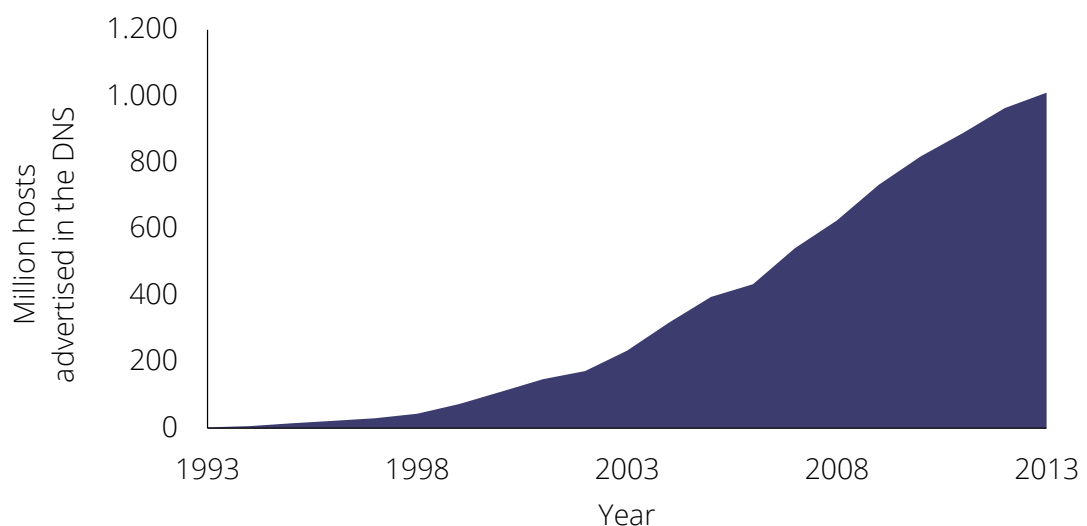


Source: ISC 2015.

In the private sector, for example, it allows companies to develop foreign markets and to conduct international business transactions more efficiently than ever before. However, it also transforms the way how businesses are organized and how they operate, which leads to special needs and requirements that public authorities have to meet from a G2B-perspective. The same holds true from a citizen point of view, because the use of modern information and communication technologies has changed citizens' demands, too. In light of the enormous importance that the Internet has reached, governments and public authorities therefore, have to account for an adequate adoption and handling of these technologies to meet the respective user needs.

The ongoing technologic development and the constantly increasing degree of globalization, which in combination caused a massive change in business and society, pose severe transformational challenges to governments all over the world. Here, e-government, which is considered a powerful system if applied effectively, may contribute substantially to stepping up to the plate (United Nations 2014) since it is regarded to possess remarkable potential for improving the responsiveness of governments and the public sector to the needs of their stakeholders (Vélez-Rivera et al. 2008). When looking at the influencing conditions that exert pressure on governments from a macroeconomic, business environment perspective, these touch political, economic, social, technological, legal, and environmental factors.

Political pressure arises from the fact that the Internet has massively influenced citizens' behavior as well as their desired information requirements. The resulting information ubiquity dethrones the state—formerly being the largest data collector—from his information monopoly by increasing the number of relevant information providers which leads to a competitive information authority environment (Im et al. 2014).

Since non-state entities already tend to show network structures that empower individuals, favoring these organizations in terms of benefiting from the rapid development of information and communication technologies, in combination with the "[...] non-territorial nature of today's problems and solutions [...] [, this] strongly suggests that the relative power of states will continue to decline" (Mathews 1997). Thus, public authorities need to effectively deal with this transformational change to stay on top of it and not to lose touch with their citizens by actively and directly interacting with their stakeholders and rethink their role and delivery model within the digital world.

The globalizing world changes the way how individuals and organizations communicate, collaborate, and compete. International cross-border business and available information and communication technologies flatten the world and form new, complex systems of interaction. The resulting knowledge revolution, which is mainly created through interconnected markets and databases as well as a large number of participants that are virtually linked together via information and communication technologies, forces the public sector to revise strategies, management, and operations to respond to increased citizen demands in a more dynamic economic environment (Milakovich 2012).

Moreover, governments and public sector organizations, which tend to show long processing times, lack of flexibility, and a focus on processes instead of results, face general demands of reducing costs and improve operations. The upcoming digital native generation demands better public service provision in terms of convenient access and interaction as well as ongoing personalization and customization possibilities. To relieve these growing pressures, they need to move away from traditional bureaucracy and move on to doing business that centers on the client: citizens as well as governmental and non-governmental organizations. This transition requires an uncomfortable shift, leaving behind long-standing public sector culture and work patterns, towards a novel business model that builds upon an open, transparent, and fast digital interaction between all parties involved (Brown, Thompson, and Fishenden 2014).

Apart from that, complex, interdependent global challenges such as peace, poverty, or inequality, require an increasingly effective collaboration across boarders and across all layers of government as well as with non-governmental stakeholders. Thus, the public sector must provide a well-functioning public administration that delivers the services demanded by citizens and businesses, promotes citizen engagement, participation, and empowerment, and creates an environment that fosters a sustainable social, economic, and environmental future (United Nations 2014).

Companies such as Google, Amazon, or Facebook, which appeared a couple of years ago and have turned many ways of doing business inside out by creating new markets, new opportunities, and entirely new business models, as well as professionally delivering innovation and scalable user-oriented e-services with unprecedented speed. In this context, governments, formerly being among the earliest adopters and largest users of information technologies, could not keep up with the development pace of technology and network organizations since they are partly stuck in complicated and nowadays outdated automation processes (Brown,

Thompson, and Fishenden 2014), have difficulties to compete with the private sector in the war for talent, and are bound to rigid procurement procedures (Vélez-Rivera et al. 2008).

Although, governments are basically forced to act on the digital advancement of public services, there still persist legal challenges, which complicate a smooth flow of this development, since the online provision of information may violate personal data rights and freedoms (O'Hara 2011), existing inconsistent legal frameworks and copyright obligations hinder data transparency (Goodspeed 2011), and incompatible policy-making may lead to incomplete data provision (Janssen, Charalabidis, and Zuiderwijk 2012).

This situation becomes even more difficult for governmental decision makers since public provision of information always carries an additional risk of breaching confidentiality or security issues. Thus, governments and public authorities need to balance legal restrictions, transparency values, and data privacy (Goodspeed 2011).

Governments are under growing pressure to consider environmental aspects within public policy-making and to elaborate governance measures and mechanisms that foster environmental protection and promote a sustainable management of natural resources. Furthermore, citizens demand an increase in environmental public service provision and an improvement of environmental stewardship. On the whole, the target is to achieve an environmentally sustainable future for next generations (United Nations 2014).

Taking into account this widespread need for action as well as the various levels involved that require improvement, namely "[…] people, process, technology, and governance" (Brown, Thompson, and Fishenden 2014, 4), governments as well as the public sector need to undergo a severe transformation process. This is, where the advancement of time and location-independent information and communication technologies, in the form of e-government, come into play.

E-government promises to provide manifold game-changing advantages. It is supposed to ease access to public sector information and to make interaction with government and public institutions more convenient through online transactions, thus, advancing public administration and transforming public service provision (Garson 2004; Welch, Hinnant, and Moon 2005). Moreover, by shifting the interaction focus from a provider to a user perspective, e-government shall extensively enhance public sector service-orientation (Holzer 2004).

The concept embraces the idea of fostering internal efficiency, effectiveness, and productivity, and thus substantial e-government-related cost savings are expected (Parent, Vandebeek, and Gemino 2005). Increased accountability reflects citizens' demands for transparency and improves control over government bureaucracy (Ahn and Bretschneider 2011). Furthermore, e-government provides a toolset for e-democracy since the concept promotes knowledge sharing, participation, collaboration, and innovation.

In addition, e-government is expected to generate benefits for social inclusion, employment, health, and education, as well as to help governments to promote effective natural resource management (United Nations 2014). Finally, e-government is considered to have the power to renew the image of the government and the public sector (Ahn and Bretschneider 2011; Arellano-Gault 2012) and thus to strengthen citizen trust in the government (Chan et al. 2010; Im et al. 2014). The potential benefits of e-government are summarized in Figure 2.

Figure 2 Expected E-Government Advantages
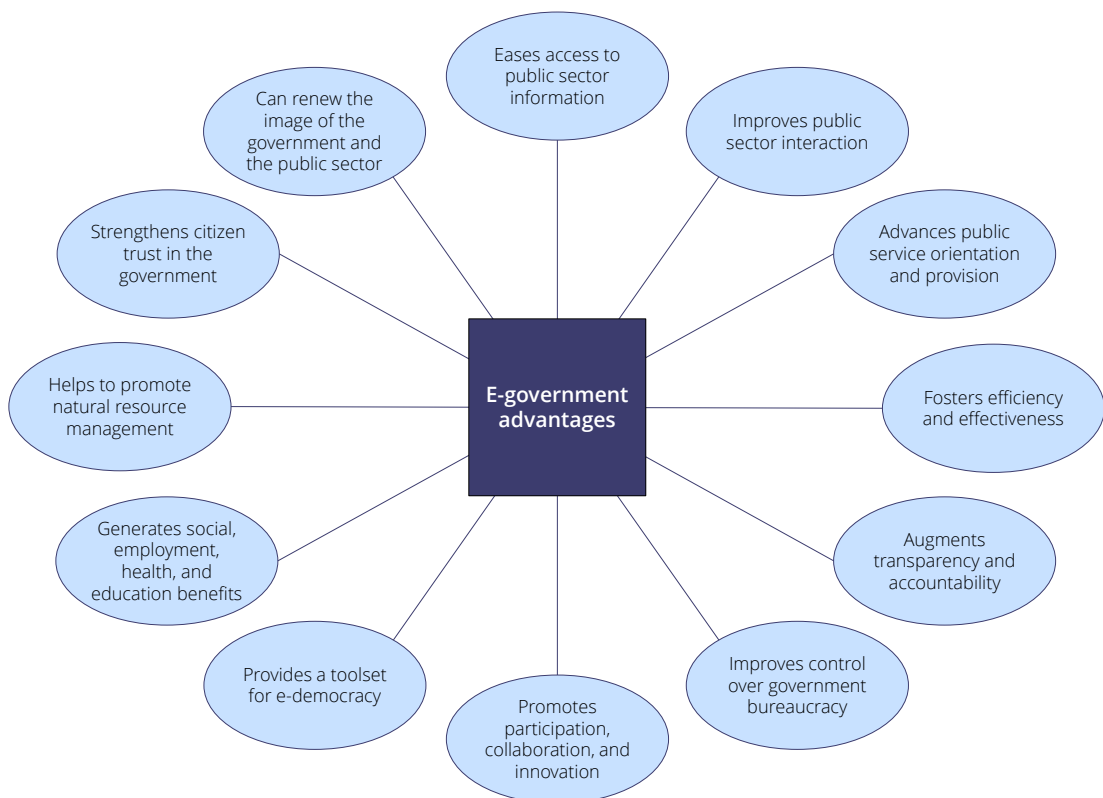
Thus, e-government is not just about digitizing existing bureaucratic processes. It should rather be seen as a transformation of e-business models onto the public sector and in terms of how governments operate. This new way of doing business is supposed to allow interactive access 24/7 via one-stop web portals (Garson 2004). These one-stop shop governmental websites are virtual portals that are an integral part of modern public service provision (Liu, Chen, and Wang 2010) and that are organized from a user-oriented perspective, bundling relevant information for citizen-government, business-government, employee-government, or government-government interaction.

This approach represents a major improvement in the provision of government services, since before, citizens often needed to address various agencies for solving different requests. In a worst-case scenario, they also had to show up in person in every agency, making access to public services a time-consuming activity (Milakovich 2012). In this respect, e-government tries to put people online instead of in line (Schellong 2009).

But despite its extensive expected benefits, e-government is still in an emerging state and its full potential has not been developed yet (Arellano-Gault 2012; United Nations 2014). Apart from that, public sector officials face difficulties that arise from the implementation of new technologies (Arellano-Gault 2012). Furthermore, since the private and the public sector show inherent differences, existing e-business models cannot be simply transferred.

While companies concentrate on their target-customers and the market automatically penalties and rewards actions in the private sector, governments have to serve all people and organizations and deal with coercive actions in accordance with political will-formation within a heterogeneous society (Veit and Huntgeburth 2014). Against this background, e-government has become a major topic of interest to science and public management (Bélanger and Carter 2012).

## 1.2   E–Government Definitions

Up to now an interdisciplinary body of knowledge has been accumulated, which covers diverse scientific fields such as business administration, information systems, communication, or public management (Arduini and Zanfei 2014). Since different areas tend to investigate phenomena from contrasting perspectives, quite a few explanation approaches can be found in scientific literature.

In the E-Government Act of 2002, the 107th Congress explained e-government as "[…] using Internet-based information technology to enhance citizen access to Government information and services, and for other purposes" (107th Congress 2002, 2899). Following, we present frequently appearing e-government definitions:

- "Simply stated, e-Government is the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees" (Silcock 2001, 88).

- "[…] E-government is defined as: utilizing the internet and the world-wide-web for delivering government information and services to citizens" (UNDPEPA and ASPA 2002, 1).

- E-government refers to "[…] the use of information technology to enable and improve the efficiency with which government services are provided to citizens, employees, business and agencies" (Carter and Bélanger 2005, 5).

- "[…] E-government in a broad sense: all use of information technology in the public sector. It covers a broad range of managerial issues: from high-level strategy to detailed tactics; from the technicalities of data flows and process mapping to the politics of e-government" (Heeks 2005, 1).

- "Simply speaking, E-Government means the communication between the government and its citizens via computers and a Web-enabled presence. The advantages in timeliness, responsiveness, and cost containment are outstanding" (Evans and Yen 2006, 209).

- "Electronic government is the use of Information and Communication Technology in the transformation of government; primarily aiming to the improvement of accessibility, effectiveness and responsibility. It is based on the diffusion of the information and the information policy development. Electronic government guides to increasing citizens' participation and active citizens' development affecting the mechanisms of democracy" (Spirakis, Spiraki, and Nikolopoulos 2010, 75).

Although, the definitions head in a similar direction and demonstrate common points, they show differences in scope, subject, and technology, too (see Table 1). While UNDPEPA and ASPA (2002) see e-government as a tool for information and service provision to citizens, Spirakis, Spiraki, and Nikolopoulos (2010) link participation, development, and democracy mechanisms with this topic and Carter and Bélanger (2005) bring employees, businesses, and agencies on board.

Table 1 Range Differences of E-Government Definitions

|  | **Minimum range** | **Maximum range** |
| --- | --- | --- |
| **Scope** | Information and service delivery | Enabler for e-democracy |
| **Subject** | Citizen | All public sector stakeholders |
| **Technology** | Computer and web presence | Internet |

Evans and Yen (2006) define computers and a web-enabled presence as sufficient technology, while most speak of information and communication technologies (Carter and Bélanger 2005; Heeks 2005; Spirakis, Spiraki, and Nikolopoulos 2010) or the Internet (UNDPEPA and ASPA 2002). In this context, Silcock (2001) mentions technology in general without specifying this more precisely.

However, there are similarities that are in line with the majority of the definitions. First, a technology-enabled government is assumed. Second, information and services are provided online and unattended to government or public sector stakeholders. Third, accessibility, accountability, efficiency, effectiveness, and government-stakeholder interaction are positively influenced. Before exemplifying the use of the term e-government in this book, we first have to differentiate it from e-governance since these terms are sometimes used synonymously, even though they do not mean the same (Saxena 2005).

E-governance[1] refers to a technology-driven administration and control system of formal and informal arrangements to enhance governance structures and/or processes as well as to guide and confine collective activities (Bannister and Connolly 2012; Vig 2012). Therefore, "[...] e-government constitutes only a subset (though a major one) of e-governance" (Saxena 2005, 3).

Accordingly, e-government constitutes a technology-enabled part of the government or public sector governance model that allows unattended public stakeholder access to information and services, improves government-stakeholder-interaction, fosters accountability, efficiency, and effectiveness, and forms the basis for e-democracy from a technological point of view. Thus, we apply the following definition throughout the book in accordance with Wirtz and Piehler (2010):

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**Definition of E-Government**

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The term e-government describes the electronic handling of administration and democracy processes in the context of governmental activities by means of information and communication technologies to support public duties efficiently and effectively.

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## 1.3   Aim and Structure of the Book

To start off, we would like to point out that this book is not the Holy Grail to e-government offering all the answers to all remaining questions. We rather present a custom-tailored overview of the current state of e-government for science, education, governments, public administration, and public management. The aim of this work is thus to collect and summarize our experiences and state-of-the-art knowledge from these fields of activities to establish a sound knowledge base for academics and practitioners alike.

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1 "E-Governance is the use of information and communication technologies (ICTs) in government in ways that either: (1) alter governance structures or processes in ways that are not feasible without ICT and/or (2) create new governance structures or processes that were heretofore not possible without ICT and/or (3) reify heretofore theoretical ideas or issues in normative governance" (Bannister and Connolly 2012, 11).

As laid out in the previous pages, e-government is a topic of paramount importance because it affects many facets of our private and professional lives as e-government applications have already become an important interface for citizen-government interaction (Wirtz, Piehler, and Daiser 2015). Moreover, the related scientific discourse shows solid optimism about its usefulness and potentials for public administration (Bekkers and Homburg 2007), which suggests that a further intensification of digital public interaction can be expected. However, its path is not finally laid out yet and thus scientists as well as public managers need to be open to new findings and experiences and stay curious about its development to actively shape the future e-government.

In this context, we intend to make a valuable academic and managerial contribution by providing fundamental aspects of e-government to teachers and students and by creating a firm foundation for development, implementation, and operation of e-government, as well as advancing related knowledge and forthcoming research. In light of these aims, the content of this textbook is structured as shown in Figure 3.

Figure 3 Book Structure

| 1 | Introduction |
| 2 | The Information Society and E-Government |
| 3 | The Concept and Strategy of E-Government |
| 4 | E-Government Business Models |
| 5 | User-driven E-Government |
| 6 | E-Government Services |
| 7 | Multichannel E-Service Delivery |
| 8 | Success Factors of E-Government |
| 9 | E-Government Implementation |
| 10 | E-Government Case Studies |
| 11 | E-Government Outlook |

The next chapter presents a comprehensive introduction into the foundations of e-government by first, referring to the principles and the development of the information society and second, providing an overview of the evolution of e-government. Chapter 3 outlines the concept and strategy of e-government by presenting the Four Forces Model of E-Government, the E-Government Value Activity System (EVAS), as well as vital strategic management aspects. A brief excursion on open government versus e-government closes the chapter.

Chapter 4 is dedicated to e-government business models, illustrating conceptual, process-related, and implementation-related facets of the concept. The user-oriented aspects of e-government are presented in chapter 5. Here, we illustrate demand as well as service preferences from a user-perspective and provide a summary of important user-related success factors.

E-government actors and services are discussed in chapter 6. The following chapter explains e-service delivery within a multichannel environment and in chapter 8, we summarize the success factors of e-government from different perspectives. Next, chapter 9 illustrates important factors and crucial aspects, which need to be considered when implementing and maintaining e-government platforms.

In the subsequent chapter, three case studies of the e-government portal offerings of Hong Kong, London, and New York are outlined, representing three top-tier city websites that serve as first-mover examples. The final chapter 11 provides a brief summary on the outlook on e-government.

# 2 The Information Society and E–Government

The innovation in information and communication technology and the resulting advent of the Internet were strong drivers for moving from an industrial to an information society. So far, "technological innovations have always shaped the development of economy and society. The digital age, also called digital revolution, which was initiated through the development of the multimedia market leads to a fundamental change of existing structures in the telecommunications, computing, entertainment, and media industry" (Denger and Wirtz 1995, 20). This early assessment of 1995 clearly illustrates the far-reaching impact of digitization.

## 2.1 The Development of Information and Communication Technologies

To understand the underlying evolution of the information society, we have to take a look at the information and communication technology development over the past 50 years.[1] The development from 1966 to 1994 is illustrated in Figure 4 on the following page.

In 1966 IBM introduced the Disk Operating System (DOS/360) for its mainframes. This was the first system that allowed batch processing (executing a series of function commands or programs without rebooting the mainframe or other manual intervention). Only three years later, Paul Baran and Donald Watts created ARPANET, the ancestor of the Internet. This was followed by another milestone in the development of information and communication technologies, the intervention of the microprocessor by Intel.

Based on these previous steps, IBM introduced the first personal computer and Motorola presented the first commercial mobile phone. These were the main technological breakthroughs that enabled the development of interconnected information and communication technologies that we know today.

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1 See for the development of information and communications technologies Wirtz 2013c.

Figure 4 Information and Communication Technology Development (1)



| Year | Event |
|------|-------|
| 1966 | IBM introduces DOS (Disk Operating System/360) for its mainframes |
| 1969 | Paul Baran and Donald Watts Davies create ARPANET, the first decentralized network |
| 1971 | Intel introduces the first microprocessor into the market |
| 1981 | IBM presents the first personal computer |
| 1983 | Motorola presents the Dynatac 8000x, the first commercial mobile phone |
| 1985 | Steve Case founds Quantum Computer Services (3 years later renamed to AOL) |
| 1985 | Microsoft releases Windows 1.0 |
| 1989 | Start of the World Wide Web |
| 1993 | SAP releases its ERP-software SAP R/3 |
| 1994 | Jeff Bezos founds the online mail-order company amazon.com |

Source: Wirtz 2013c.

Given the first network technologies and users, who possessed the necessary hard- and software, information technology in general gained more and more commercial interest. In this context, Microsoft released Windows 1.0, a user-friendly operating system that applied a graphical instead of command line interface, to conquer the personal computer market. At the same time, Steve Case founded Quantum Computer Services, which was renamed to America Online (AOL) three years later, and around the year 2000 was the world's largest Internet provider possessing more than 30,000,000 paying customers.

With the beginning of the World Wide Web in 1989, the starting point of interconnected networks was set and the digitalization trend picked up speed. Big enterprises, such as SAP releasing SAP/R3 in 1993, had to react to provide network-compatible software, and young entrepreneurs like Jeff Bezos, who founded amazon.com in 1994, were first movers in the Internet and e-business world.

A year after the establishment of amazon.com, eBay Inc. was founded by Pierre Omidyar and quickly became the largest online market place for private and commercial traders. As people started to use the Internet more intensively, the demand for online mobility increased, too. Thus, in 1996 Nokia introduced the first smartphone, which up to now has become a commodity in the mobile phone market. The information and communication technology development from 1995 until 2014 is illustrated in Figure 5 on the following page.

1998 was the founding year of Google Inc., an Internet business that started as a search engine newcomer and already a couple of years later faced its first lawsuits concerning its Internet monopoly, which Google achieved by providing many useful, innovative products and services. At the end of the 1990s, Deutsche Telekom started marketing broadband connections and in 2001 Manx Telecom introduced the first UMTS network on the Isle of Man. This technology is regarded as a milestone in mobile Internet.

Ongoing technological progress led to increasing bandwidth and thus a continuing rise in data transmission rates, which allowed the provision of new online services, such as music or video distribution. A milestone in online music distribution, for example, was the media library and player iTunes, which was released in 2001 and soon became the leading portal in digital music marketing. Moreover, completely new services like Facebook, an online social network, were suddenly realizable.

Figure 5 Information and Communication Technology Development (2)
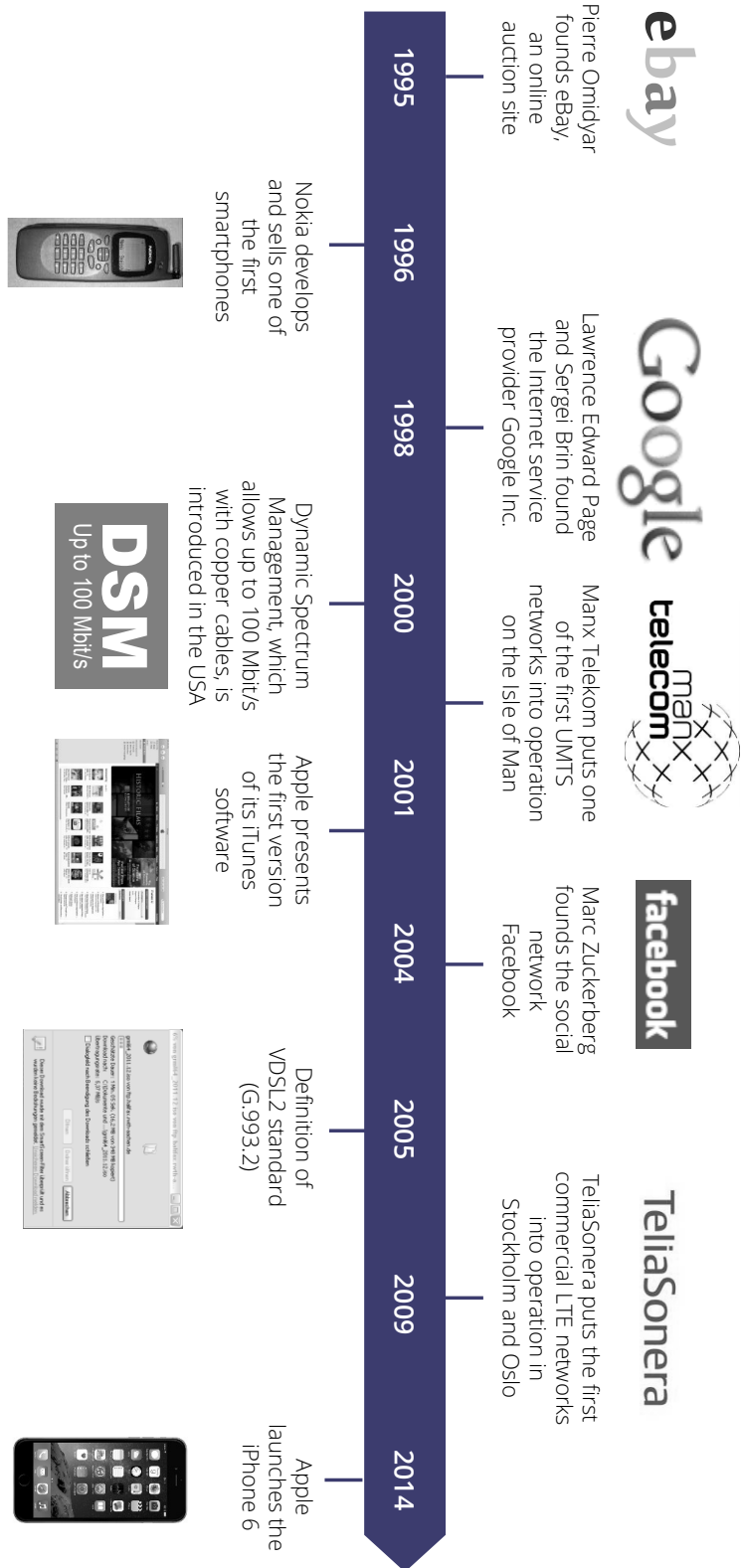


Source: Wirtz 2013c.

So far, wired as well as wireless Internet connections are constantly becoming faster, enhancing online service provision at home and on the way. In the US, for instance, the T1 cable was introduced in 1956. Then in 1978 ISDN revolutionized communication and in 1993 ADSL and in 1995 VDSL again brought along major break throughs in online data transmission. About ten years later, the VDSL2 standard (G.993.2), which promised increased speed and better performance, was defined and in 2009 the first LTE networks were put into commercial operation. These developments are clear indicators of this trend.

These information and communication technology developments provided the technological basis for the global system of interconnected computer networks called Internet, which in 2014 already showed more than 3 billion users. Table 2 illustrates recent worldwide Internet usage and population statistics.

Table 2 Worldwide Internet Usage and Population Statistics

| Regions | Population (2014 Est.) | www Users (31 Dec 2000) | www Users (30 Jun 2014) | Pop. in % | Growth (2000-2014) | Users in % |
|---|---|---|---|---|---|---|
| Africa | 1,125,721,038 | 4,514,400 | 297,885,898 | 26.5 % | 6,498.6 % | 9.8 % |
| Asia | 3,996,408,007 | 114,304,000 | 1,386,188,112 | 34.7 % | 1,112.7 % | 45.7 % |
| Europe | 825,824,883 | 105,096,093 | 582,441,059 | 70.5 % | 454.2 % | 19.2 % |
| Middle East | 231,588,580 | 3,284,800 | 111,809,510 | 48.3 % | 3,303.8 % | 3.7 % |
| North America | 353,860,227 | 108,096,800 | 310,322,257 | 87.7 % | 187.1 % | 10.2 % |
| Latin America | 612,279,181 | 18,068,919 | 320,312,562 | 52.3 % | 1,672.7 % | 10.5 % |
| Oceania/ Australia | 36,724,649 | 7,620,480 | 26,789,942 | 72.9 % | 251.6 % | 0.9 % |
| **World total** | **7,182,406,565** | **360,985,492** | **3,035,749,340** | **42.3 %** | **741.0 %** | **100.0 %** |

Source: Internet World Stats 2014.

This means that already four out of ten people worldwide use the Internet, representing a growth of 741% since 2000. The respective development and diffusion of modern information and communication technologies as well as the respective repositioning and use of these technologies were key drivers for moving from an industrial to an information society.

## 2.2 The Information Society and its Development

Conducting a title search for 'information society' in the Social Science Citation Index shows that the topic is of academic interest since the 1980s and that peaks can be identified in 1983, briefly after the introduction of the first personal computer, and around the introduction of the Apple Macintosh in 1984 as well as from 1995 to 1997 when the World Wide Web started to gain popularity (Fuchs 2013). Thus, with personal computers becoming a commodity and the advent of the Internet, the concept of the information society received increasing attention.

Manuel Castells, who is one of the leading authors of this topic (Homburg 2008), summarizes that the world entered a new technological paradigm by making use of globally networked information and communication technologies. This is a key reason for a set of related social transformations that have taken place all around the world during the past three decades. Although these transformations partly have taken distinct forms and show different manifestations due to varying cultural and historical characteristics, they nowadays fundamentally affect a vast majority of societies. However, what has changed is not the role of knowledge or information since these factors have always been playing an important role in societies, but rather the availability and application of new information and communication technology[1] (Castells 2000). According to Castells (2000), this new economy we are living in is characterized by the following three features:

1. It is informational, meaning that information management and knowledge creation capacities are main determinants for competitiveness for all economic participants.

2. It is global, in the sense that economic units can communicate and coordinate their strategic and operative activities in real time on a global scale.

3. It is networked, meaning that economic units are interconnected, which allows the network enterprise[2] to develop a new form of organization.

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1 For this reason, Castells later refers to the term network society since information society may be misguiding (Castells 2000).
2 A network enterprise is "[...] is a network made from either firms or segments of firms, and/or from internal segmentation of firms. [...] These networks connect among themselves on specific business projects, and switch to another network as soon as the project is finished" (Castells 2000, 10–11).

The underlying principle of the shift from an industrial to an information society can be partly explained when looking at the Kondratiev waves, also called supercycles or K-waves (Denger and Wirtz 1995). Figure 6 illustrates the concept of the Kondratiev waves against the background of the important technological innovations.

Figure 6 The Development of a Technological Revolution
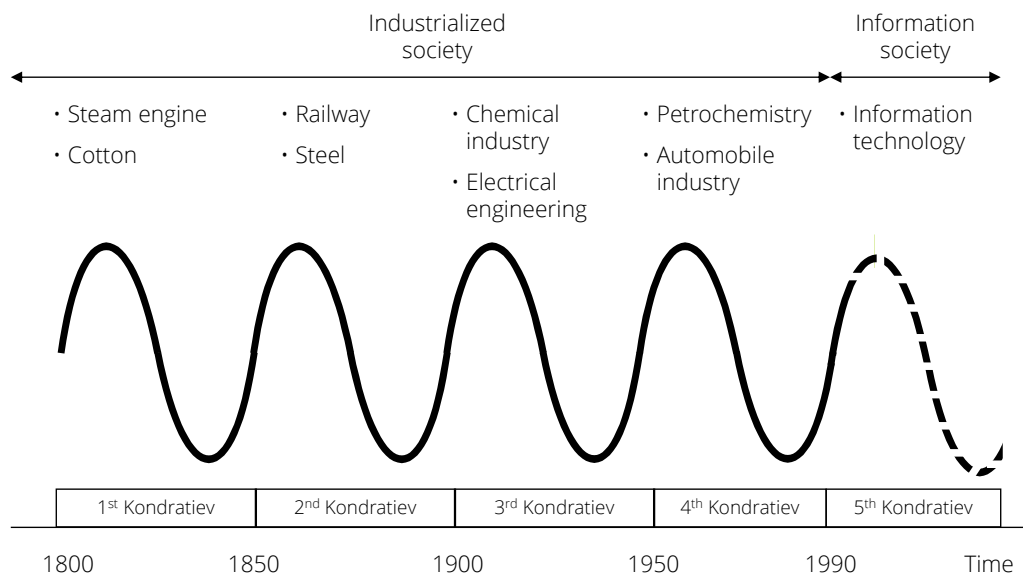


Source: Nefiodow 2006.

According to this theory, technological innovations cause economic cycles of alternating intervals between growth and recession with periods of approximately 40 to 60 years, which also determine societal developments. When considering information and communication technology as important as previous major break-through technologies, such as the steam engine, railway, or electrical engineering, this provides the impulse for the fifth Kondratiev wave.

## 2.3 E–Government Development

Applying new information and communication technologies to the public sector environment promised to enhance public administration productivity and to satisfy citizen demands for online information and service provision. This was the starting point for an increasing integration of these technologies into governance systems and processes and public authorities began to digitally provide information and services to citizens and businesses.

This novel form of service provision was called electronic government or e-government that—based on its innovative nature and expected potential—quickly received increasing attention in the public administration and management practice as well as in science (Dawes 2009). Considering both streams, the development of e-government is presented in a two-step approach in the following. First, we outline its progress in practice and second, we demonstrate the topic's evolution in academic research.

### E–Government in Practice

In the US, the High Performance Computing Act of 1991 (HCPA) laid the initial groundwork for making developments like e-government possible and led to the elaboration of the National Information Infrastructure (NII), which was proclaimed in the Agenda for Action of the Clinton Administration (Department of Commerce 1993). Until that time, information and communication policy did not play a major role in US-internal politics (Kleinsteuber 2012).

However, in 1993 the American government started to build up the so-called information superhighway, changing the conditions and the relation between politics, media, and the public. With this initiative, the USA started to make collective, nationwide use of then novel information and communications technologies and popularized as well as commercialized digital networks (Rosenbach 2012).

A major e-government breakthrough from an implementation perspective happened in 2001. The Office of Management and Budget Director Mitchell E. Daniels initiated an e-government interagency taskforce to elaborate an action plan for implementing the e-government vision as advised by the President.

The e-government taskforce identified 25 high-payoff, nationwide projects with an estimated savings potential of several billion dollars (see Table 3). However, these were not supposed to be exhaustive, but would rather grow or be modified with increasing implementation and degree of maturity.

Table 3 E-Government Taskforce Project Deployment 2002

| Area | Project |
| --- | --- |
| **Government-to-citizen** | Recreation one-stop |
| | Eligibility assistance online |
| | Online access for loans |
| | USA services |
| | EZ tax filing |
| **Government-to-business** | Online rulemaking management |
| | Expanding electronic tax products for businesses |
| | Federal asset sales |
| | International trade process streaming |
| | One-stop business compliance information |
| **Government-to-government** | Geospatial information one-stop |
| | E-grants |
| | Disaster assistance and crisis response |
| | Wireless public safety interoperable communications |
| | E-vital |
| **Internal efficiency and effectiveness** | E-Training |
| | Recruitment one-stop |
| | Integrated human resources |
| | E-clearance |
| | E-payroll |
| | E-travel |
| | Integrated acquisition environment |
| | Electronic records management |
| **Cross cutting initiatives** | E-authentication |
| | Federal enterprise architecture |

Source: Forman 2002.

The projects were allocated to five areas: (1) government-to-citizen, e.g., elaboration of one-stop portals, (2) government-to-business, e.g., e-tax, (3) government-to-government, e.g., disaster assistance and crisis response, (4) internal efficiency and effectiveness, e.g., e-payroll or e-training, and (5) cross cutting initiatives addressing barriers to e-government success, e.g., as e-authentication. The respective projects came under the responsibilities of competent agencies, such as the Department of Interior, Treasury/IRS, Labor, Education, which performed their role as project managing partner (Forman 2002).

On the 17th of December 2002 the E-Government Act of 2002 was enacted. Its main purposes were the improvement of management and promotion of public online service provision as well as the establishment of a Federal Chief Information Officer within the Office of Management and Budget. It represents the political and legal foundation for all following e-government initiatives in the US.

In 2009 President Barack Obama signed the Memorandum for the Heads of Executive Departments and Agencies on Transparency and Open Government. In this document, he proclaims a political concept of transparency, participation, and collaboration, as well as an improvement in efficiency and effectiveness.

He further directs the Chief Technology Officer to coordinate responsible departments and agencies in order to achieve the underlying principles of the memorandum. This is a clear statement for the future of e-government from an US perspective. In a similar way, other countries started their own programs to build digital communications networks.

A forerunner in electronic government services is South Korea, which already enacted the Computer Program Protection Act and Supply and Utilization of Computer Network Act in 1986 to secure network technology and infrastructure. By doing this, the country early set a clear digital focus and thus became one of the first movers in information and communication technology infrastructure development.

In the beginning of the new millennium, South Korea committed itself to promote e-government by starting various initiatives under the Promotion of Digitalization of Administrative Work for E-Government Realization Act, the Participatory Government's Vision and Direction of E-Government, and the E-Government Roadmap, in which South Korea specifically formulated their vision of attaining the world's best e-government.

This aim was pursued through four specific performance initiatives: increase online public services to 85%, become one of the top 10 countries for business support competitiveness, reduce visits for civil service applicants to a maximum of three visits per year, and raise the e-government utilization rate to 60%.

In 2008 South Korea established the Master Plan for National Informatization, which consists of 12 e-government improvement initiatives. These initiatives aim to further enhance the openness, sharing, and cooperation of the Korean e-government environment (National Information Society Agency 2012).

China started its information and communication technology development with the definition of the Golden Projects in 1993, which refers to a pool of initiatives that are carried out by the government to enhance electronic business, government, and governance. Examples are the Golden Bridge Project, which concentrates on the diffusion of commercial internet service, the Golden Macro Project, which focuses on the advancement of governmental information sharing, or the Golden Shield Project, which refers to increasing police efficiency and public security.

The enthusiastic discussion of building an information superhighway in the US and the developments in other countries were closely followed in Japan. Here, the Ministry of Posts and Telecommunications pushed a plan to develop an advanced information and communication network that supports virtually unlimited media transmission throughout the country.

Since Japan believed that they had fallen behind the US with respect to the broadband Internet infrastructure, this plan became a cornerstone of the information and communication infrastructure development. Thus, in 1995 Japan integrated the Basic Policy for the Promotion of Advanced Information and Communication Society and developed the Master Plan for Promoting Government-Wide Use of IT. The three pillars of this digital communication network plan were multimedia, information infrastructure, and fiber optics (West 1997).

In this context, the government of Japan promoted government digitalization to respond to the society's rising interest in electronic provision of government information and public services. Hereby, the Japanese government made this project a top national priority and also provided interest-free loans to financially support necessary investments.

In 2001 the e-Japan Priority Policy Program was started, which aimed to create the world's most advanced information and telecommunications network. Key targets of this program were the promotion of education, learning, and human resources development, the facilitation of electronic commerce, and the digitization of public administration and management areas.

A year after its initiation, Japan enacted the Law Concerning the Use of Information and Communications Technology for Administrative Procedures, in which the government provided a legal framework for e-government. Given these initiatives, Japan made quick progress in advancing its digital network technologies and is now listed among the top 20 of the most developed countries in the field of information and communication technology in the world (see Table 4).

Table 4 ICT Development Index

| No. | Countries | Rank 2013 | IDI 2013 | Rank 2012 | IDI 2012 |
|---|---|---|---|---|---|
| 1 | Denmark | 1 | 8.86 | 2 | 8.78 |
| 2 | South Korea | 2 | 8.85 | 1 | 8.81 |
| 3 | Sweden | 3 | 8.67 | 3 | 8.68 |
| 4 | Iceland | 4 | 8.64 | 4 | 8.58 |
| 5 | United Kingdom | 5 | 8.50 | 7 | 8.28 |
| 6 | Norway | 6 | 8.39 | 6 | 8.35 |
| 7 | Netherlands | 7 | 8.38 | 5 | 8.36 |
| 8 | Finland | 8 | 8.31 | 8 | 8.27 |
| 9 | Hong Kong, China | 9 | 8.28 | 11 | 8.08 |
| 10 | Luxembourg | 10 | 8.26 | 9 | 8.19 |
| 11 | Japan | 11 | 8.22 | 10 | 8.15 |
| 12 | Australia | 12 | 8.18 | 12 | 8.03 |
| 13 | Switzerland | 13 | 8.11 | 13 | 7.94 |
| 14 | United States | 14 | 8.02 | 14 | 7.90 |
| 15 | Monaco | 15 | 7.93 | 17 | 7.72 |
| 16 | Singapore | 16 | 7.90 | 15 | 7.85 |
| 17 | Germany | 17 | 7.90 | 18 | 7.72 |
| 18 | France | 18 | 7.87 | 16 | 7.73 |
| 19 | New Zealand | 19 | 7.82 | 19 | 7.62 |
| 20 | Andorra | 20 | 7.73 | 24 | 7.41 |

Source: Internet World Stats 2014.

This list is based on the ICT Development Index (IDI), which combines 11 indicators into a single benchmark measure and is applied to monitor, compare, and evaluate information and communication technology developments across countries over time. The 11 indicators are made up of three subgroups:

1.  Five indicators measure ICT readiness, which reflects the availability of fixed and mobile Internet access

2.  Three indicators measure ICT intensity, which reflects a country's Internet usage and broadband subscriptions

3.  Three indicators measure ICT capability/skills, which reflects a country's literacy rate and educational level

For the first time—since the ICT Development Index has been recorded—South Korea is second and not first. However, South Korea is still regarded the world leader in high-speed Internet connectivity because they were one of the first movers in professional information and communication technology infrastructure development, possess a rather high population density, have a highly competitive market for companies offering broadband connections, promote open networks and systems for cheap Internet access, give subsidies for connecting low-income people, and were a first mover in becoming a highly connected country (Sutter 2010).

But South Korea is not representative for the Asia-Pacific region. In 2014 less than 15% of the population in developing countries of this territory had access to broadband Internet. Based on this situation, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) formed the initiative, called Asia-Pacific Information Superhighway, to increase the availability of high-speed Internet and make this technology affordable across Asia and the Pacific by extending the infrastructure with a terrestrial fiber optic network (ESCAP 2014).

In the case of the European Union, briefly after the establishment of the single European market in 1992, projects and working groups dealing with the application of information and communication technologies were set up. A key taskforce was the Bangemann group that produced a clear implementation roadmap that included three main targets: (1) destroy public information monopolies, (2) nurture competition, and (3) install pilot projects to reduce social resistance (Bangemann 1997; Commission of the European Communities 1993).

The findings and subsequent actions of this approach were the first steps towards a fundamental change in European Union media and information regulatory behavior (Baubin and Wirtz 1996), which led to various European projects and initiatives that aimed to promote information and communication technologies.

From 2002 to 2004 the European Union funded the SWAD-Europe project that aimed to support the W3C Semantic Web initiative through research, demonstrations, and by supporting the development of universally accessible platforms that allow automated and manual data sharing and processing as well as complementing and harmonizing web technologies and languages (Brickley 2015).

The IDABC initiative, which was a European Union program and stands for Interoperable Delivery of European eGovernment Services to Public Administrations, Businesses, and Citizens, was launched in 2004. Goals of this initiative were an enhancement of correct use of information and communication technologies for cross-border services for stipulating the development of public e-service provision and an improvement of efficiency and collaboration of European public administrations. The European Interoperability Framework (EIF), which is a set of recommendations for administration, business, and citizen communication, was an outcome of the IDABC (European Commission 2010).

The program ended on the 31st of December 2009 and was followed by the ISA (Interoperability Solutions for European Public Administrations) initiative, which was approved by the European Commission on the 29th of September 2008. The ISA program focuses on back-office solutions that support the interaction of European public administrations as well as the implementation of policies and processes (European Commission 2015c).

In 2005 the European Union launched i2010, which aimed at bringing together various information and communication technology initiatives on a European level, to support and deliver a competitive information economy. All member states have agreed and clearly committed themselves to the i2010 strategy: (1) establish a single European information space, (2) foster innovation and investment in technology research, and (3) promote public services and social aspects for more quality of life in the information society (ECDL Foundation 2008).

The Ministerial Declaration on eGovernment on 18th November 2009, which was unanimously approved by the Ministers responsible for e-government policy of the European Union and its candidate countries as well as the countries of the European Free Trade Area (EFTA), clearly explains that the participants agreed to deepen their cooperation, to further promote e-government, and to actively support the post-i2010 initiative (European Union 2009).

Based on the ministerial declaration on e-government, the European Commission developed the E-Government Action Plan 2011-2015, which aims to help providing European policy instruments, to support the transition into an information society, and to create collaborative e-government services on a local, regional, national, and European level. To achieve these targets, the following priorities were defined: empower citizens and businesses, strengthen mobility, foster efficiency and effectiveness, and create the necessary environment to support the transformation (European Commission 2015b).

The European Commission's Digital Agenda, which forms the first of the seven Europe 2020 strategy pillars (I. Digital single market, II. Interoperability and standards, III. Trust & security, IV. Fast and ultra-fast Internet access, V. Research and innovation, VI. Enhancing digital literacy, skills and inclusion, VII. ICT-enabled benefits for the society), proposes to better exploit information and communication technology benefits and potentials to foster innovation and economic growth. The Digital Agenda aims to reduce barriers that block a free flow of information and digital services as well as updating relevant market rules within the European Union (European Commission 2015a). The following figure shows an overview of selected e-government acts and initiatives.

Figure 7 Overview of Selected E-Government Acts and Initiatives (1986-2011)
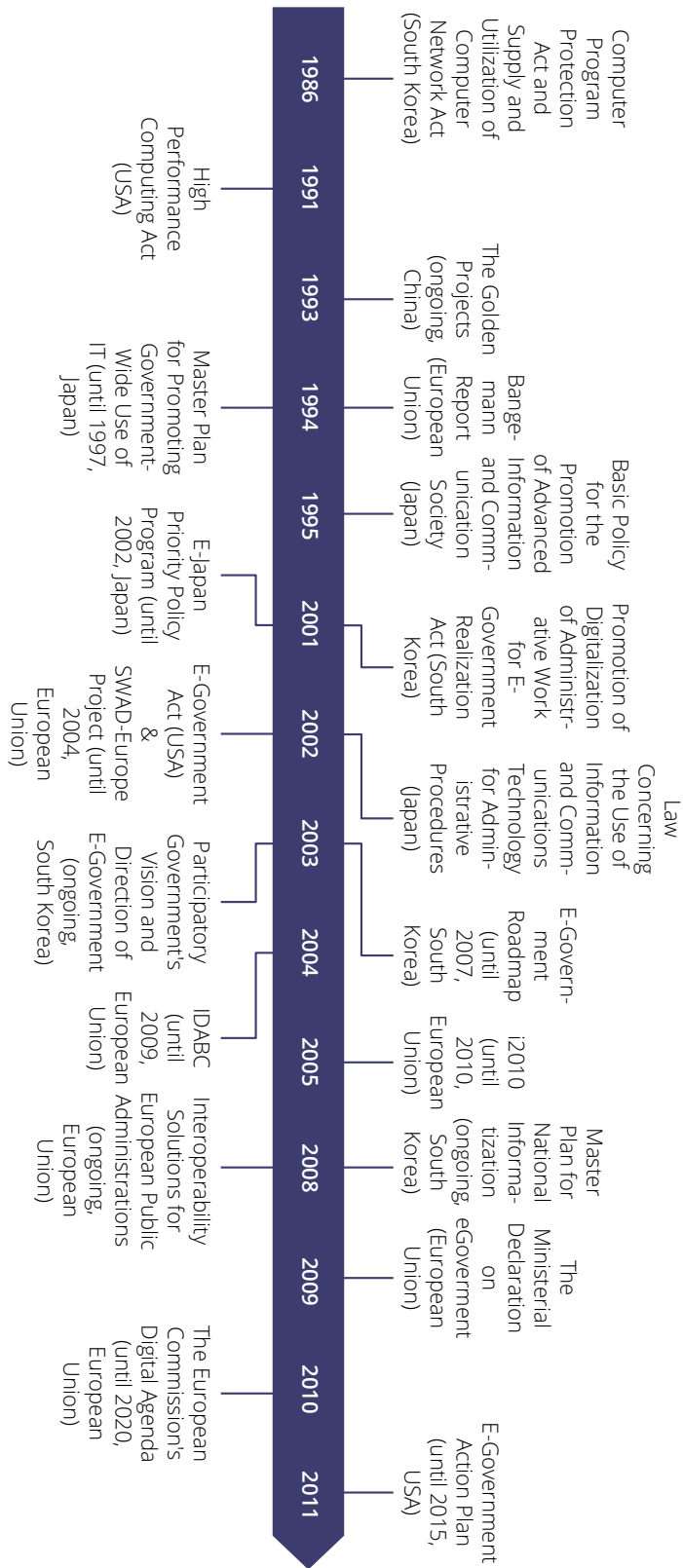
A similar development, "[...] [handling] the most important services of administration through the Internet and therewith to organize all procedures in a more comfortable, faster and less bureaucratic way" (Timm and Kahle 2005, 721), can be seen in many countries all around the world, promoting e-government on a global scale.

This is underlined by Karunasena and Deng (2012), who resume that "[g]overnments around the world continuously use e-government for transforming their public service delivery, promoting greater interaction between their citizens and government, streamlining the two-way communication between citizens and governments, improving the efficiency of public organizations, and saving taxpayer money [...]".

However, there are wide disparities among the countries concerning their extent of e-participation and e-government readiness. These indicators are investigated in the United Nations E-Government Survey, which is a comparative ranking of the 193 member countries with regards to their e-government implementation state.[1]

Based on the E-Government Development Index (EGDI), South Korea has remained number one in 2014, followed by Australia (2nd) and Singapore (3rd). France and The Netherlands were 4th and 5th place respectively (see Table 5). Europe continued to lead with the highest overall regional E-Government Development Index followed by the Americas.

Concerning the results of the past United Nations e-government studies, the general level of economic, social, and political development of the countries and the investment in telecommunication, human capital, and online services provision are key factors for a high e-government development (United Nations 2014).

In the study of 2014, it was the first time that at least all 193 member countries had national government websites, although most of them remained at the low or intermediate levels with regards to e-government development. The most frequently found transactional services include personal accounts, income tax filing, and business registration. On the whole, the e-government portals show great variability in the scope of the services provided.

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1 For further information on the following paragraphs, please refer to the 2014 United Nations study on e-government (cf. United Nations 2014).

Even though, the use of mobile solutions, social media, and multichannel strategies was rather little, there was an increasing expectation concerning the integration and utilization of such applications and services. However, since 2012 the number of countries offering mobile solutions doubled, so that in 2014 almost 50 countries provided these kind of services. But although, digital channels are on the rise, counter and telephone services usually serve as fundamental service channels.

Table 5 World E-Government Leaders in 2014

| No. | Country | Region | EGDI 2014 | Rank 2014 | Rank 2012 |
|---|---|---|---|---|---|
| 1 | South Korea | Asia | 0.9462 | 1 | 1 |
| 2 | Australia | Oceania | 0.9103 | 2 | 12 |
| 3 | Singapore | Asia | 0.9076 | 3 | 10 |
| 4 | France | Europe | 0.8938 | 4 | 6 |
| 5 | Netherlands | Europe | 0.8897 | 5 | 2 |
| 6 | Japan | Asia | 0.8874 | 6 | 18 |
| 7 | United States of America | Americas | 0.8748 | 7 | 5 |
| 8 | United Kingdom | Europe | 0.8695 | 8 | 3 |
| 9 | New Zealand | Oceania | 0.8644 | 9 | 13 |
| 10 | Finland | Europe | 0.8449 | 10 | 9 |
| 11 | Canada | Americas | 0.8418 | 11 | 11 |
| 12 | Spain | Europe | 0.8410 | 12 | 23 |
| 13 | Norway | Europe | 0.8357 | 13 | 8 |
| 14 | Sweden | Europe | 0.8225 | 14 | 7 |
| 15 | Estonia | Europe | 0.8180 | 15 | 20 |
| 16 | Denmark | Europe | 0.8162 | 16 | 4 |
| 17 | Israel | Asia | 0.8162 | 17 | 16 |
| 18 | Bahrain | Asia | 0.8089 | 18 | 36 |
| 19 | Iceland | Europe | 0.7970 | 19 | 22 |
| 20 | Austria | Europe | 0.7912 | 20 | 21 |
| 21 | Germany | Europe | 0.7864 | 21 | 17 |
| 22 | Ireland | Europe | 0.7810 | 22 | 34 |
| 23 | Italy | Europe | 0.7593 | 23 | 32 |
| 24 | Luxembourg | Europe | 0.7591 | 24 | 19 |
| 25 | Belgium | Europe | 0.7564 | 25 | 24 |

Source: United Nations 2014.

The 2014 Capgemini study on e-government, which benchmarks the European e-government services from a user or citizen perspective, also comes to the result that many public services are already available through electronic government portals. Nevertheless, room for improvement has been found, too.

In a nutshell, governments have come a long way and have already reached a well advanced state of e-government, but achieving the level of desired user centricity still requires a further transformational shift. Having reviewed the development of e-government in the public sector brings us to the second step of this section, the topic's evolution in scientific research.

## E–Government Research

Although, novel information and communication technologies have been utilized by governments for nearly 30 years now, the technological breakthrough just took place after the millennium—with wide distribution of Internet access and the availability of modern online applications (Andersen et al. 2010).

This situation had a strong influence on the development of scientific research since especially research concerning operative potentials and political impacts of e-government has been actuated by the public sector's growing interest in information and communication technologies (Welch, Hinnant, and Moon 2005; Wirtz and Daiser 2015; Yang and Rho 2007). Thus, although e-government was rather a practitioner-oriented field in the beginning of the 1990s, the topic quickly became an important subject in the scientific literature, too.

A database query that was conducted in May 2015 resulted in a total of 3.249 relevant publications, of which 1.889 were published in peer reviewed and 1.360 in non-peer reviewed scientific journals.[1] As mentioned above, scientific e-government picked up speed after the millennium, which is shown in Figure 8.

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1 Database query performed with EBSCOhost in Academic Search Complete Search, Business Source Complete, and EconLit. Title and abstract search terms: "e-government", "electronic government", "egovernment", "online government", "digital government". Search limiters: English articles in journals.

Figure 8 Development of Scientific E-Government Literature
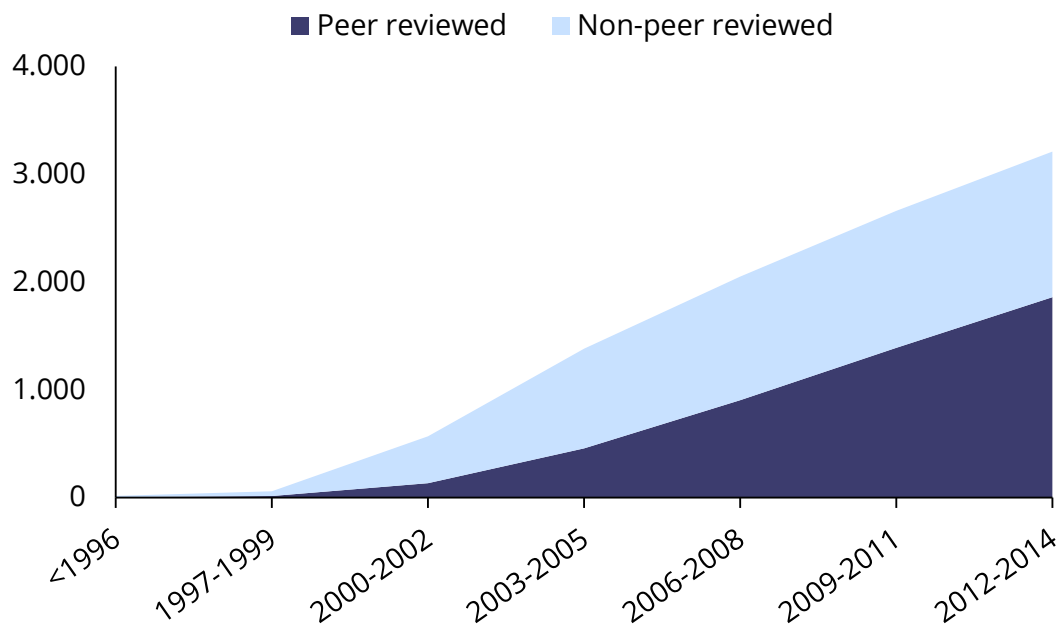


Initial e-government research was mainly characterized by descriptive, practical-oriented studies. In this context, only little explanatory research was conducted. This situation can basically be attributed to the relatively low distribution of e-government in practice, which did not allow more rigorous studies.

It was only in the mid-2000s that qualitative exploratory research became increasingly supported by quantitative confirmatory approaches providing academics and public officers with better grounded theories and advanced knowledge on e-government (Reece 2006).

So far, approximately six out of ten studies are of empirical nature.[1] Therefore, the majority of scientific investigations collected evidence from reality to deduce theoretical findings. Although academic investigations peaked in the period between 2003 and 2005, there is still a high amount of scientific research compared to other academic disciplines. Figure 9 provides an overview of the number of e-government publications and shows the methodological split concerning empirical and conceptual research.

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1 The separation of conceptual and empirical research is based on specific search items that were used in the EBSCOhost search.

Figure 9 Number of E-Government Publications and Methodological Split
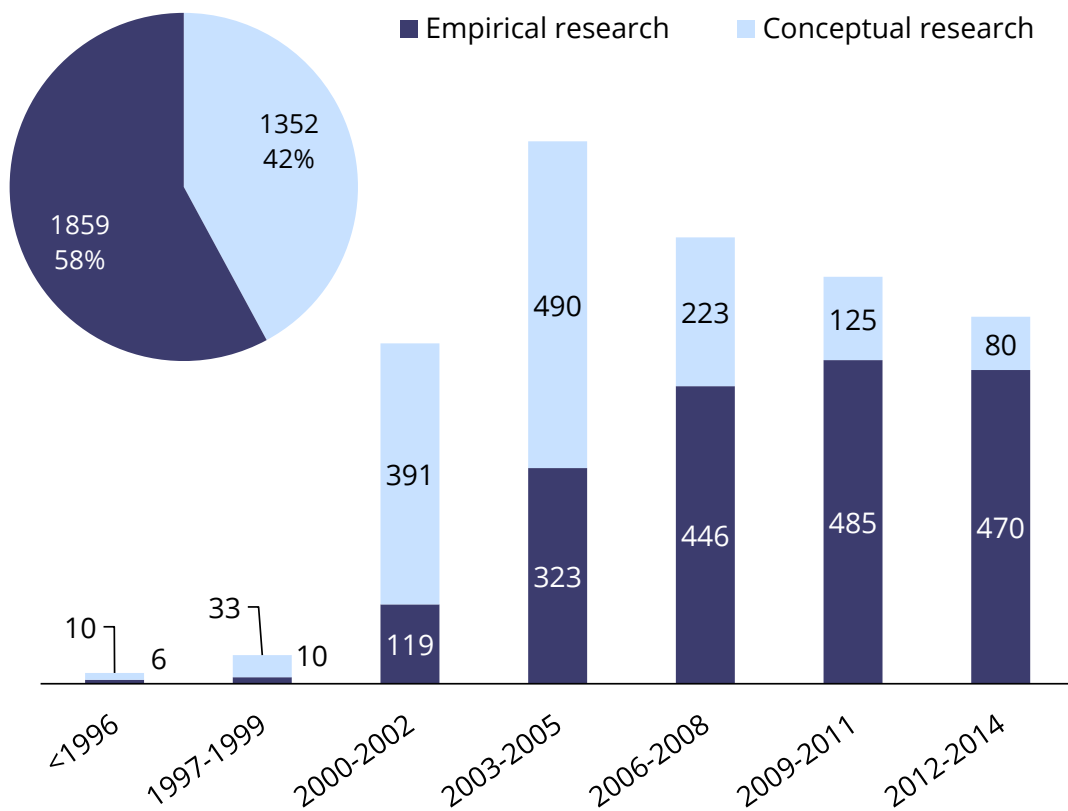


Considering the ongoing technological advancement and the partly contradictory relations between e-government expectations and achieved results, this field may continue to offer interesting research questions and dynamic challenges to academics as well as public managers and thus stay a compelling topic within science and management.

In this context, e-government research has taken various research directions, which have been investigated from a user or provider perspective. Figure 10 presents important e-government focuses and perspectives, in which considerable research effort has been put so far.

Figure 10 Vital E-Government Focuses and Perspectives
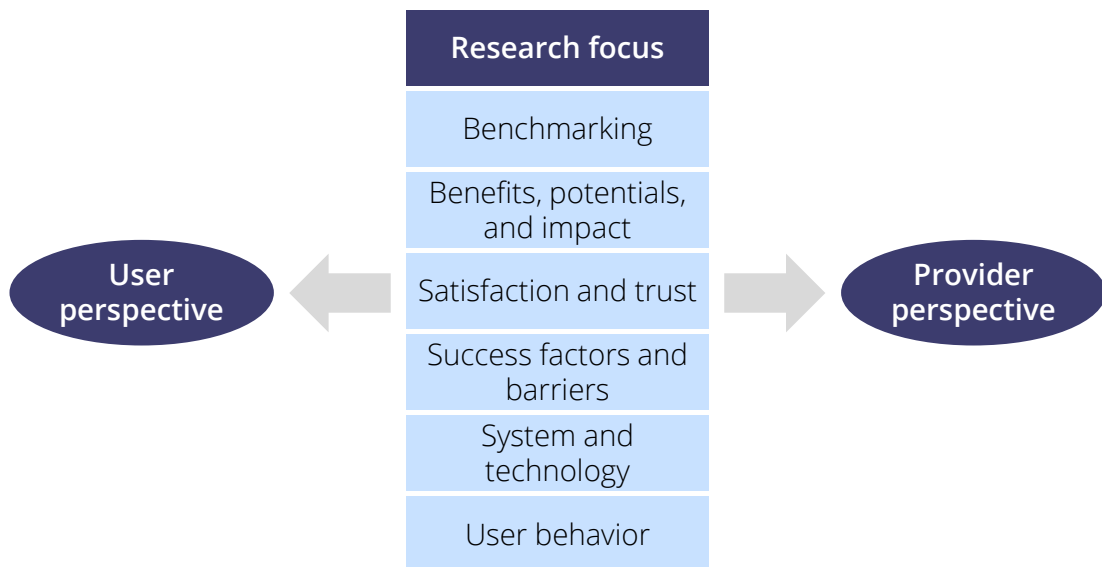


Benchmarking-oriented studies often compare different e-government solutions or analyze e-government maturity states across borders. Studies dealing with benefits, potentials, and impact may investigate e-government activities concerning the outcome of IT implementation on public sector capabilities, interactions, orientations, and value distributions (Andersen et al. 2010).

Satisfaction and trust-related studies examine these or similar conditions from a user or provider perspective, identifying, for instance, which portal characteristics foster or impede citizen satisfaction when using the e-government interface. The usual goal of success factor and barrier-related investigations is the identification and evaluation of aspects that promote or hinder implementation or use of e-government technology.

In the e-government sub-field system and technology, information system-relevant factors and technology-related aspects are analyzed for the most part. The user behavior-oriented field of e-government research is normally dedicated to investigations of citizens and their manner of conducting themselves when using e-government systems.

Summing up, the e-government development from an academic perspective, investigating the digital interaction between the government and the public has gained massive importance during the past two decades, now being a substantial topic within scientific literature (Dawes 2009).

# 3 The Concept and Strategy of E–Government

The beginning of e-government was set by the development of modern information and communication technologies. With boosting processing power and transmission capacities of computers and networks as well as increasing demand for electronically provided information and services from citizens and businesses, governments and public authorities began to run first electronic service offers at the end of the 1990s. This novel form of service provision emerged as electronic government or e-government (Dawes 2009).

E-government being a technology-enabled part of the government or public sector governance model was quickly regarded as a powerful system that can provide manifold benefits since it allows unattended public stakeholder access to information and services, improves government-stakeholder-interaction, fosters efficiency and effectiveness, and forms the basis for e-democracy from a technological point of view. Furthermore, its digital platform character for government stakeholder interaction embellishes unity and standardization and thus reflects citizens' demands for more transparency and accountability.

Today, e-government is an inherent part of governments and public administrations worldwide since it is highly relevant for these organizations to address their individual stakeholder desires and requirements. In this context, the implementation of e-government and its associated benefits is a compelling topic for citizens and is especially relevant for the economy since the availability of online public services is an important factor within global competition.

The driving forces behind the situation, requiring change for government and public administration, can be explained by the Four Forces E-Government Model, which aggregates relevant drivers to four key developments: Convergence and Technology, State and Politics, Society and Economy, and Citizen Empowerment (see Figure 11).

Figure 11 The Four Forces Model of E-Government

**Convergence and Technology**

- Convergence in ICT
- Virtualization/digitalization of products and services
- Technology-driven networking
- High networking and innovation dynamics through powerful infrastructure

**Citizen Empowerment**

- Rising transparency and accountability
- Connecting citizens in social networks and online stakeholder communities
- Participation of citizens
- Citizen-government Interaction

**Government & Public Administration**

**State and Politics**

- Denationalization due to political/fiscal/free-trade areas
- High levels of indebtness
- Bureaucracy vs. public administration efficiency
- Discontinuities due to short-term legislature orientation

**Society and Economy**

- Globalization
- Digital divide (increasing income gap between the rich and the poor, enlarging gap of educational differences)
- Demographic changes
- Urbanization

The first force of the e-government model is Convergence and Technology. Although all of these developments are crucial, this the most significant one since it covers the fundamental breakthrough of making e-government technologically possible. Here, convergence describes the approximation of underlying technologies, diminishing sector boundaries, networking of different public and non-public areas of value creation, and finally, an integration of sectors, business units, organizations, products, and services (Denger and Wirtz 1995). This means that the underlying technological innovation leads to a more comprehensive service provision. Depending on the respective level of aggregation, convergence can be divided into different types (see Wirtz 2013b):

(1) Sector level: Convergence of a growing number of organizations within related sectors finally leads to the convergence of the corresponding sector. (2) Organization level: Convergence forces organizations to reposition their value chains and core activities and which results in modified institutional boundaries. (3) Organization unit level: Organization unit convergence relates to various organization units of a public authority or different public authorities. (4) Service and product level: Convergence of services, content (e.g., standardization of formats), distribution channels (e.g., same distribution channel for formerly different formats), or products (e.g., convergence through integration of functionalities).

This ongoing trend was initiated through several drivers, such as virtualization and digitalization of services and technology-driven networking, which in sum caused a paramount strategic and operative change in all forms of electronic business and governance. But this change is by no means over yet. The already existing powerful broadband infrastructure, which itself undergoes continuous development, constantly drives new networking applications and innovation.

The second force is State and Politics. From a this point of view, ongoing denationalization of countries as well as regional coalescence of markets and nations require adequate technological preconditions for transnational cooperation on political and administrative level. These have to be created by the respective governments. E-government is a suitable answer to tackle this challenge since it is an Internet-based solution and thus provides the possibility to quickly establish an online environment that allows government-user interaction on a global scale.

At first glance, high indebtness levels seem to contradict the expensive implementation of e-government solutions. But the expected e-government cost-cutting effects, which are achieved, for example, by automation, standardization, and outsourcing of activities, fit the current need to economize and the cost-saving character of e-government has positive side-effects on managing indebtness.

This goes along with the desire for less red tape and the wish for an increase in public administration efficiency. In this context, e-government is a decent system due to its administration process automation and standardization capacities. An example of a comparable undertaking is electronic banking.

While earlier the clients needed to visit a branch of their bank in person to conduct a banking transaction, people nowadays can settle nearly all transactions from home at any time. This form of automatization and outsourcing of activities to the client has led to a significant cost reduction of 70% to 90% in e-banking service delivery.

Considering the prevailing political discontinuities caused by short-term orientation on votes and legislature periods, e-government is—although being an election campaign-friendly topic—not universally supported by decision-makers in the government and the public sector due its legislature period outlasting character and requirement of profound transformation processes. Thus, political discontinuities represent a negative driver or obstacle.

The third force is Society and Economy. Its key drivers are globalization, digital divide, demographic change, and urbanization. The high economic interconnectedness and international assimilation of lifestyles as parts of globalization require a stronger public sector focus on superregional and supranational demand aspects as well as on cross-border cooperation of governments and public authorities. As mentioned before, e-government, which is based on Internet technology and thus can be regarded as a global medium, is an adequate system to approach this situation.

Digital divide describes differences in access to and use of information and communication technologies, especially the Internet, between individual social groups with distinct technical and socio-economic factors. Key hypotheses are that (1) the use of modern information and communication technology is not distributed evenly within society since its access depends on social factors and that (2) this unequal situation leads to social disparities of opportunity.

In this context, the increasing income gap between the rich and the poor as well as the enlarging gap of educational differences are frequently mentioned topics. As with the observable polarization of income ratios and differences in education of distinct social groups, the risk of digital divide is also present online. Here, e-government can be used to create similar opportunities in terms of citizen-government or organization-government interaction by assuring direct and uniform access and providing information and services in similar form and equal quality to all users.

Another aspect of the societal and economic force is demographic change, which in the context of information and communication technology refers to the situation that a high proportion of older people with only limited Internet skills will face a young generation that grew up with these technologies (digital natives) and thus demands increasing online information and service provision.

Since the majority of the digital native generation shows Internet usage patterns and is hence believed to individually manage their public administration relevant matters online, this is seen as a chance to massively relieve public administration workload through automatization and outsourcing. In this context, automatization refers to tasks that are run automatically, electronically, and independently of staff assignment and outsourcing relates to tasks that are shifted from public administration staff to the user (e.g., data input, filling in online forms).

However, e-government faces severe strategic and structural challenges because of the generation that does not possess similar online affinity and often lives in regions with only limited high-speed Internet access. Here, the Smart Country initiative strives to establishing innovative concepts to master this challenge since gaining and maintaining the confidence of the vast majority of the citizens is an absolute necessity for comprehensive, nationwide public information and service provision (Co:llaboratory 2014). In the report of Co:llaboratory (2014), four critical recommendations to address this situation are presented: (1) digital society, (2) digital infrastructure, (3) digital coproduction, and (4) digital location policy.

Digital society means that the regional community becomes a more self-sustaining position and jointly develops (citizens, public administration, and politics) regional solutions. To reduce the burden of limited online access, digital infrastructure—in terms of high-speed Internet and network possibilities—needs to be established.

Digital coproduction serves to enable and encourage citizens to more strongly participate in public administration service provision (e.g., citizens inform citizens about administrative procedures). Finally, public communities of practice foster collaboration across administrations and decentralization, and open innovation networks with society, economy, and science promote local development.

With increasing urbanization and rural depopulation, keeping up today's expensive decentralized public administration infrastructure and maintaining a high territorial presence will not be feasible from a cost perspective in the long-run. Cost constraints will reduce the density of public administration resources and local public service provision, requiring more centralized and automated public service provision. In this context, e-government is a reasonable and cost-effective platform to realize these demands efficiently.

The forth driving force of the e-government development is Citizen Empowerment. This change in the public environment mainly concerns the citizens themselves. The rising transparency and accountability of public actions and the possibility that citizens can locally, regionally, and nationally unite in social networks and communities, exchanging their desires and opinions, all became possible due to modern information and communication technologies. United they can have a considerable influence on political and administrative processes and can exert pressure in voting networks, which clearly strengthens the position of the citizens.

Furthermore, citizens claim more participation in public policy issues and for a renewed citizen-government Interaction. Here, governments have to act, for instance, by providing a more transparent form of governance and integrating citizens into public processes.

In the light of the aforementioned four driving forces of e-government, an integrated management approach is mandatory to handle the multitude of interrelated impacts and related activities. Against this background, the E-Government Value Activity system (EVAS) is outlined in the following.

## 3.1 E–Government Value Activity System (EVAS)

Value activity systems are based on the concept of the value chain, which describes a set of organizational activities performed to deliver a product or service to the market. The value chain concept was developed in management research and first described by Michael E. Porter.[1]

The underlying idea of the value chain is based on a process view of organizations. From this perspective, an organization is a system made up of subsystems that transform input factors into outputs. The effectiveness and efficiency of the associated activities, which are needed for the transformation process, finally determine the costs and the profit of the organization.

Given an exemplary e-government value chain (see Figure 12), its activities may consist of (1) content and service concept, (2) content and service development, (3) technological distribution, (4) marketing and user relationship management, and (5) e-payment.[2]

The first step of the value chain deals, for example, with content and service selection for as well as layout and design of the e-government portal. In the next steps, the respective content and services have to be developed and their technological distribution needs to be set up (e.g., pull vs. push concept).

The marketing and user relationship-related step of the value activity is of vital importance. Here, the access to the user is determined, which requires customer-oriented marketing and relationship measures. Finally, the imposed fees and charges have to be processed, which completes the value chain activity. This exemplary value chain sequence is presented in the following figure.

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1 For further information, please see Porter 1985.
2 Since it is not common to describe public stakeholders as customers, we refer to user relationship management instead of using the term customer relationship management.

Figure 12 Exemplary E-Government Value Chain

| Content/ service concept | Content/ service development | Technological distribution | Marketing/ URM | E-payment | User |
|---|---|---|---|---|---|
| · Content and service selection<br>· Layout and design<br>· Definition of target user groups | · Content sourcing<br>· Development of content and services<br>· User generated content | · Pull (e.g. downloads)<br>· Push (e.g. RSS feeds) | · User relationship measures<br>· Marketing channels<br>· Communica-tion policy | · Processing of payments<br>· Receivables management | |

Source: Based on Wirtz 2013b.

The E-Government Value Activity System (EVAS) is conceptually built on the value chain approach, but it provides a more differentiated perspective on the entire system as well as its interfaces. From a theoretical perspective, e-government is a technology-enabled part of the government or public sector governance model that allows unattended public stakeholder access to information and services and forms the technological basis for e-democracy.

Therefore, e-government is often referred to as a comprehensive approach to elaborate citizen-oriented public services and enhance public administration effectiveness and efficiency. Thus, it is an important element of public management reform programs across the world.

Figure 13 illustrates the Model of E-Government Value Activity System (EVAS), which portrays the key value activities that need to be comprehensively planned, organized, steered, and controlled to promote effective e-government within the public administration environment.[1]

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1 A regular and reliable operation of the general public authority infrastructure, such as accounting, legal, administration, management, etc., is a precondition of an effective and efficient e-government.

Figure 13 Model of E-Government Value Activity System (EVAS)
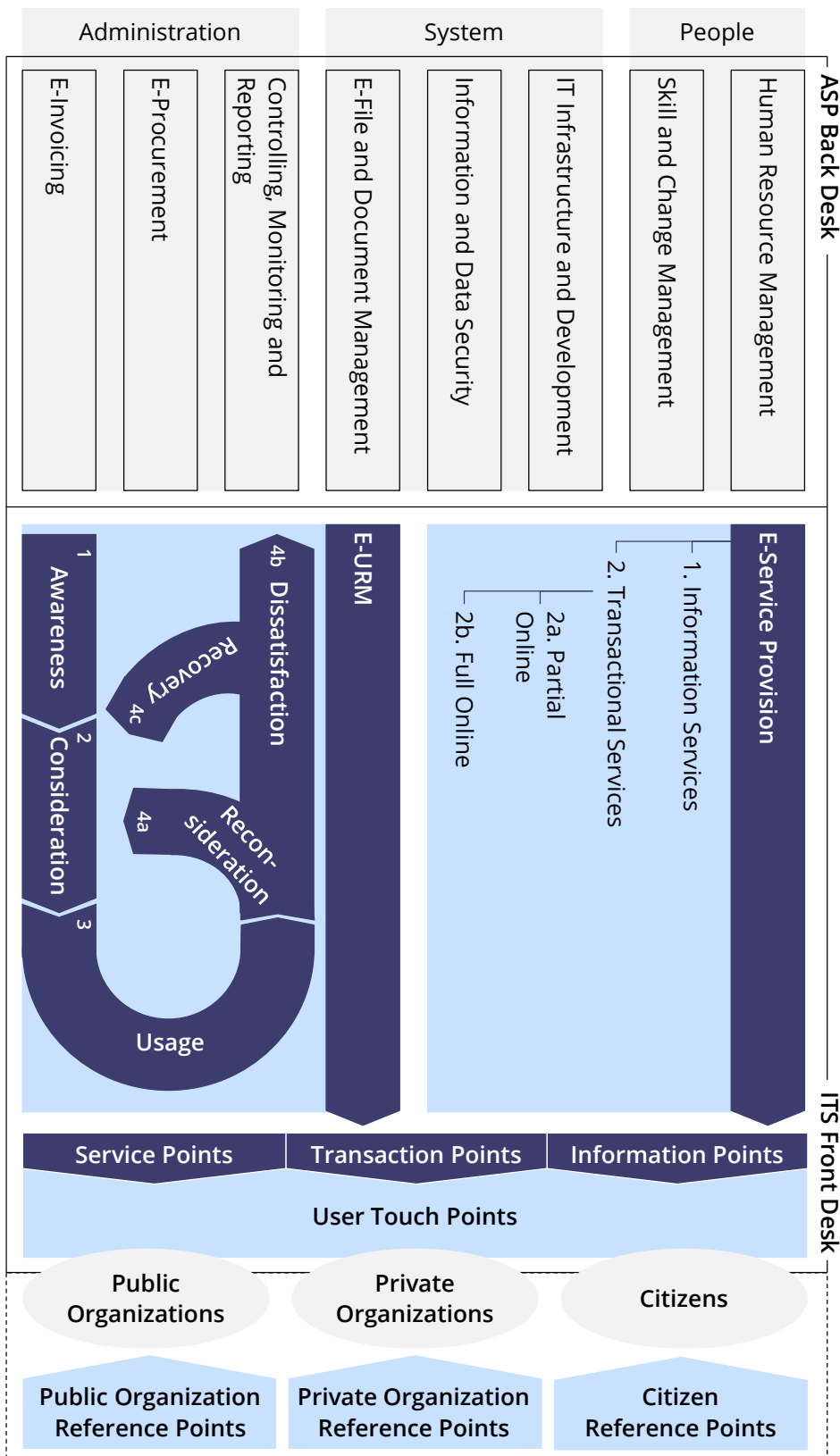
Despite e-government's online character, it is not a completely virtualized system since also procedures and operations behind the software need to be managed. Hence, efficient and goal-oriented e-government requires solid underlying routines, processes, and structures.

For this reason, the EVAS model is based on a value activity perspective of public authorities that outlines an e-government system, which is made up of subsystem activities that have specific inputs, transformation operations, and outputs, which involve acquisition or consumption of human, financial, or knowledge resources. Therefore, the better the individual processes are managed, the more efficient the e-government system runs.

Regarding the EVAS model, we first have to differentiate between the Information-Transaction-Service (ITS) Front Desk, which is the front line part of the public sector organization with a direct client connection, and the Administration-System-People (ASP) Back Desk, which deals with internal or supporting activities of the public sector organization without a direct client connection.

The two key activities in the ITS Front Desk are E-Service Provision, which is subdivided into Information Services and Transactional Services, consisting of Partial and Full Online transactions, and E-User Relationship Management (E-URM), showing an integrated e-government user relationship process.

Concerning E-Service Provision, Information Services offer purely information-based, single-sided services to the user without interaction or participation activities (e.g., information retrieval concerning service hours of departments). Partial Transactional Services offer services that are only to some extent provided online and thus still contain media breaks (e.g., the user downloads a form to apply for a work visa or completes a tax declaration).

Full Transactional Services are offers that are completely virtualized and thus allow the processing of full administrative procedures without involving further media breaks and without having to appear in person, which usually requires a qualified electronic signature or identification (e.g., change of vehicle registration, requesting a current police certificate of good conduct).[1]

The goal of E-URM in an e-government context is the maintenance of user relations to induce users that have already used a service to use this service again or use a similar service. This process consists of a sequence of phases: awareness, consideration, usage, reconsideration, dissatisfaction, and recovery.

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1 For further information on e-services, please refer to chapter 6.

In the awareness phase, the user recognizes the availability of the services provided, which suits his needs. Based on this, an initial user contact is established via information and communication technologies (e.g., visiting the website)[1]. In the next phase, consideration, the potential user is presented with the service offerings from the e-government system, which are tailored to the expected user needs.

This requires a profound knowledge of the potential user needs and preferences. In the usage phase, the user should select the desired service and start processing. If the user is satisfied with the handling and the outcome, he may reconsider using the e-government service offering. Therefore, the services offered need to be designed in a way that satisfies the needs of the user.

At this point of the interaction, user satisfaction should be checked through user feedback or monitoring systems that support constant evolution of the services provided. This is of particular importance since a dissatisfied user may not use the service again, may discourage others from using the service, or may leave the entire platform. In this case, measures for recovering dissatisfied users have to be at hand.

The User Touch Points (Information Points, Transaction Points, and Service Points) are the ITS Front Desk interface to the e-government stakeholders (citizens, private organizations, and public organizations) and thus are the actual connection between the e-government system and the user. The parallel use of multiple user touch points across all channels has become a regular procedure (e.g., online banking), helping information and service providers to optimize customer-specific service provision and to guide customers towards economically reasonable interfaces (Wirtz 2012).

Apart from the technological benefit with regards to managing server requests, particular user touch points provide users with bundled, customized service offers, leading to an increased overall satisfaction experience. This is important since in addition to economic also user-oriented aspects need to be taken into account in order to achieve a positive value contribution for the online service offering. If only considered under cost-efficiency perspectives, the expected effect may even be turned on its head (Rayport and Jaworski 2004).

The distinction of the different user touch points is based on their primary function. For Information Points this is the provision of information (e.g., information on opening or service hours on a website). In the case of Transaction Points, this is the

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1 For further information on user relationship management, please refer to section 5.3.

transaction-based service offering (e.g., requesting a police certificate of good conduct). Service Points mainly deal with services that are provided before or after a transaction process has been started or inquiries that demand staff involvement (e.g., complaint management, inquiries regarding applications or requests in progress, customer call-backs).

A further vital aspect are the reference points for citizens as well as private and public organizations. Here, a reference point refers to any source of information that may influence the user in using or not using e-government services. If, for instance, a friend or a colleague has made a dissatisfying experience while using the e-government system, this may influence the intention to use the system, irrespective of the system's actual quality and efficiency. Although these reference points can only be influenced indirectly, their potential user impact needs to be borne in mind.

The ASP Back Desk activities deal with the internal or ITS Front Desk supporting processes of the public sector organization. The primary challenge of Human Resource Management is recruitment, training, and motivating employees. Since people are a vital source of skills, knowledge, and value, good human resource management can create a sustainable benefit in implementing and running an efficient e-government.

Skill and change management are vital aspects to change the current organization and move employees from the status quo to the e-government environment. First, because public administration and management within an e-government setting demand other skills and competencies than past practice and second, because the shift from old paper-based to new electronically-oriented structures and procedures requires a paramount transformation of the entire organization. Therefore, training and accompanying employees as well as professional change management are key factors for successful e-government.

IT Infrastructure and Development relates to the support systems that allow to process and manage information and maintain daily operations (infrastructure) as well as to the innovation process of developing and integrating new applications and functionalities (development). Since e-government to high degree depends on well-working IT systems and innovative solutions, the related activities are cornerstones of a rewarding e-government system.

Information and data security refers to an important aspect of e-government. Here, we would like to emphasize that the actual security of private user data as well as the perceived security of individual user data and network-based information processing are crucial factors that need to be maintained by all means (Cavoukian 2010). If people believe that their personal information is not stored or processed confidentially and securely, they will tend to oppose e-government-related online data storage and processing since—especially for transactional offers—a certain level of trust is necessary (Bélanger and Carter 2008).

E-file and document management deal with electronic and paper-based administration of files, documents, and records. In this context, especially the e-government-driven conversion from paper-based work to the paperless organization (e.g., introduction of electronic citizen files) causes complex, extensive conversion procedures in the public sector.

Furthermore, due to an increasing requirement of supraregional and supranational procedures, there is a growing need to exchange objects of the file and document management between state, federal, and local governments, especially concerning IT-based administration processes (e.g., coordination, information, or handling of records in the course of duty shifts) since no subject-specific data exchange standard for these types of transactions is available yet.

The requirement also derives from the legal guidelines for long-term storage and archiving of public records. Apart from that, rising e-government specifications and expectations concerning speedy and electronic handling of transactions and processes further drive this development.

Controlling, Monitoring, and Reporting activities are constantly required for keeping track of the overall e-government workflow system and for a consistent and sustainable management of the involved ASP Back Desk and ITS Front Desk activities. These activities can be broken down into a strategic and an operative component. Key aspects of the longer-term oriented strategic controlling are planning, information, and early warning purposes, while the operative monitoring part focuses on target-performance comparisons for result-oriented steering and control of the overall e-government system.

Controlling, Monitoring, and Reporting activities require appropriate standards as a basis for measurement and an integrated, automated performance measurement system. Furthermore, a common understanding of the potential implications of downtime due to system crashes, failure, or mistakes should be present throughout the group of responsible e-government officers (Wirtz et al. 2014).

E-Procurement is the integration of network-based information and communication technology to support operational and strategic activities that are required to supply the necessary inputs that are not self-created by the organization. Its main target is the reduction of procurement cost, which is partly offset by e-procurement system investments and maintenance cost as well as training cost for employees.

However, demand aggregation usually allows significant cost savings and the increase in standardization and automation helps prevent corruption and creates transparency, contract security, and enhanced quality. Nonetheless, this massive transformation implies restructuring and reorganization of existing processes and structures, and thus is a vital activity for e-government (Wirtz, Lütje, and Schierz 2009).

E-Invoicing is supposed to close the payment gap in otherwise consistent transactions without media-discontinuity and support compliance in all relevant legal requirements. The widespread introduction of an electronic invoice processing system that allows sending and receiving electronic invoices without media breaks shall ensure significant gains in efficiency and make a notable contribution to sustainable economic and increased competitiveness.

E-Invoicing forms the basis for the next step in electronic payment, integrated e-payment systems that enable users to pay invoices directly from web applications. However, these fundamental changes in processes and procedures need to be implemented and managed on a strategic as well as an operative level for successful and efficient e-government. For this reason, E-Invoicing is an important, developing activity that requires intensive care.

Given the E-Government Value Activity System, its associated value activities need to be managed in a systematic way. Referring to Chandler (1962), structure follows strategy and thus strategic management is required to effectively and efficiently lead and operate the e-government value activities.

## 3.2 Strategic Management of E–Government

The term strategy has Greek roots and was originally closely related with military action.[1] Strategy in this context meant the leadership of an army up to the first encounter with the enemy, as from that point in time, army leadership became tactical. This strictly military view is usually not found in today's business strategy understanding anymore. It is rather the creation of a sustainable rent that can be seen as a key element of modern strategic corporate management: "Strategy can be viewed as a continuing search for rent" (Mahoney and Pandian 1992, 364).

In particular, it was during the 1980s and 1990s that two dominant strategy paradigms have evolved within the international management research. On the one hand, there is the market-based view of strategy, which is mainly build upon the notions of Michael E. Porter concerning industrial organization research. On the other hand, there is the resource-based view, which specifically attributes enduring organizational success to organizational resources (Wirtz 2013b).

The underlying principle of the market-based view is the structure-conduct-performance paradigm, which relates an achieved outcome to market structure and behavior: "To explain the competitive success of firms, we need a theory of strategy which links environmental circumstances and firm behavior to market outcomes" (Porter 1991, 99). In the case of the public sector, this outcome may be seen as a service optimization and benefit maximization for the various public e-service demand groups (citizen, private, and public organizations).

In contrast, the resource-based view tries to explain the emergence of competitive advantages through heterogeneity of resources: "Regardless of the nature of the rents, sustained competitive advantage requires that the condition of heterogeneity be preserved" (Peteraf 1993, 182). Transferred to the environment of public sector organizations and governance, competitive advantage means that governmental and administrative service provisions on local, regional, and federal level achieve a significant higher added value for their users than comparable service provisions of other public and private e-service providers.

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1 The following is based on Wirtz 2011c, Wirtz 2013b, and Wirtz 2013c.

The term resource refers to "[...] all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies" (Barney 1991, 101). However, resources only lead to competitive advantage if they share the following four basic characteristics: (1) valuable, (2) rareness or access barriers, (3) lacking substitutes, and (4) imperfectly mutable and are combined and/or coordinated in a success-pursuing way.

The competence-based view, which is often used in a similar manner like the resource-based view, tries to explain organizational success—in the sense of achieving strategic goals—with the creation and use of resources, skills, and competencies. Here, Sanchez, Heene, and Thomas (1996), for example, describe competency from an organizational perspective as a target-oriented, repeatable discretion for collective action of an organization. Against this background, we allocate the competency to the resource-based view and thus refer to both when mentioning the latter.

Currently, strategic management, which mainly deals with making fundamental decisions about the intermediate and long-term goals and activities of the organization, is characterized by a dual strategy comprehension taking into account both the market and the resource-based view.

Apart from that, it can be observed that the two different perspectives partly converge to generate a harmonized theory without isolating the market structure and behavior-oriented or resource and competency-based factors: "Strategy is the direction and scope of an organization over the long term. It ideally matches its resources to its changing environment, and in particular its markets, customers and clients so as to meet stakeholders expectations" (Johnson and Scholes 1993, 10).

Therefore, an integrated understanding of strategy, which brings together the key elements of the market and the resource-based view that are relevant for success, should qualify as a vital basis for strategy formulation, especially in the field of e-government.

On the one hand, creation, combination, and coordination of innovative resource bundles is a key element of an organization's activities. On the other hand, carrying out evaluations and adjustments between the primary internal development perspective of the resource-based view with external market-oriented aspects and factors also represents a key element.

In the light of the above, the development of an e-government strategy requires integration of existing strategy concepts within the organization. But in addition to the classical offline strategic management, e-government also demands success-oriented consideration of innovative, technology-based online methods and tools (Chaffey 2009). Although e-government forms a paramount part of the public sector organization's overall strategy, it is not a stand-alone concept and thus requires a subordinate integration into the superior strategy.

The development of an e-government strategy includes all organizational activities concerning the definition, formulation, description, planning, implementation, and audit of the e-government strategy. In the following, the proceeding of the individual steps as well as the related key content that have to be taken into account are explained (please see Figure 14).

Figure 14 Taxonomy of E-Government Strategy Development

| E-government target plan | E-government situational analysis | E-government strategy formulation | E-government strategy implementation | E-government strategy audit |
|---|---|---|---|---|
| • Vision<br>• Mission<br>• Targets | • Assessment of internal factors<br>• Assessment of external factors | • Derivation and assessment of strategic options<br>• E-government strategy selection and determination | • Implementation/realization plan<br>• Resource allocation to initiatives<br>• Change management | • Performance control<br>• Strategic control<br>• Scorecard approach |

Source: Based on Wirtz 2013b.

The starting point of the e-government target plan is the formulation of the e-government vision. Here, a vision is generally understood as the central theme or the guiding principle of organizational activity, quasi an idea of how an organization should look like in the future and which future reality is pursued for the organization.

Characteristic examples for vision statements are "to make people happy" from Walt Disney or "to organize all of the data in the world and make it accessible for everyone in a useful way" from Google. Thus, the e-government vision is the guidance for the strategic e-government development (Hill and Jones 2013).

Apart from that, a vision should fulfill a meaningful, motivating, as well as action-guiding function. Depending on the content, a vision can be classified into four groups: (1) target focus—pursuing a future target state, (2) change focus—modifying basic organizational principles, (3) competitor focus—outperforming a competitor, or (4) role focus—becoming a role model (Wirtz 2013b).

Besides the above-mentioned aspects, especially the public manager's assessment concerning the future development of information and communication technology is important. E-government-related technological changes and break-throughs that may influence online public service provision need to be considered.

In addition to the e-government vision, e-government strategy formulation requires the elaboration of an e-government mission statement. The e-government mission differs from the vision in that it does not focus on an aspired future state of the organization, but defines a core statement regarding e-government purposes, values, and standards of conduct (Grant 2005).

Thus, the definition of these core principles determines the e-government system's reason to exist of the as well as which public services are to be provided. This maxim may also be regarded as an expression of a permanent, action-guiding set of values that specify a framework of appropriate behavior or organizational conduct for internal stakeholders. Consequently, the e-government mission statement can be considered as the primary guiding principle contributing to meet online public service provision demands of citizens and businesses.

Based on the e-government vision and mission, the next step is the derivation and operationalization of concrete organizational targets. By using clearly formulated targets, the long-term organizational development can be actively influenced. Thus, concrete targets fulfill a coordinating role within the organization allowing to focus public activities onto particular planning specifications. In this context, targets may be defined as a normative idea about a future state of the organization.

Effective target setting requires two vital aspects: target formulation and target content. Concerning target formulation, academics and managers usually follow the approach of defining SMART targets (Hill and Jones 2013). Here, SMART is a mnemonic acronym that provides criteria to guide target setting. The letters stand for **S**pecific (clearly define area for improvement), **M**easureable (make the objective quantifiable/traceable), **A**ssignable (specify the responsible person), **R**ealistic (targets need to be achievable with the available resources), and **T**ime-related (specify when the target needs to be achieved) (Doran 1981).

Considering the target content, there is no clear common consensus on this issue since this depends on the overall strategy and targets of the respective public sector organization. Based on the general e-government objectives, these should follow its underlying principles of improving public sector efficiency and effectiveness, reducing overall levels of expenditure, and enhancing accountability, transparency, and responsiveness of the public sector.

Against this background, satisfying stakeholder needs in an effective and efficient way may be seen as the primary goal of public administration, making stakeholder identification and evaluation an important topic for strategic target setting. Figure 15 shows an overview of vital e-government stakeholder groups.

Figure 15 Taxonomy of E-Government Stakeholders
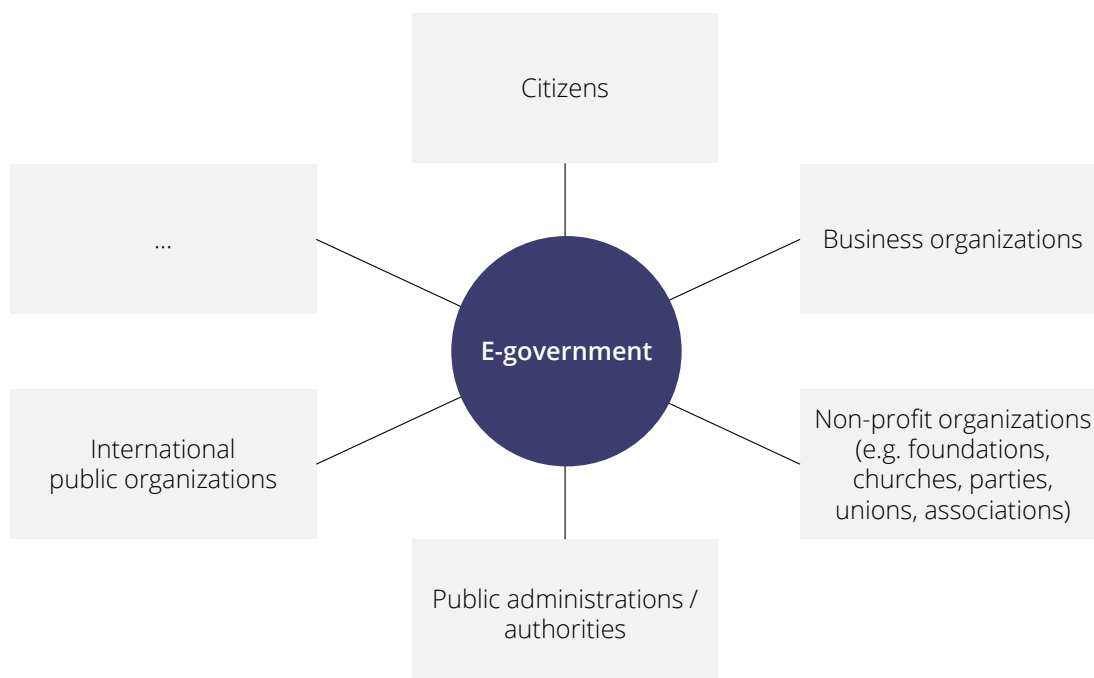
Stakeholders of the public sector are persons or organizations that can affect or are affected by its actions (citizens, businesses, public administrators, etc.). In order to systematically consider the interests of different stakeholders in the e-government targets, identifying relevant or potential stakeholders is a first important step.

Since taking into account every e-government pressure group is generally neither constructive nor realistic, the identified stakeholders have to be further specified according to their inherent target and power structure. The key objective of this task is to identify the agenda of the individual stakeholders.

In addition, it is important to assess—depending on the power structure of the respective stakeholder—the potential influence that stakeholders can exert on the initiative or organization. Based on this analysis, the final step is to determine how stakeholders relate to the overall e-government targets, which in summary defines if they have to be considered in the target formulation. The second step of the e-government target plan is the e-government situational analysis (see Figure 14). Figure 16 presents an overview of the situational e-government analysis.

Figure 16 Elements of the Situational E-Government Analysis
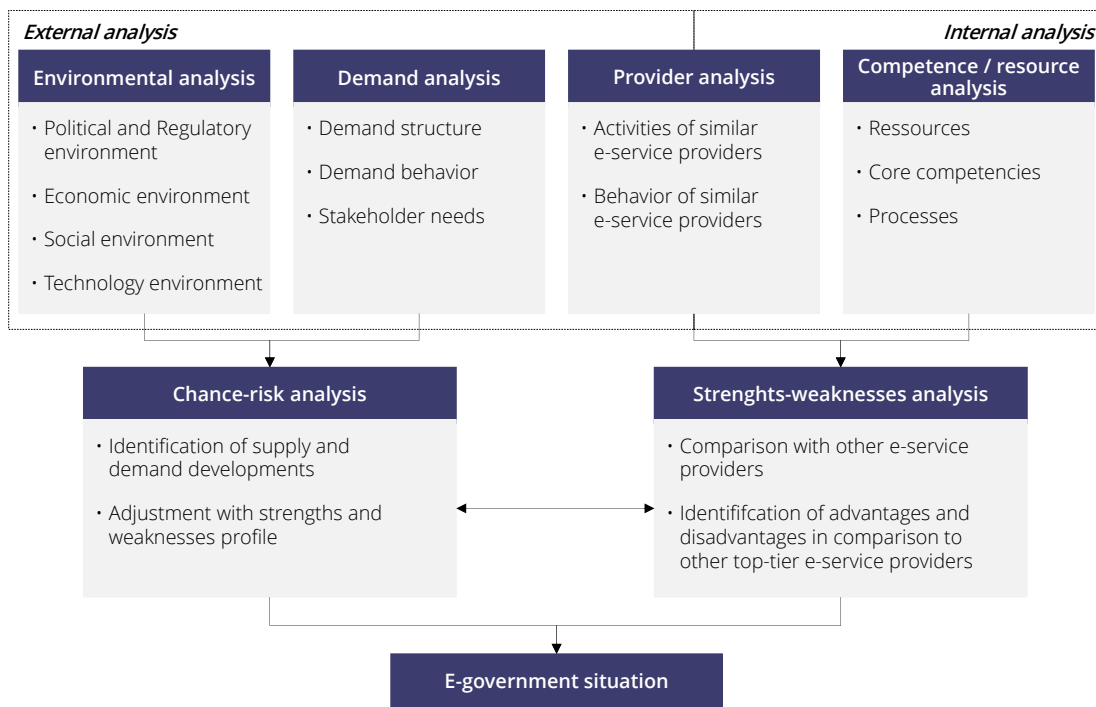


Source: Based on Wirtz 2013b.

Since the situational analysis is a fundamental framework in strategy development, this step requires special attention. The situational e-government analysis proceeds in two streams, an analysis with an internal orientation and an analysis with an external orientation (Andrews 2003).

The internal view covers the analysis of internal resources, competencies, and processes as well as the activities and the behavior of similar e-service providers. The external view deals with the analysis of the e-government system from a macro and a micro perspective. Whereas the micro environment refers to investigating stakeholder demands and provider behavior, the macro level relates to the analysis of demand structures and regulatory conditions (Chaffey 2009).

The internal analysis is directed to the organization's competencies and resources. This perspective strives to identify one's own demand-related resources and competencies. In this context, resources are understood as classical factors that are required to provide the respective e-services (e.g., people, IT), and competencies are combining factors that allow the value-added combination of the resources (e.g., specific skills, knowledge). Here, core competencies that are required for an organization's service provision are of particular importance.

In the next step of the situational e-government analysis, the competencies and resources of other e-service providers need to be investigated in the same way and integrated into the analysis. Other e-service providers are private and public organizations that offer comparable e-services (e.g., city portal providers, community providers). Their behavior and activities to satisfy user demand are of paramount importance for defining own strategic targets. Therefore, all relevant e-service providers should be analyzed—as far as possible—with regards to their targets, strategies, and competencies.

The outcome of the internal analysis, consisting of the competency/resource and the provider analysis, can be transferred into an organization-oriented strengths-weaknesses analysis, indicating the potential competency-pull impact that the existing e-government organization can generate within its sphere of influence. The aim of the strengths-weaknesses analysis is to identify and evaluate existing advantages and disadvantages compared to other providers in order to derive a reasonable scope of action.

Concerning the demand analysis, the stakeholder needs, demands, and behavior have to be investigated because these influence the demand fundamentally. This step aims at creating transparency to achieve a stakeholder-oriented approach, taking into account their specific requirements. When looking at the environmental analysis, the objective of the investigation is to identify conditions that have a direct or indirect influence on the organization. The findings of the environmental and the demand analysis are summarized in a chance-risk analysis, revealing the capacities to develop a competency-push impact.

Finally, a comparison of the chance-risk analysis and the strength-weaknesses analysis allows a meaningful assessment of the organization's situation from an internal and an external perspective. This information establishes a rational and comprehensive basis for choosing the fundamental strategic options for the e-government system.

The third step of the e-government target plan is the e-government strategy formulation. The achieved results of the formerly conducted analyses concerning the organization's situation, allow to define the aspired e-government strategy. For this purpose, it is necessary to be aware of the generally available strategic e-government options—how the e-service may be provided from a strategic perspective—to make a reasonable evaluation and determine the deducted strategy in the next stage.

According to Porter (1985), there are generic market and competitor strategies that successful organizations consistently follow. Transferred to the e-government environment, this means that public managers should consider demand and provider strategies in order to achieve a prosperous e-government outcome. In this context, demand strategies refer to the procedures that an organization chooses to satisfy its stakeholder demands and provider strategies refer to the focus that an organization has for achieving a competitive advantage.

Based on this line of thought, demand strategies mainly deal with the question of which e-services shall be provided and which stakeholders shall be addressed. In contrast, provider strategies aim at achieving a competitive advantage through being more efficient than other providers or through differentiating their e-service offer from that of other providers. Therefore, it is reasonable to follow one of the three consistent strategic options, which are summarized in Figure 17.[1]

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1 The following is based on Wirtz 2011c.

Figure 17 Generic E-Government Strategies

| Generic e-government strategies | | |
|---|---|---|
| **Focusing strategies** | **Integration strategies** | **Network strategies** |
| • Key principle: concentration on specific e-services or value activities <br><br> • Key target: realization of efficiency / differentiation advantages | • Key principle: expanding the e-service range <br><br> • Key target: securing and expanding of services / channels | • Key principle: using cooperations for e-service provision <br><br> • Key target: reduced resource costs and optimized access to complementary competencies |

Source: Based on Wirtz 2011c.

(1) Focusing strategies

Within the framework of a focusing strategy, an e-government system is laid out to a specific area or set of e-services, in which the organization attempts to achieve a leading position within its field. This form of strategy allows to gain efficiency or differentiation advantages. A focusing strategy can make sense in complex and innovative environments if the core competencies of the organization facilitate a leading position in the corresponding value stage.

This strategic option may thus, for instance, be viewed as a transitional step for public authorities that just started off with their e-government system and quickly want to address specific stakeholder needs to generate e-service traffic on their servers. This strategy is used by many Internet enterprises during their initial phases. A well-known example of this are Google or Yahoo, which first only offered a search engine to gain market presence before dedicating themselves to offer additional e-services, such as news, email, finance, or location services.

(2) Integration strategies

Integration strategies—in contrast to focusing strategies—target to expand the e-service range. This can be pursued through the independent—in-house, outsourced, or a mix of both—development of new services (internal expansion) or acquisition of existing providers or suppliers (external expansion).

This strategic option may be used to exploit an organization's existing core competencies and to reduce its dependency from other providers. In the case of e-government, integration strategies mainly deal with horizontal integration, expanding their e-service range across different administrative subjects. Currently, a massive development and expansion of offered public e-services from various private and public providers can be seen.

(3) Network strategies

Besides focusing and integration strategies, network strategies are an additional strategic option. The underlying principle of networking strategies is the formation of two or more organizations that cooperatively work together on a specific service or process. These forms can be observed on horizontal, vertical, and lateral levels. Organizations that cooperate on a horizontal level are called strategic alliances, whereas vertical or lateral orientated cooperations are labeled strategic networks. However, in all circumstances the organizations stay legally independent.

Network strategies allow organizations to benefit from both focusing and integration strategies. First, because the different network partners can concentrate on, develop, and bring in their core competencies and second, because the network structure supports the integration of skilled, highly specialized service providers. Moreover, network strategies enable organizations to better keep up with the increasing innovation rate since service or product development can be shouldered by various partners.

Besides these convincing chances, network strategies also carry risks, such as losing know-how, free-riding of partners, or unpredictable behavior of competing organizations. Apart from that, networks do tend to be unstable, which may lead to uncertainty among the organizations involved and may complicate collaboration and cooperation between the partners in the long-run.

Summing up, focusing, integration, and network strategies possess manifold advantages, but may also give rise to problems and difficulties if not applied in a sensible manner. Therefore, the derivation and assessment of strategic options needs to be based on a current, comprehensive situational analysis and conducted very carefully, taking into account relevant and appropriate internal and external factors. This is the fundamental ground work for e-government strategy selection.

Having formulated the e-government strategy, the next step of the e-government target plan is the e-government strategy implementation. This step serves to implement the formerly defined e-government strategy and accordingly to pursue the aspired goals of the e-government strategy. Figure 18 illustrates the phases that are associated with this step.

Figure 18 E-Government Implementation Phases
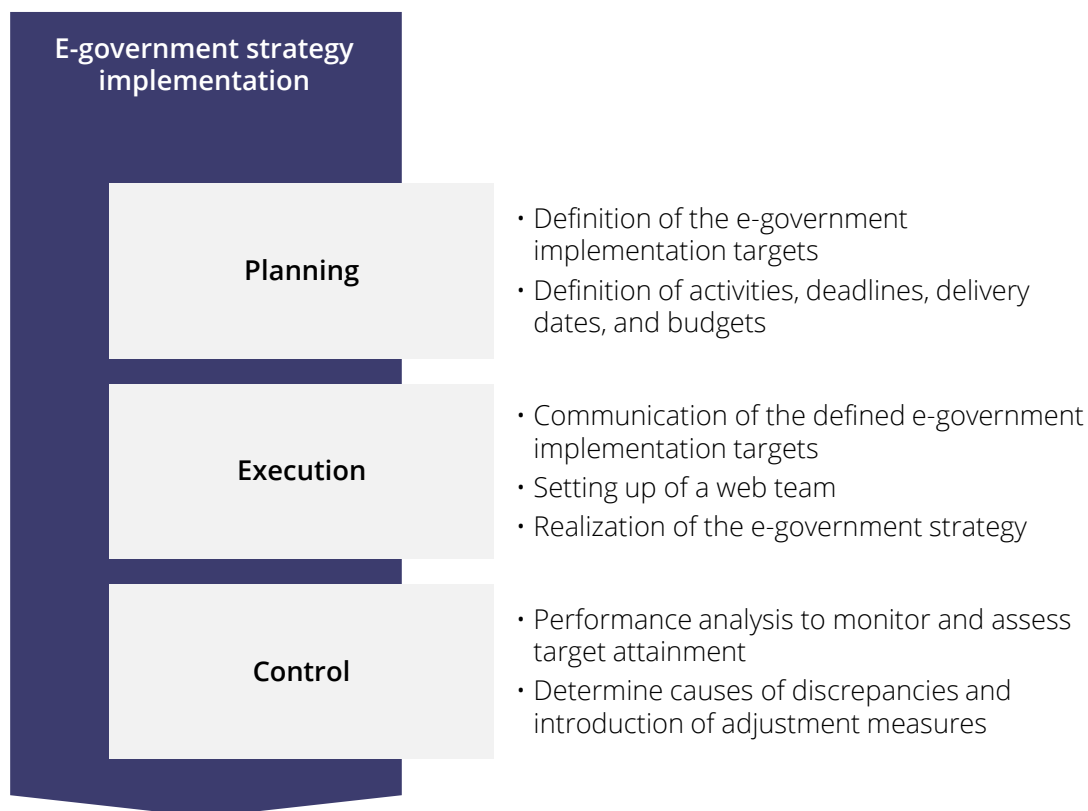


Source: Based on Wirtz 2013b.

The strategy implementation procedure is an interdisciplinary and cross-hierarchical process. Its coordination requires an approach in multiple stages, which are passed iteratively. Although the scientific literature on strategy implementation shows different approaches on this topic, these mainly differ concerning their constituents, but are in general based on a rather similar schedule model.

In the e-government context, subdividing the e-government strategy implementation process into the three classic phases planning, execution, and control proves to be useful. Specific success factors arise from the particular characteristics of the e-government online or Internet environment, which should be considered when implementing e-government.

The planning phase serves to determine the key targets of the e-government strategy implementation. In addition to the specification of the implementation proceeding, expense figures in particular decisions regarding budgeting, deadlines, schedules, resources, and milestones are assessed in this phase.

There exist various instruments, such as network diagrams or detailed workflow schedules, to implement these plans. Due to the typically extensive planning effort that is associated with realizing or implementing e-government strategy concepts, efficient handling of this matter usually requires adequate IT support. Therefore, the corresponding resources have to be considered, too.

On completion of the planning phase, the e-government strategy implementation enters the execution phase. Here, the strategy targets and the respective implementation approach need to be communicated first. Early communication of these matters can, for instance, support acceptance of the pursued e-government strategy among affected public administration staff.

Once the basic structures for strategy implementation have been created, a project team must be put together that is assigned with the task of implementing the e-government strategy implementation plans. Against the background of the online context, recruiting technical experts that possess an adequate level of network, web, and IT expertise is a mandatory provision. Therefore, the project team needs to be equipped with people that have a relevant set of e-government proficiency.

The core process of the execution phase is the actual implementation of the e-government strategy implementation plans in the public sector organization. This stage of the e-government strategy development process reflects the transition from the planning to the execution phase.

Evaluating the degree of implementation or how well the aspired goals of the e-government strategy implementation have been realized is the aim of the final phase control. In this context, interim results and project progress need to be constantly measured and critically examined. If necessary, particular parts or tasks of the projects have to be rerun if the desired outcome has not been achieved.

E-government implementation projects usually require certain stages that need to be completed successfully in order to achieve the desired results. In addition, successful project progress requires comprehensive project management on a project leadership level that spans all associated phases. Figure 19 presents an exemplary e-government implementation plan.

Figure 19 Exemplary E-Government Implementation Plan

| Q1 2017 | Q2 2017 | Q3 2017 | Q4 2017 | Q1 2018 | Q2 2018 | Q3 2018 |
|---------|---------|---------|---------|---------|---------|---------|

Project management

Conceptual design

Technical design

Pilot

Rollout — Go-live

After go-live support

Closing
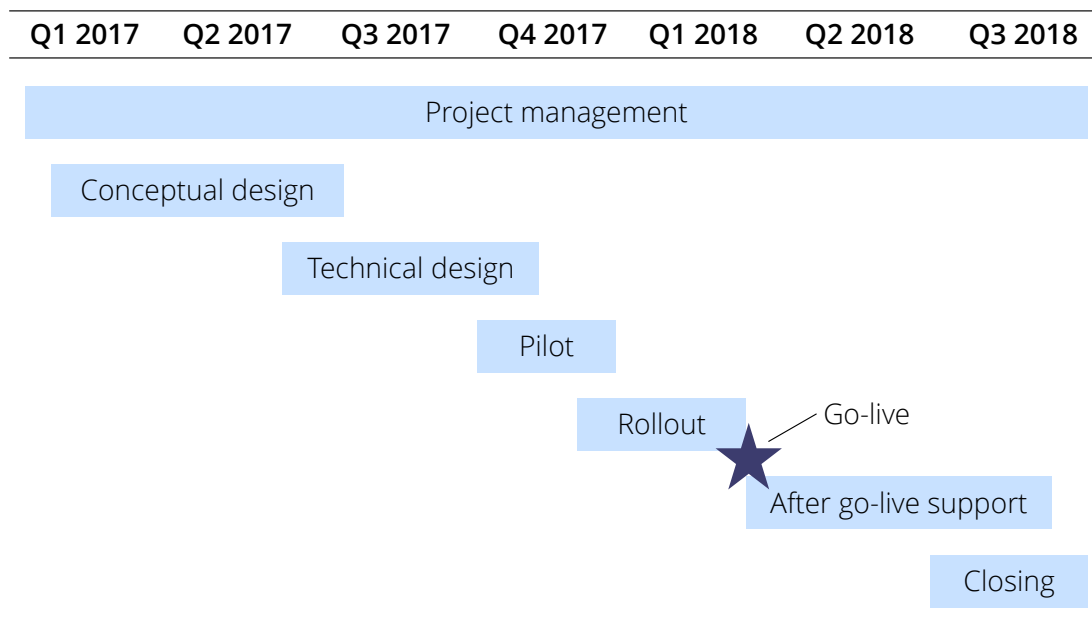
Source: Based on Wirtz 2013b.

The presented phases of the exemplary e-government implementation plan are briefly explained in the following. The conceptual design phase covers the activities that are needed for the conception of the e-government enterprise. The technical design phase aims to establish the technical plan that represents the formerly defined conception. In the pilot phase, the initial prototype of the e-government system is developed.

After successful prototype testing, the pilot is duplicated or transferred to other parts of the organization. The go-live specifies the point in time when the new system becomes activated. The after go-live support is a specific time period during which special support is available to the employees of the organization. The closing phase determines the official end of the project upon project completion.

In order to systematically reflect all e-government relevant strategic management dimensions, it is reasonable to apply an e-government strategy scorecard, which is a method to keep track of e-government strategy relevant factors. Figure 20 provides an example of an e-government strategy scorecard.

Figure 20 Dimensions of the E-Government Strategy Scorecard



**Finance view**

What needs to be achieved to meet the needs of the stakeholders?

**Stakeholder view**

What needs to be done for the stakeholders to enforce the desired e-government strategy?

**E-government strategy**

**Process view**

How should the e-government processes be designed to meet the stakeholders' needs?

**Knowledge and growth view**

How can the ability to change, innovate, and improve be steadily increased?

Source: Based on Wirtz 2013b.

An e-government strategy scorecard allows to assess the performance of an e-government strategy concerning its formerly defined dimensions, which are measured through a limited number of indicators. There are four dimensions, which should be considered when developing the e-government strategy scorecard—the finance, the process, the knowledge and growth, and the stakeholder view.

The finance view deals with the question, what needs to be achieved to meet the stakeholders' needs. This usually refers to specific investment and cost-cutting targets that should be included in the e-government strategy. The process view is concerned with the strategic design of the e-government processes in a way that these meet the needs of the respective stakeholders.

From a knowledge and growth view, an e-government strategy should provide a clear strategic guideline on how to foster the ability for future enhancement. Finally, it is indispensable to have a clear vision of what needs to be done for the stakeholders, so that they support the desired e-government strategy.

Further vital factors for long-term success of e-government systems are core assets, which take on a central role in service creation, and core competencies, which denotes the public authority's capabilities to combine its assets and competencies in a manner that gives rise to special stakeholder benefits.

## Core Assets and Core Competencies

In classic management theory, core assets and core competencies give companies a sustainable competitive advantage, which leads to the achievement of superior returns in the long term.[1] Moreover, competitive advantage in the private sector is regarded to lead to better, superior product and service offerings, which in turn lead to an enhanced demand position (Fahy and Smithee 1999). Therefore, all other factors being equal, the best product and service offering from a customer point of view will finally result in a market leadership position by satisfying customer demand in a better way than the competitors.

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1 The following is based on Wirtz 2011c.

Transferred to the public sector, the concept of competitive advantage thus allows the respective organization to create better, superior service offerings and to provide its services for society with higher value for the public, supporting their public service remit. In addition, competitive advantage becomes a vital factor for public administration for further reasons, such as efficiency demands of the public and the government, shared-services, conducting privatization processes, to maintain and increase citizen trust in the government.

In the case of e-government, this is especially important since governmental providers, for example, face increasing competition from the private sector (e.g., privately managed city or tourism portals) or have to deal with user dissatisfaction and user churn (e.g., users that do not want to use electronic service provision anymore and may switch to other providers or service channels).

Furthermore, local competitive disadvantage will lead to an ongoing centralization of e-government service provision, which in turn results in a decrease of local activities and resources. At the same time, e-government faces intra-channel competition since it should possess benefits compared to the former status quo (e.g., face-to-face public administration visits to handle administrative matters) in order to attract users for online service provision.

Summing up, competitive advantage is of vital importance for the public sector, too. Nonetheless, considering this work's e-government focus, this concept is referred to as e-government advantage, which can also be achieved through identification and effective management of core assets and core competencies.

Core assets are those tangible and intangible assets that play a central role in the establishment and marketing of e-government online services. In the case of public sector organizations, these include, for example, employees, data, or the technological infrastructure.

Core competencies complement core assets and describe the capabilities of the public sector organization, particularly the capabilities of its employees and its management to combine the public sector organization's assets and core assets in a way to achieve special user benefits. Examples of core competencies of public sector organizations in an e-government context are outstanding user relationship management or distinguishing technology and programming abilities.

The concept of core assets and core competencies arises from the resource-based theory approaches of strategic management. Therefore, the resource-based view and its advanced concepts—capability-based, dynamic capability-based, and knowledge-based view—form the basis for the following discussion of core assets and core competencies of e-government management.

The resource-based approaches are used to explain differences in results between organizations and to derive strategies for the creation of competitive advantages. In this context, an inside-out perspective is applied, meaning that the accumulated internal assets and capabilities of the organization are in focus.

Based on this reasoning, the achievement of sustainable competitive advantage is attributed to the unique and specific assets and competencies of an organization. Discrepancies in these assets and competencies as well as in their management are regarded as reasons for differences in organizational success.

The classic resource-based view is primarily concerned with the assets and core assets of an organization, largely neglecting competencies. The term asset in this context refers to an undifferentiated input factor, which is freely acquirable in the market and forms the necessary condition for all activities of a company (Teece, Pisano, and Shuen 1997). Thus, financial resources or human resources are general examples for assets.

If organization-specific assets play a particularly important role in the value chain of the organization, these are referred to as core assets. However, assets can only be classified as core assets if they are valuable to value creation, rarely available in the market, and not easy to imitate or to substitute. Otherwise, they cannot create the potential for sustainable e-government advantage. Based on this proposition, the following definition for the asset and core asset concept concerning public sector organizations is derived.

## E-Government-related Definition of Assets and Core Assets[1]

Assets are tangible and intangible resources that form the basis for the activities and the competitiveness of a public sector organization. Core assets concern public sector organization-specific assets that were accumulated in-house or were at least refined and that have a special intrinsic value for a public sector organization's value creation process. They are relatively scarce and are difficult to imitate or substitute. Core assets form the basis for a lasting e-government advantage.

The resource-based view follows the fundamental premise of imperfect factor markets. This theoretical circumstance is the prerequisite for the asset heterogeneity of organizations, which underlies the resource-based theory approach. According to this reasoning, above-average returns can only be achieved if the value of an acquired asset exceeds its cost.

In addition to imperfect factor markets, there are usually no specific factor markets for highly-specific or intangible organizational assets. Citizen trust, for example, cannot be acquired in the market, but can only be built on long-term high-quality service provision. Such internally accumulated assets are generally of far greater importance for an organization's success than purchasable factor markets. Since these core assets are highly company-specific, difficult to imitate, and mostly difficult to substitute, they usually reflect the largest differentiation potential.

E-government-related core assets of public sector organizations are for example exclusive alliances and networks, existing and obtained data, employees, IT platform, and technological infrastructure. By building up exclusive alliances with specialized information or service providers, public sector organizations can elaborate unique features of their online service offerings to lure users to their e-government platform and keep them revisiting.

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1 Based on Wirtz 2011c.

Public sector organizations also have the possibility to create exclusive alliances and networks within the public sector that are difficult to imitate by competitors from the private sector. Moreover, much of existing and obtained data in public sector organizations is either not directly available through other sources or cannot be retrieved at all. Smart application of this data can therefore generate an e-government advantage.

The employees of a public sector organization, being the persons with the relevant know-how and competencies, are essential for value creation. Since their implicit knowledge and expertise is rarely available in the market and difficult to imitate, employees are core assets of the public sector organization. The IT platform, being the interface between the e-government user and provider, as well as the technological infrastructure, providing the backbone for the functioning of the e-government system, are core assets of public sector organizations.

The answer to the question how a core asset-based e-government advantage is transferred into superior services is provided through the competency-based perspective of the resource-based theory. The underlying assumption of this perspective is that organizational skills and abilities allow smart combinations of assets and core assets creating surpassing services, which are different from those of competitors and have thus the potential to create user preferences.

For this reason, competencies allow to manage core assets in a way to achieve e-government advantages for the public sector organization. Organizational competencies are therefore a coordination capacity that is based on the social interaction patterns, the knowledge, and the individual skills of the public sector organization's employees and its management.

According to the management-oriented explanation of Prahalad and Hamel (1990), core competencies are characterized by three features: (1) provide access to various business areas, (2) are transferable to a multitude of products/services and/or customer groups, and (3) form the basis for its core products or services. Based on the previous discussion, competencies and core competencies of public sector organizations can be defined as follows:

## E-Government-related Definition of Competencies and Core Competencies[1]

Competencies form the foundation for the collective action in a public sector organization and facilitate the service creation process, in which assets and core assets are combined into valuable services. Core competencies are a special form of competencies. They are relatively scarce and do not lend themselves to imitation or substitution by the competition. Core competencies make a significant contribution to the perceived user benefits and provide public sector organizations with a lasting e-government advantage.

Automatization and data processing competencies are of high importance for e-government implementation and management. The same holds true for content creation competency, which covers the abilities that are necessary for successfully producing information content that satisfies user demand. An outstanding e-government system further requires collaboration competency since comprehensive service provision usually involves the collaboration among different organizations or organization units.

Experience design competency refers to the ability of creating a satisfying user experience while visiting the online platform. Technology and programming competencies are indispensable abilities for an e-government undertaking since these are needed to set up, maintain, and develop the relevant IT infrastructure.

Running a successful e-government system calls for distinct information and service bundling as well as service development competencies since these directly influence the service offering, which is designed to satisfy the user's demands. Finally, user relationship management is an important core competency since this requires the activities to attract users to the e-government system and to maintain the growing user base. Figure 21 provides a summary portrayal of e-government-related core assets and core competencies in the public sector.

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1 Based on Wirtz 2011c.

Figure 21 E-Government-related Core Assets and Core Competencies



**E-government advantages**

**Core assets**

- Exclusive alliances and networks
- Existing and obtained data
- Employees
- IT platform
- Technological infrastructure

**Core competencies**

- Automatization and data processing
- Collaboration
- Content creation
- Experience design
- Information and service bundling
- Technology and programming
- Service development
- User relationship management
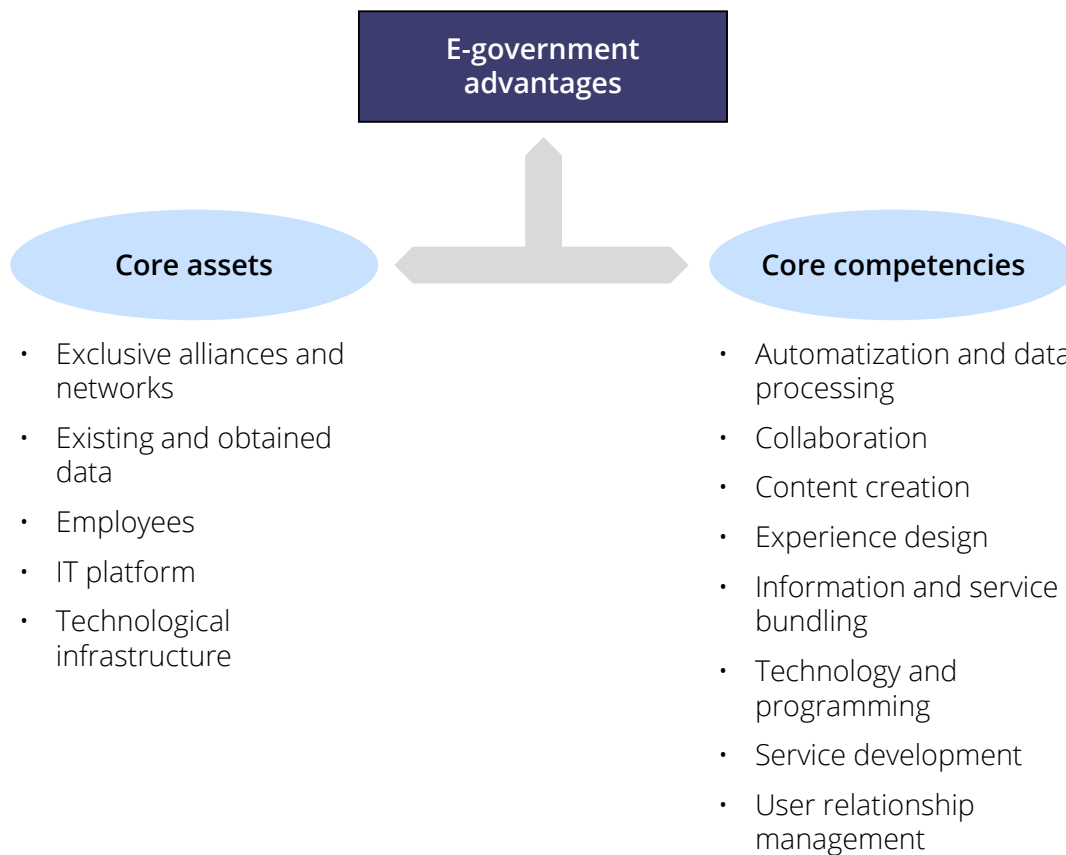
Source: Based on Wirtz 2011c.

The system to provide e-government services needs to be envisaged like a tree. In this picture, the trunk and major limbs are core services, the smaller branches are service segments, and the leaves are the final e-government services. Since the actual source of sustainable e-government advantage lies in an effective and enduring combination of core assets and core competencies, a superior final e-government service may only result in a short-term competitive benefit but for the most part not in a long-term e-government advantage.

For this reason, the interconnected "tree-system" is based on its roots, the core competencies, which provide the nourishing basis for sustainable competitive service provision. Thus, like a tree, the e-government system grows from its roots and branches out to its final e-government services (see Figure 22).

Figure 22 The Roots of Competitive E-Government Services

**Final e-government service**
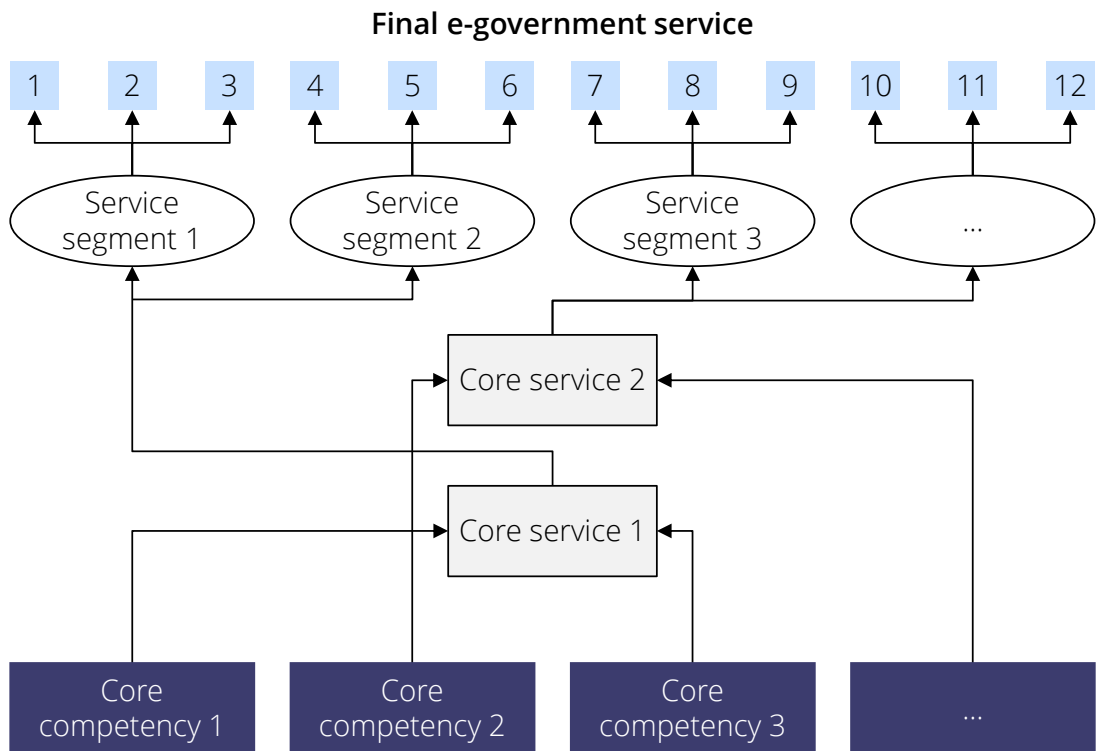


Source: Based on Prahalad and Hamel 1990.

Prahalad and Hamel (1990) exemplify this matter by referring to a company that possesses the core competency of producing electronic displays. By using its competency, the company could successfully do business with different products in different markets (e.g., pocket calculators, watches, smartphones, tablets, machinery and equipment, etc.).

Transferred to the e-government context, this means that the public sector organization's core competencies can be applied to establish a lasting e-government advantage in terms of superior service provision. Given, for example, the core competencies automatization and data processing, experience design, service development, and service bundling, these can be exploited to develop outstanding core services, like electronic declarations or electronic voting, which are tailored to specific service segments, such as citizens or businesses.

Since both core assets and core competencies are not rigid or stiff objects but responsive factors that can be developed, the resource-based perspective was complemented with the dynamic capabilities view. Dynamic capabilities explain the

development of resources and competencies over time and reflect an organization's capability to build up, configure, integrate, and coordinate core assets and competencies (Teece, Pisano, and Shuen 1997).

Building up or dismantling core assets or core competencies is, for example, required if organizations are constrained to adapt to varying surrounding conditions. This activity demands regular reviews of an organization's assets and competencies in order to decide which, for instance, need to be developed or degraded.

These processes can be controlled by the management of the organization through the definition of specific goals and strategies that support an asset or competency-based development. Here, especially the e-government user needs and requirements should serve as a benchmark for the continuous review of the core asset and core competency profile. The cycle is illustrated in Figure 23.

Figure 23 Core Asset and Core Competency Development
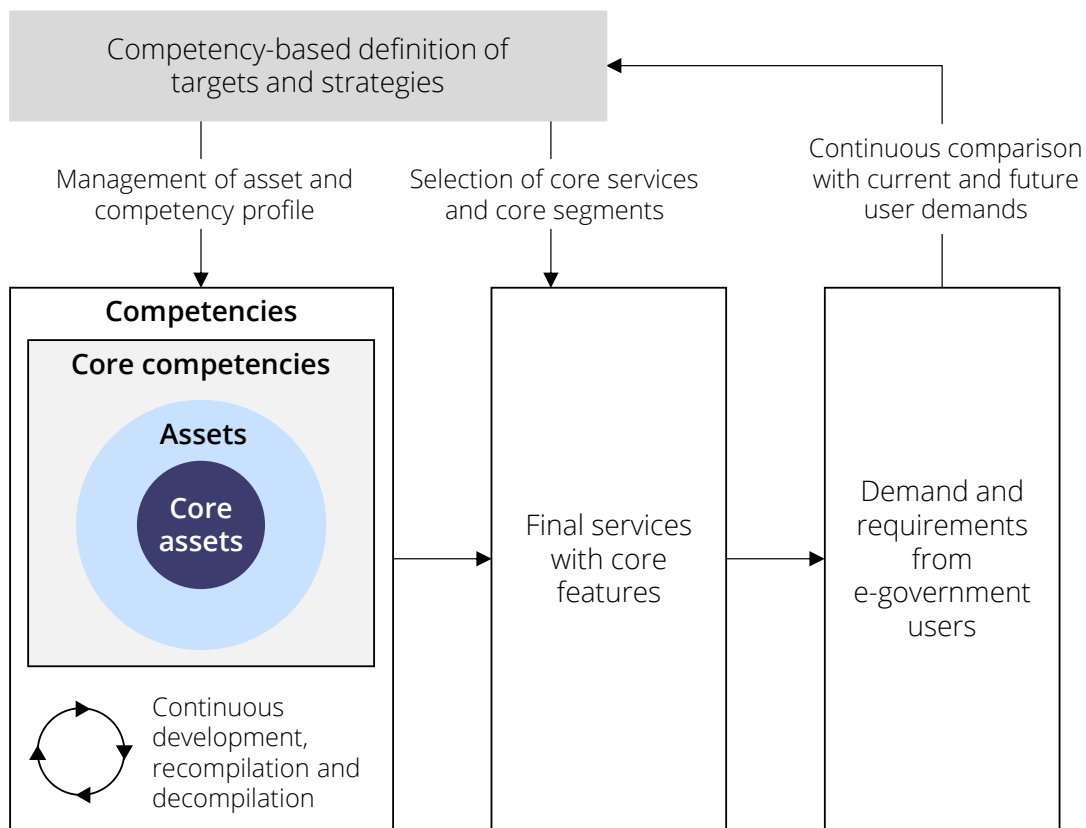


Source: Based on Wirtz 2013c.

Developing core assets and core competencies requires a systematic analysis and management process since this procedure plays a vital role in the formulation of recommendations for action in order to ensure the organization's future success. First, the core assets and core competencies that possess strategic importance for the organization need to be determined. Here, future scenarios may be analyzed to identify promising core assets and core competencies, i.e. mobility is assumed to become an important topic for e-government provision, and thus, IT platform, technological infrastructure, technology and programming, as well as service development are promising core assets and core competencies.

Second, the achieved hypothetical target state is compared with the current core asset and core competency profile to identify relevant fields of action. If, for instance, a public sector organization does not yet have access to the required core assets and core competencies to adequately address the previously mentioned mobility topic, these need to be actively developed. In the same manner, core assets or core competencies can be outsourced, reduced, or completely dropped if they do not show strategic or operative relevance anymore.

Finally, the results of the target and actual situation outcome are transferred to derive the respective course of action. Core assets and core competencies that show, for instance, a high future significance but a low current state should be quickly build up, intensifying investments and knowledge management. However, core assets and core competencies that show a diametrically opposed picture (low future significance but high current state) should be dismantled and disinvested.

If specific core assets and core competencies have rather become obsolete (low future significance and low current state), these may be outsourced or further reduced. If core assets and core competencies, however, show high future significance and the public sector organization already has achieved a high current state, they should be maintained and upgraded by all means. Figure 24 presents an overview of the analytical processes and the strategic course of action.

Figure 24 Analysis and Management of Core Assets and Core Competencies



| | | | Current forming of core assets and core competencies | |
| --- | --- | --- | --- | --- |
| | | | Low | High |
| Future significance of core assets and core competencies | High | | Build up through investment and knowledge management | Maintenance and further upgrading |
| | Low | | Outsourcing and further cutback | Dismantling and disinvestment |

**Actual situation**
- Value-added chain analysis
- Identification of core assets and core competencies that are
  - ✓ valuable
  - ✓ rare
  - ✓ difficult to imitate
  - ✓ difficult to acquire

**Target profile**
- Market analysis
- Development of future scenarios
- Derivation of relevant future assets and core competencies

Target and actual situation comparison

Course of action

Source: Based on Wirtz 2011c.

Having set a clear strategic course of action, the respective core assets and core competencies can be systematically developed or dismantled and thus adjusted to the public sector organization's e-government requirements. Apart from the strategic management perspective, information and communication technologies, which are a key driver for e-government, play an important role in the conception of the e-government system. For this purpose, important technology aspects and associated issues are outlined in the following.

## 3.3   Technology Aspects of E–Government

The innovation in modern information and communication technologies and the resulting advent of the Internet have changed many aspects of networking and global communication and have set the basis for innovations like e-government. Against this background, the key technology aspects of e-government are presented in this section.

The Internet has become a standard for supporting, executing, and maintaining data exchange processes between two or more actors via modern information and

communication technologies.[1] In principle, the Internet is a global networking and communication system that is made up of computer networks, which can again be divided into subnetworks. The fundamental structure of this network is based on the client-server-principle, which—simply speaking—means that server computer provide files and applications that can be used by client computers.

The physical connection of this structure is formed through a tight network of national, international, and intercontinental data lines. The transmission of data via these networks is based on specific protocols and standards, which can be interpreted as a set of basic rules and requirements that structure and arrange the data exchange workflow in the networks. The dominating Internet standard protocol is the transmission control protocol/Internet protocol (TCP/IP).

Since the Internet is a rather loose network with constantly changing participants, each participant has to be uniquely identified in order to allow accurate digital data exchange. For this reason, each participant receives an exclusive identifier from the TCP/IP when accessing the Internet, the so-called IP address, which is an Internet address written as numbers separated by periods (e.g., 192.124.238.252).

Since accessing websites by using long sequences of numbers is bulky, domain names were introduced that allow server identification through unique character strings (e.g., uni-speyer.de). The required underlying domain name system (DNS) is a database that allocates each domain name to the respective IP address. If a user tries to access a website through a domain name, the client sends a request to a DNS server, which transmits the associated IP address.

Due to the high amount of IP addresses and requests, there exist many DNS servers, which map a specific part of the address directory. Therefore, the DNS routing follows a particular cycle. First, the client contacts the DNS server of the respective Internet service provider (e.g., AOL, AT&T, Comcast, etc.), which checks if the IP address is available in its database or its cache from a previous user query.

If the requested IP address cannot be located, the DNS server of the Internet service provider takes over the role of the requester, contacting one of 13 root DNS servers, which represent the supreme authority of the DNS directory. The root DNS server identifies the target DNS server, where the initially requested IP address is located, and sends it to the requester.

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1 The following is based on Chaffey 2009, Laudon, Laudon, and Schoder 2010, and Wirtz 2013b.

Next, the requester sends the initial IP address request to the target DNS server. After the target DNS server has answered the IP address request to the requesting server, it sends the IP address to the client. Having received the IP address that is associated to the domain name, the client can access the desired website. Figure 25 illustrates the client-server-principle as well as the DNS routing.

Figure 25 Client-Server-Principle and Internet Addressing with DNS
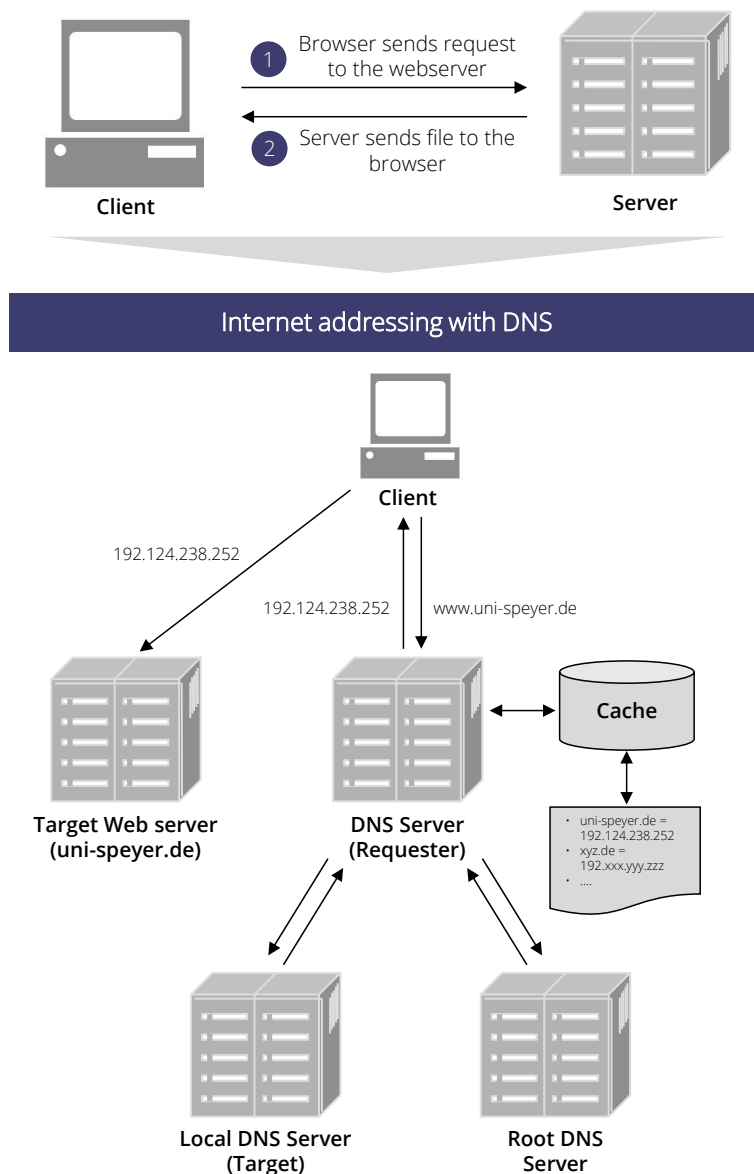


Source: Wirtz 2013b.

The Internet provides users with a substantial amount of information content. This content can be divided into static content and dynamic content. Static content refers to web content that is exactly delivered to the user as stored on the web server (e.g., static presentation of the opening hours of a public agency). A dynamic website in contrast is processing data and provides the user with customized content (e.g., online creation of address labels for return delivery). This processing can take place on the client (client-side dynamic) or the server (server-side dynamic).

Concerning e-government, the platform for user interaction, which disposes static and dynamic content, is located on a web server that can be accessed by internal and external users. This web server accesses and exchanges data with the application server, the database server, and the backend systems. This setting is visualized in the following figure.

Figure 26 Schematic E-Government Setting
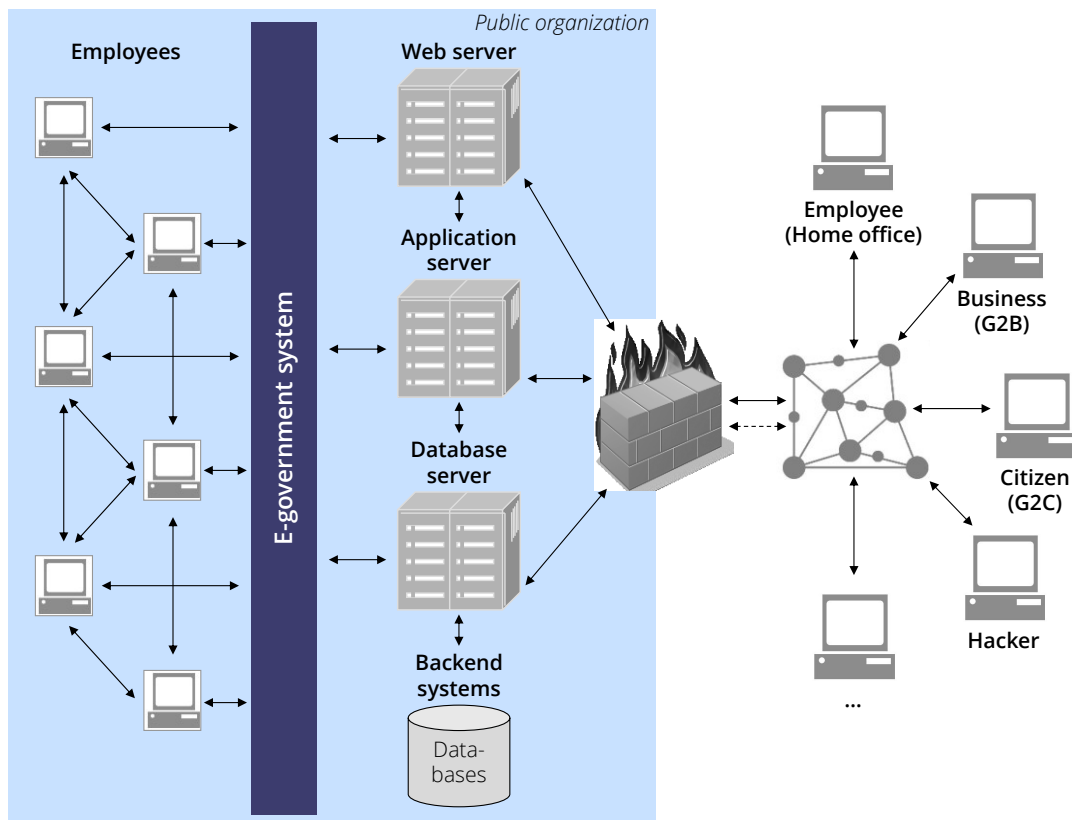


Source: Based on Wirtz 2013b.

An application server enables facilities to create applications as well as the server environment to run them. A database server provides database services to other computer and back end systems that support the corresponding processing of transactions. This integrated server system is protected by a so-called firewall, which is used to limit access and monitor incoming and outgoing data traffic, to prevent unauthorized access by people such as hackers while allowing authorized access by citizens, businesses, employees that work from home and so on.

The associated requirements of using multiple systems—also across different public sector organizations—demands interoperability of these systems. Interoperability is the ability to exchange information via common interfaces without restricted access or the need for implementation, in a way that the communication partners can entirely understand and process the information exchanged.

Against the background of the unity and the heterogeneity of still widely spread application-oriented IT systems, efforts to ensure their future interoperability are key challenges from an e-government technology perspective.[1] For this purpose, closed software systems that have commonly been installed to support administrative procedures must be replaced by networked administrative systems, databases, and integrated portals that allow holistic administrative processes that are free of media breaks. The necessary technical solutions are based on open standards and service-oriented architecture (SOA). SOA is a computer software design and integration concept in which interoperable components exchange information and provide services, thus allowing to combine various heterogeneous IT systems.

Moreover, the associated detachment from a purely technical integration towards a holistic service-oriented approach represents a major innovation with regards to classical enterprise application concepts. This technological development corresponds to an organization-wide transformation from task-oriented thinking towards a clear service orientation focus.

From a technical perspective, this requires the construction of a process-oriented e-government infrastructure based on service-oriented architecture and the design of high-performance e-government portals. These aspects are prerequisites for multichannel access to the services of the administration network as well as for efficient handling of processes across administrations.

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1 The following is based on Rombach, Tschichholz, and Jeswein 2010.

Based on the experience of conducted e-government projects, a computational e-government model was developed to illustrate an e-government reference architecture. This reference architecture aims at providing a basic understanding of the structure of an e-government system and at supporting the identification and allocation of the components. The overview of an e-government reference architecture is shown in the following figure.

Figure 27 E-Government Reference Architecture
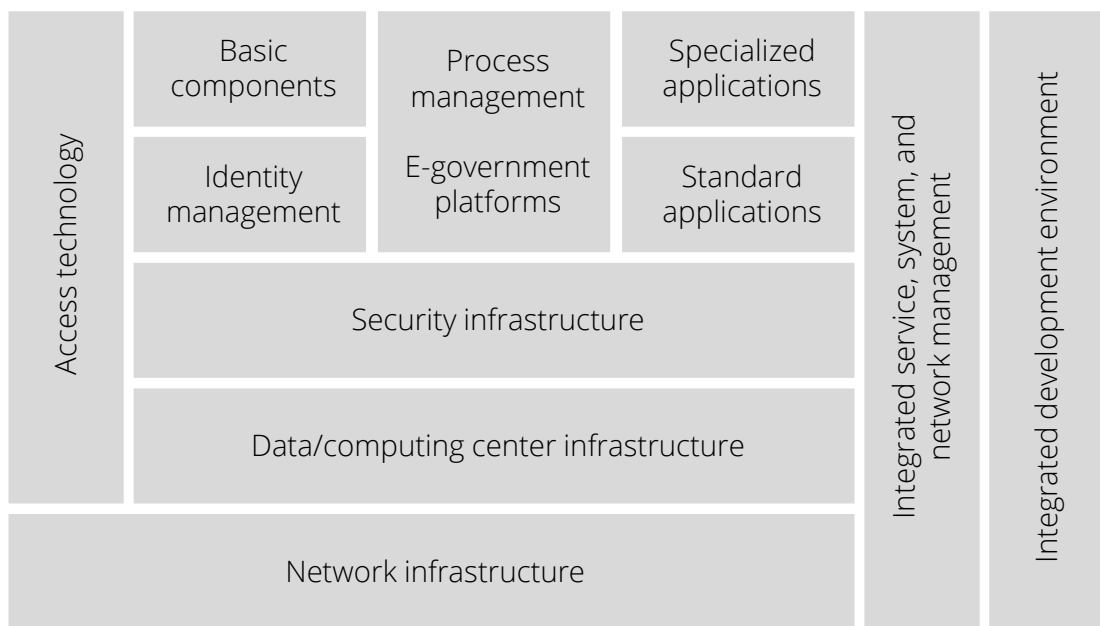


Source: Rombach, Tschichholz, and Jeswein 2010.

One component is access technology, which deals with two important aspects: access roles (e.g., citizens, employees, other agencies) and access technologies (e.g., analogue via local municipalities, digital via Internet portals, digital requests via web service interfaces). A closely related component is identity management, which serves the secure identification and authentication of users (e.g., password management, electronic signature, electronic ID card).

Basic components provide fundamental services that can be used by other applications (e.g., forms management system, document management system). The process management component supports the design, implementation, and monitoring of IT-supported administrative processes. The e-government platforms

component serves as middleware—connecting software and applications—that supports uniform, standardized data exchange of all specialized applications, basic components, and systems.

Specialized applications are software systems that support specialized administrative procedures (e.g., vehicle registration, civil register). Standard applications are software systems that are not designed for supporting any specific specialized administrative procedure but rather for cross-departmental tasks (e.g., e-procurement, knowledge management, e-learning).

The components network infrastructure, data/computing center infrastructure, and security infrastructure form the technological infrastructure basis for the e-government system. Their integrated functioning is a necessary prerequisite for a secure and reliable operation of the system.

A further important component is integrated service, system, and network management. This component is required to manage and monitor the distributed system components, which are usually located in and administered by different operator organizations, of the e-government system. Apart from that, an e-government systems regularly demands software development and engineering. Therefore, an integrated development environment is another substantial component of the e-government architecture.

Although multiple systems are in use and connect the data from various providers, the e-government platform is the single point of access for the user and the transactions can be conducted via the Internet since modern information and communication technologies as well as increasing interconnectedness of participants provide the necessary environment for adequate online data transmission.[1] In this context, e-government portals serve as service bundling platforms that combine the service offering of the respective public sector organizations and allow comfortable service provision.

In this way, a one-stop-e-government portal can be generated that centrally provides the formerly analog public services to its stakeholders online. This single point of access reduces the search effort for the user and allows more efficient administrative processes, resulting in cost and time savings. Figure 28 illustrates a schematic e-government portal network.

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1 The following is based on Wirtz 2013b.

Figure 28 Schematic E-Government Portal Network
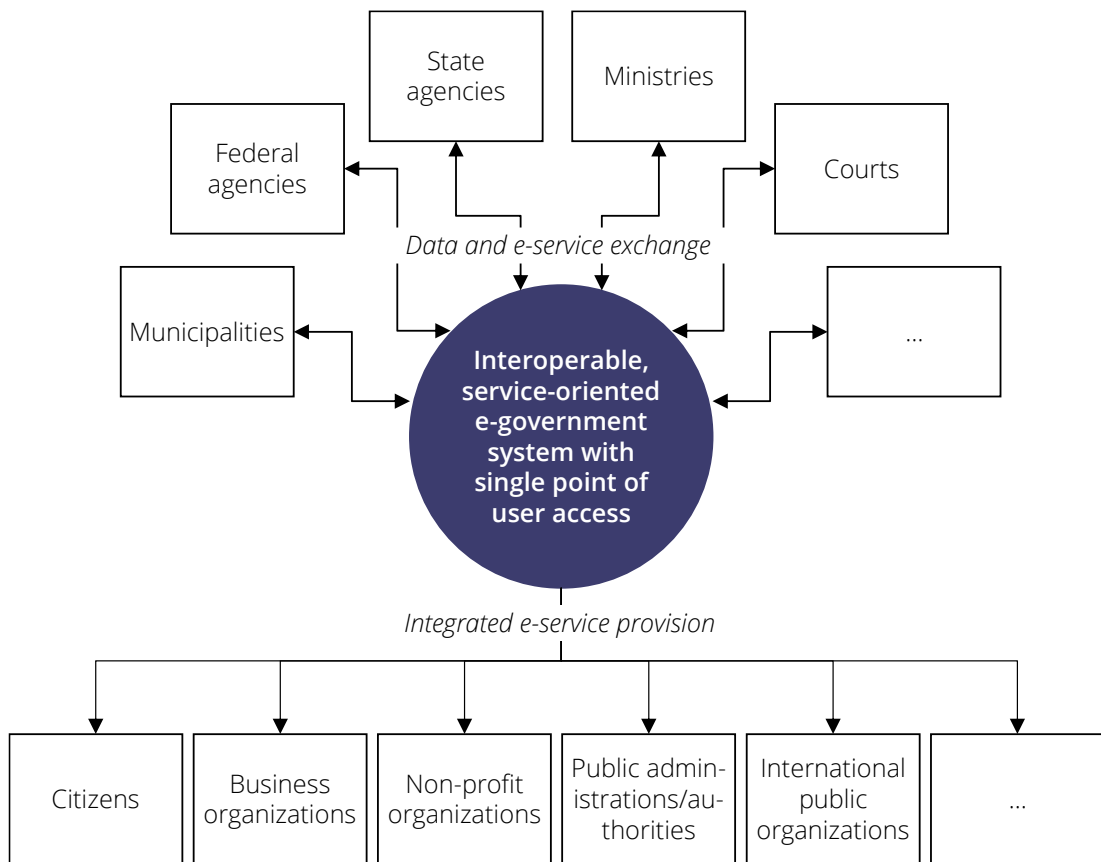


Since these networks contain information and data that are interesting for various organizations and governments, IT security is an important aspect. In 2015, for example, the German Bundestag and in 2014 the White House were victims of a hacker attack with considerable data theft.

Such IT security threats, Internet attacks, or unauthorized data access can take many forms. Malware, such as computer viruses, stands for malicious software and refers to any kind of files or programs that are used to harm computer operation or gain unauthorized access to computer systems.

Attacks on IT infrastructure which, for instance, may be conducted through denial of service attacks, in which a system overload is deliberately caused to limit service availability, or approached through systematic system scanning for security vulnerabilities, are a further form of IT security threats.

A further point is data interception and manipulation (e.g., password cracking, phishing), which are used to get unauthorized access to sensitive information or modify this information for personal benefit. Identity masking or theft are methods, which use the identity of another individual in order to pretend to be someone else. An example is spoofing, which describes the masking of the own identity through faking IP or email sender addresses, or social engineering, which is a method that heavily relies on human deception or tricking people instead of technological hacking in order to break or escape security measures.

To deal with this kind of IT security threats, these potential risks already have to be considered in the planning phase of the e-government system. In total, there are six fundamental security targets that are pursued in e-government system design: confidentiality, integrity, availability, non-repudiation, authenticity, and reliability.

An application system is regarded to be confidential if information or data cannot be accessed without authorization. Integrity refers to data integrity (data can only be changed with the required authority) and system integrity (application systems are available and provide the desired services). A system is considered to be safe if neither its functioning nor its availability can be impaired in an unauthorized manner.

Non-repudiation implies the fulfillment of the communicative obligation that results from the network character, meaning that all computers that belong to the network send and receive the respective data and that there is no doubt about the origin and destination of the data. If—apart from the username or computer identification—the user himself can be unequivocally identified, the system fulfills the requirements for authenticity, which is a prerequisite for non-repudiative communication. Finally, one can speak of a reliable system if all applications and systems consistently provide the desired functionalities.

Summing up, ensuring and maintaining confidentiality, integrity, availability, non-repudiation, authenticity, and reliability of the e-government system is the key to reduce the risks of IT threats. From a conceptual and a management perspective, these are the fundamental security-related issues that need to be addressed when dealing with e-government implementation or the responsible technical experts.

Concerning e-government implementation, open government is often mentioned as a closely related concept to e-government, which in this context should be taken into account. For this purpose, the concept of open government is explained in the following and compared with the concept of e-government.

## 3.4   Open Government and E-Government

The topic open government, which generally stands for the opening of the state and the administration to the economy and the population (Wirtz and Schmitt 2015), has received increasing attention in recent years. A key driver for its growing popularity in science and public management was the Obama Administration's Initiative on Transparency and Open Government (Evans and Campos 2012; Lee and Kwak 2012). Its global importance is underlined by the Open Government Partnership, which was established in 2011 and already counts 65 member countries (Open Government Partnership 2015).

The core of this initiative was to create a transparent, participative, and collaborative government by involving public stakeholders in public policy and public administration processes. In addition, this change should lead to more effective and more efficient administrative procedures and prepare government for the digital challenges (Wirtz and Birkmeyer 2015).

The basic idea behind the open government concept, making public sector data accessible, is neither new nor ground-breaking. These considerations can be traced far back into the past within the context of freedom of information, anti-corruption, or previous transparency initiatives (Nam 2012). US President Thomas Jefferson, for example, already declared in 1789 that a certain degree of information availability and openness is necessary for the people's trust in the government (Yagoda 2010).

However, considering the possibilities that modern information and communication technologies provide and leveraging them "to generate participatory, collaborative dialogue between policymakers and citizens" (Evans and Campos 2012, 173), shows manifold opportunities for various areas, such as public policy, public management, governance, economy, and science.

Although an open government-related literature search shows various publications in peer-reviewed academic journals, it is a rather young field of research that is in an ongoing process of establishing itself, and thus its content and direction still leave room for interpretation (Wirtz and Birkmeyer 2015). This circumstance becomes clear when looking at popular open government definitions, which are presented in the following:

- "Open and responsive government refers to the transparency of government actions, the accessibility of government services and information, and the responsiveness of government to new ideas, demands and needs" (OECD 2009, 113).

- "Open Government acts as an umbrella term for many different ideas and concepts. The narrow definition of Open Government consists of transparency, participation and collaboration of the state towards third actors like the economy or the citizenship" (Geiger and von Lucke 2012, 266).

- "Broader access to government data and other documentation, the ability to contribute to decision-making processes within government agencies, and the possibility of responsible engagement with agency leadership in such processes are incrementally more democratic actions that lie at the heart of the open government vision" (Harrison et al. 2012, 84).

- "Openness of government is the extent to which citizens can monitor and influence government processes through access to government information and access to decision-making arenas" (Meijer, Curtin, and Hillebrandt 2012, 13).

- "Open government is widely understood as the leveraging of information technologies to generate participatory, collaborative dialogue between policymakers and citizens" (Evans and Campos 2012, 173).

- "Open government is a multilateral, political, and social process, which includes in particular transparent, collaborative, and participatory action by government and administration" (Wirtz and Birkmeyer 2015, 2).

The OECD (2009) describes open government as a concept of transparency, accessibility, and responsiveness for government information and action. The understanding of Geiger and von Lucke (2012), who see open government as transparency, participation, and collaboration fostering concept between government and third parties, heads in a similar direction, but does show variations though. Concerning Harrison et al. (2012), their definition focuses on access and participation of public stakeholders in governmental decision-making and actions. Meijer, Curtin, and Hillebrandt (2012) relate open government to monitoring and influencing government processes through adequate access to information and decision processes.

The definition of Evans and Campos (2012) emphasizes technological aspects and thus sees the development of modern information and communication technologies as key open government enabler and driver. Wirtz and Birkmeyer (2015) view open government more from a conceptual perspective and explain that open government is a multilateral process, which requires transparent, participatory, and collaborative governmental action.

Since to our understanding open government is rather of a philosophical, meta-level nature than e-government, which can be regarded as a modern form of government from a functional and technical perspective that lays the basis for open government, we apply the following definition of open government:

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**Definition of Open Government**

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"Open government is a multilateral, political, and social process, which includes in particular transparent, collaborative, and participatory action by government and administration" (Wirtz and Birkmeyer 2015, 382).

---

Based on their literature review, Wirtz and Birkmeyer (2015) deduced an open government framework (see Figure 29) that serves as a guideline for explaining the concept of open government. The framework consists of an internal (the three open government pillars transparency, participation, and collaboration) and an external part (the external drivers accountability, technology, acceptance and trust in government, and regulation and law).

Figure 29 Open Government Framework
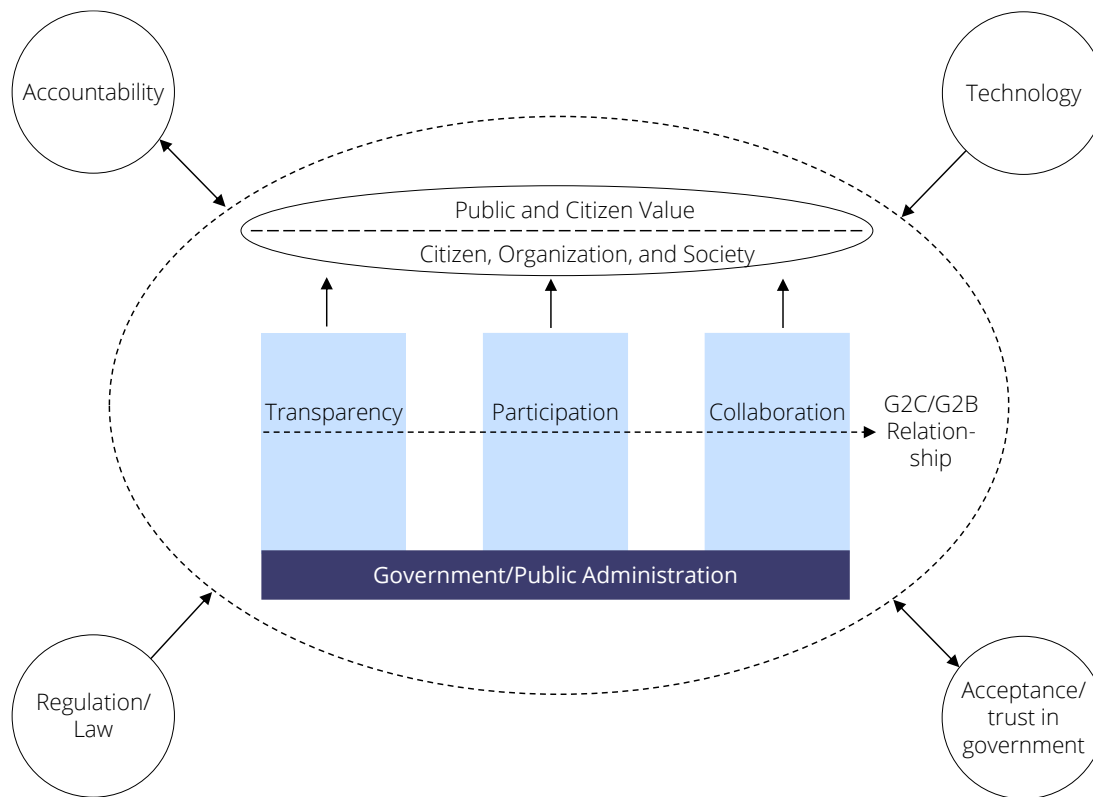


Source: Wirtz and Birkmeyer 2015.

Transparency is one of the most frequently mentioned aspects of open government. According to van Dooren, Caluwe, and Lonti (2012), transparency consists of three elementary components: (1) systematic and timely release of information, (2) an effective role for legislature, and (3) an effective role for civil society through the media and non-governmental organizations. In this context, transparency requires an adequate public access to relevant information, and thus this constitutes another essential element of transparency (Dawes 2010).

Participation, which means that public stakeholders become involved in public policy and public administration decision-making through information exchange, is another essential part of open government. This concept is supposed to encourage public engagement and increase government decisions through additional relevant input from public stakeholders.

The third pillar of open government is collaboration. In comparison to transparency and participation, collaboration has so far not been directly associated with

democratic political theory (Harrison et al. 2012). Collaboration aims at actively engaging public stakeholders in administrative procedures and effective cooperation among executive departments and agencies across all levels of public administration, as well as with citizens and private organizations.

The three open government pillars transparency, participation, and collaboration target at creating and increasing public value, which is the key objective of the open government concept. Public value describes the value that the government contributes to citizens, organizations, and society and thus how public activities contribute to the common good (Moore 1995). Transparency, participation, and collaboration have a significant influence on government-to-citizen and government-to-business relationships since high transparency, active participation, and effective collaboration strengthen the relationship between the government and its stakeholders (Geiger and von Lucke 2012).

This core of open government is constantly influenced by the external drivers accountability, technology, acceptance of and trust in government, as well as regulation and law. Accountability is a vital factor since a public administration that is accountable and responsible for its actions and decisions can be regarded as a prerequisite for democratic government as well as good governance. For this reason, accountability is considered to be a central element of democratic governance (Shkabatur 2012).

Technology is a crucial external factor for the concept of open government. Web 2.0 technologies and social media, for example, have had a considerable impact on the relationship between the government and its stakeholders. The associated availability of information through modern information and communication technologies has led to well-informed stakeholders that are enabled to participate in administrative procedures. Since this factor, however, demands implementation and maintenance of adequate information and communication technologies, the associated technological development may require intensified investments.

Acceptance and trust are further important factors for open government. In this context, Wirtz and Birkmeyer (2015, 11–12) "understand 'acceptance' as the degree to which citizens agree with the open government strategy and the government's tools to implement this strategy [and] consider 'trust' as the confidence of citizens in their government's work".

Especially transparency and public access to information are regarded to support acceptance (Pollo 2012), and participation and collaboration are considered to increase trust since they allow public stakeholders to become part of administrative actions (Mergel 2012).

Regulations and laws set the framework necessary for successful open government, because every administrative action requires and underlies a specific system of rules. Considering that open government is a transnational topic and every country has its own laws, open government concepts and systems can vary significantly between different countries. For this reason, regulations and laws are substantial external factors.

Summarizing, e-government and open government should be viewed as complementary concepts. While open government is rather a philosophy or strategy on how to increase public value through transparent, participatory, and collaborative action by the government, e-government is concerned with the electronic handling of administrative procedures to support public duties efficiently and effectively.

However, both concepts are mandatory and mutually dependent—if government is to become more transparent, more participatory, more collaborative, and more efficient—since e-government provides the required technological approach and open government the necessary conceptual framework. Considering the approach of this book, we focus on e-government without special reference to the open government concept, while keeping in mind that an e-government system should also always strive to realize the open government targets.

As laid out in the previous parts, smart and innovative use of information and communication technologies can make public administration more effective and more efficient. Nevertheless, their implementation and use—compared to the traditional approach—require new forms of business models for delivering services, which are presented in the next section.

# 4 E-Government Business Models

Business models are an important topic in the management and business environment.[1] In these fields, the term business model is closely related with creating competitive advantage. Moreover, management of business models and organization success are frequently mentioned in one breath.

This important role that has become attached to business models is in particular associated with the significant changes in market conditions and competition. Digitalization, globalization, deregulations, economic integration—to name a few— have led to more dynamic, more competitive, and more complex markets. This situation forces companies to constantly adapt to the steadily changing market conditions in a quick, effective, and efficient manner.

Here, business models become an important leadership and management tool by simplifying the complexity of reality and shifting the focus from habitual to game-changing organizational activities. Moreover, the process of designing and developing business models supports the generation of new business ideas as well as the assessment of existing strategies, structures, and business activities. Thus, the business model concept supports organizations in systematically analyzing their success factors and adapting their business activities in a target-oriented way (Wirtz et al. 2015).

Transferred to the public sector, a business model represents the service systems of a public sector organization and illustrates in a simplified, aggregate form which resources are used and how these are transformed into the service offering of the public sector organization.

In this context, a business model contains information about the strategy of the public sector organization, the production factors, and the functions the actors involved have. Thus, the business model approach can be considered as a public management instrument that supports the systematic creation of better, superior service offerings and provides public services for society with higher value for the public, supporting the public sector's service remit.

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1 The following is based on Wirtz 2011b.

Moreover, business models are considered especially suitable for e-government endeavors since they assist and encourage the continuous adaption and re-engineering of organizational practices to new circumstances. These are key reason why the business model concept is regarded as appealing and useful in the public sector and why governments worldwide are increasingly applying business models to enhance their e-government-related service delivery (Janssen, Kuk, and Wagenaar 2008).

## 4.1 Business Model Concept

When talking about business models, one has to keep in mind that there is a general superordinate orientation reflecting the general demand. In business, for instance, this refers to a specific market that demands a particular product or service, such as the market for smartphones or fashion. Here, global trends set the overall direction for the respective business models, though leaving niche markets on different levels.

In terms of e-government, this superordinate orientation refers to the general agreement of the nations that establish and promote e-government, to set up electronic systems for handling administration and democracy processes in the context of governmental activities by means of information and communication technologies to support public duties efficiently and effectively.

Although this superordinate orientation on the supranational level provides a strategic and operative direction for setting up an e-government business model, it leaves plenty of room for interpretation and allows ample individual scope for realization. From an integrative perspective, several interdependent business model levels can be distinguished: supranational, national, regional, and local.

While the supranational level reflects the superordinate orientation of e-government in an international or global context (so to speak the overall e-government environment), the national level is the first degree of abstraction. This level is of particular importance since a nation usually shows the following attributes that favor a consistent and systematic e-government implementation within its territory: uniform legal framework, common history, culture, and language, as well as homogeneous public administration (see Figure 30).

Figure 30 E-Government Business Model Levels
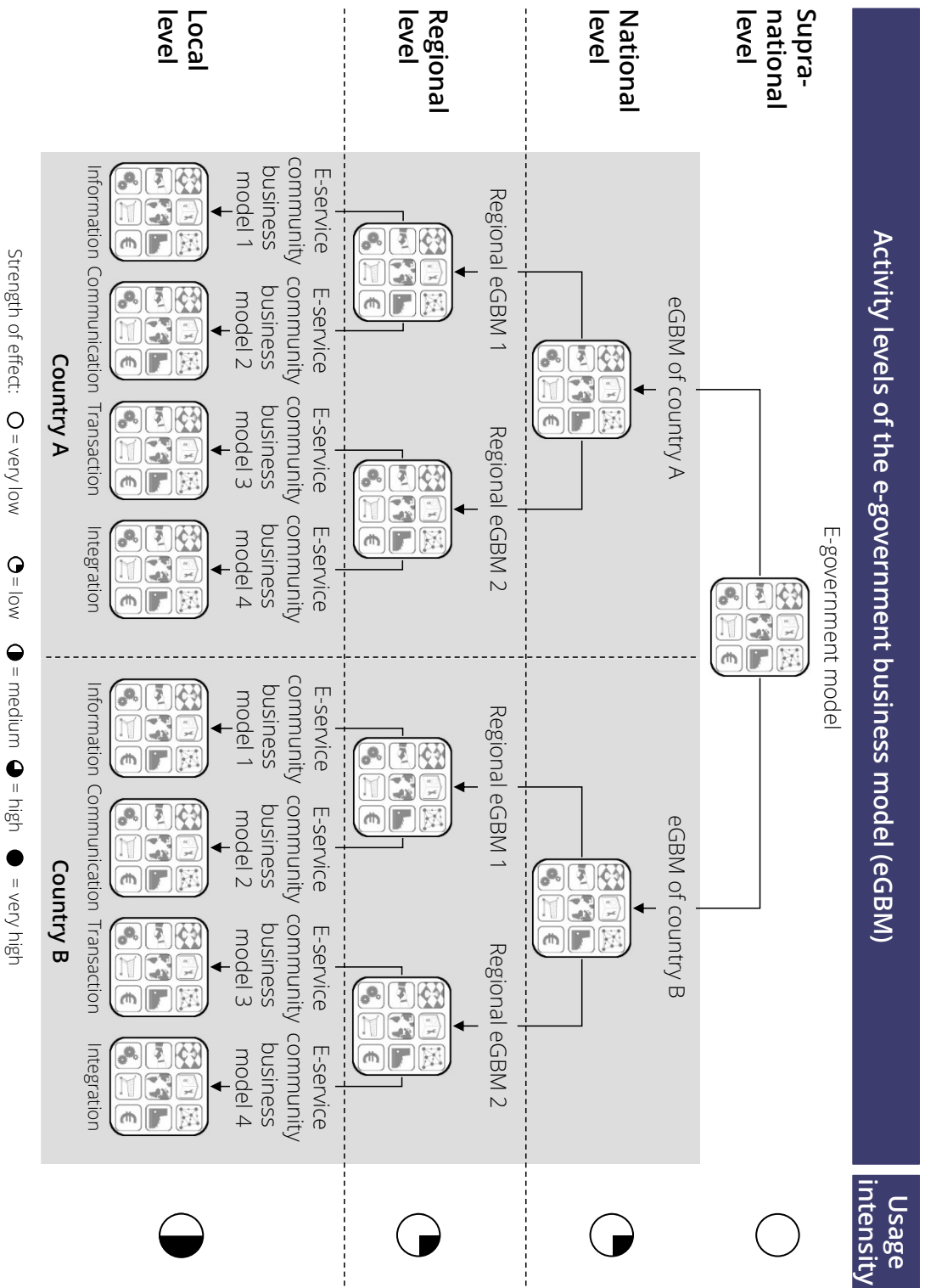


Source: Based on Wirtz 2011b.

An important factor for the design, functionality, and management of the national, regional, and local levels is the nation's political imprint concerning its centralized (e.g., France) or decentralized (e.g., Germany) character. While countries with a decentralized character rather possess powerful public authorities on a regional and local level, countries showing a centralized character focus on expertise and competencies at a central or supreme authority level. Against this background, public business models from politically centralized and decentralized nations tend to show differences with regards to service orientation and responsibility.

Business models for the local level, which primarily aim at providing the community with e-government services, show a stronger user orientation than the levels above and provide the main platform interfaces for user access. For this reason, the local level should demonstrate the highest usage intensity. This relationship could be observed in a recent e-government user survey. The study showed that local e-government portals are the main Internet interface between the government and the citizens. Nearly half of the participants (43%) demonstrate high and very high usage of city portals, while these figures are 15% and 8% for regional and national portals respectively. Figure 31 presents the usage-related results of the study.

Figure 31 E-Government Portal Use (Germany)
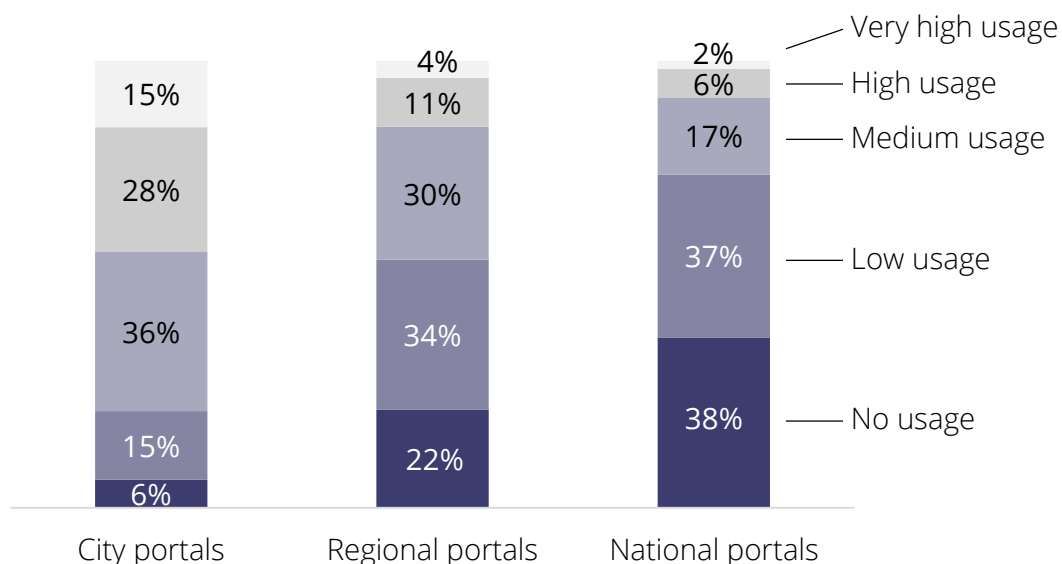


Source: Wirtz 2015.

In the scientific literature, various business model concepts can be found. The three main directions are the technology-oriented, the organization-oriented, and the strategy-oriented approach. The technology-oriented business model approach is heavily influenced by the concepts of business modeling and electronic business. Many electronic business concepts are explained by this approach.

Creating superior organizational design is at the heart of organization-oriented approaches. Here, size and composition of units, responsibilities, roles, organizational culture, organizational learning, etc. within an organization are defined to create a more efficient and more effective organization and thus a competitive advantage.

The third direction is the strategy-oriented approach, which creates a close connection between an organization's business model and its strategy, taking into account the internal and external view on the organization, as well as its core assets and core competencies.

Although these three main directions show clear differences concerning their orientations, all approaches share the assumption that business model processes are an important aspect: technology-oriented approaches regard process modeling as a vital factor, organization-oriented approaches consider process optimization to be crucial, and in strategy-oriented approaches business model processes are a medium for operationalizing strategy. For this reason, also processes are a fundamental part of business models.

Against the background of the different directions and large number of academic publications concerning business models, scientific literature shows various definitions for this subject.[1] Considering the existing research streams and taking into account the relevance of business processes, we propose a rather general definition for the public business model:

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1 For an extensive overview of business model definitions please see Wirtz 2011b.

## Definition of Public Business Model[1]

A public business model is a simplified and aggregated representation of the relevant services, processes, and activities of a public sector organization that describes how information, products, and services that create additional value for society are developed and managed, while also considering strategic and processual as well as user and public demand components to support sustainable public value creation for society and the public service remit.

Business models can be found in various fields with differing scopes. A business model for a start-up of a local e-government platform, being built on initial data and assumptions and aiming to get the e-services running, as well as quickly acquiring a decent user base, is significantly different from a business model that is, for instance, applied to a change management process of a well-established, traditional cross-departmental administrative procedure.

Irrespective of these potential deviations, the primary objective of the business model is always connected to developing, implementing, and maintaining a sustainable, successful organizational advantage. Furthermore, a business model should always integrate the relevant internal and external aspects and present an aggregated conceptual framework of the underlying components.

This way, the business model illustrates the approach of creating better, superior service offerings and increasing value for the organization as well as public value for society in form of a transparent conceptual framework. This framework consists of partial models that provide the basic input for the integrated public business model, which is made up of three component layers: the public strategic component, the customer/user and public demand component, as well as the public value creation component.

These three components consolidate the strategy, user, public demand, and public value creation perspective to finally lead to an overarching business model that is set up on the necessary level of detail, while providing the advantage of reduced complexity required for effective and efficient management.

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1 Based on Wirtz 2011b.

The levels of detail comes from the partial models, which possess a crucial role within an integrated business model approach since these are all closely intertwined, creating interdependent relationships. Figure 32 presents the partial models of the integrated public business model, which are described in the following.

Figure 32 Partial Models of the Integrated Public Business Model



| Partial models of the integrated public business model | | |
|---|---|---|
| **Public strategic component** | **Strategy model**<br>· Public mission<br>· Strategic positions and development paths<br>· Public value proposition | **Resources model**<br>· Public core competencies and competencies<br>· Public core assets and assets | **Network model**<br>· Public business model networks<br>· Public business model partners |
| **Customer/ user & public demand component** | **Customer/user model**<br>· Customer/user relation-ships/target groups<br>· Channel configuration<br>· Customer touchpoint | **Public demand offer model**<br>· Public competitors<br>· Public demand structure<br>· Public value offering/ products and services | **Tax/fee model**<br>· Fee streams<br>· Service charge streams<br>· Tax streams |
| **Public value creation component** | **Public service provision model**<br>· Public development model<br>· Public value generation | **Public procurement model**<br>· Resourcing<br>· Information analysis<br>· Resource monitoring and controlling | **Budget model**<br>· Budget<br>· Cost structure model<br>· Cash flow model |

Source: Based on Wirtz 2001.

In the strategy model, the e-government leader determines the long-term targets of the e-government system.[1] Thus, this partial model contains the public mission, the strategic positions and development paths, as well as the public value proposition of the e-government system.

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1 The analytical and methodical steps required for gathering the relevant information to develop the partial business models, are laid out in the section 3.2 Strategic Management of E-Government. For further details on the partial business models please see Wirtz 2011b.

The resources model serves the integration of the public assets and core assets as well as the public competencies and core competencies that are relevant for public value creation. Therefore, the resources model represents a summary of all relevant value-creating input factors of the business model.

The network model provides an overview of vital public business model partners that have a significant impact on the public value creation process as well as of important connections between the different public business models. This model can be regarded as a management instrument to control and manage different network partners, processes, and services.

The customer/user model identifies the customers/users that are relevant for the public business model. Since it is not reasonable to manage customers/users on an individual basis, specific target groups need to be determined. These target groups are usually defined on the basis of distinctive demographic criterions and according to the respective fields of application.

The public demand offer model is concerned with the external demand analysis, which primarily assesses public stakeholder needs, demands, and behaviors. Here, further relevant external aspects like legal or political changes as well as future developments of information and communication technology are important since these may influence public online service provision.

The tax/fee model determines the public sectors organization's cash inflows, such as fee streams, service charge streams, and tax streams. These cash inflows can be classified into direct and indirect as well as transaction-dependent or independent forms. Whereas direct streams are generated through the service provided and the related fee itself, indirect streams are generated through additional activities, such as sponsorship or marketing of advertising space on the portal[1]. Cash streams that are directly linked to a specific transaction are called transaction-dependent, while transaction-independent streams are already generated through the service provision itself and are thus independent from the actual usage of the service.

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1 Advertising space on public sector portals is still rare. However, individual examples exist on municipal level (e.g., www.berlin.de).

The public service provision model defines the key parameters for the customer/user-oriented service provision business model by determining the services that are offered to the customer/user target groups and its related processes. Thus, the public service provision model gives an overview of the internal conversion process that shows the transformation of the input factors into superior services that increase public value.

The public procurement model describes the structure and sourcing of the input factors as well as the related analysis, monitoring, and controlling activities. For this purpose, the public procurement model contains the goals and measures for systematically procuring the relevant input factors for the service offering as well as managing and optimizing the related processes.

The budget model combines the budget, cost structure, and cash flow perspective into an integrated partial business model, which reflects the monetary impact of the other partial models. Thus, it presents the cost, revenue, and cash flow streams of the public sector organization.

These partial models add up to the overall public business model that provides a compressed overview of the organizational activities, which supports management and coordination of the public sector organization. In the next step, this rather abstract meta-description of a public business model is adapted to the offering and the requirements of e-government systems.

## 4.2   ICTI E–Government Business Model Approach

Concerning classification criteria for systematizing e-government business models, there exist various possible approaches. For the following classification, we decided to choose the primary service offering as the critical element. On the one hand, because the diversity and complexity of e-government service provision has increased over time, which has also had a considerable impact on the development of the associated business models.

On the other hand, because a service offer classification can be directly transferred to the related utilization requirements, giving users and providers the chance to directly distinguish between usage-oriented categories. Summing up, the classification of e-government business models according to their primary service offering is regarded as particularly useful here.

The relevant public business models in an e-government context can therefore be classified into four basic stand-alone business models: Information, Communication, Transaction, and Integration (ICTI). As laid out before, this ICTI E-Government Business Model Approach, which is illustrated in Figure 33, is based on an abstraction of e-government service provision characteristics.

Figure 33 ICTI E-Government Business Models



**Information**
- Compiling and packaging of information
- Presentation and provision of information and content on own platform

**Communication**
- Set-up of communication exchange possibilities
- Provision of communication exchange possibilities

**Transaction**
- Initiation of administrative transaction
- Processing of administrative transaction

**Integration**
- User integration into value chain activities
- User integration into innovation cycles

Source: Based on Wirtz 2013b.

Against the background that all four e-government business models can be regarded as independent, separate public business models, which could be applied and operated individually, these fulfill the prerequisites of being stand-alone e-government models. Nevertheless, most e-government portals today are hybrid business models that apply a combination of the four basic stand-alone models.

The development of public business models paralleled the advancement of modern information and communication technologies. For this reason, the first one was the Information Business Model, presenting static information to the users. With increasing data transmission capacities and more sophisticated software and programming languages, the technological environment allowed the design of new business models, such as the Communication or Transaction Business Model.

The Information Business Model builds upon the strategy to provide users with information in a simple, convenient, and appealing way. Thus, key processes of this business model are collecting, selecting, systemizing, structuring, compiling, and packaging information as well as presenting and providing the respective content on an online platform.

The Communication Business Model follows the approach to provide the users with a comfortable online communication platform. For this reason, setting-up, maintaining, and developing of online communication exchange possibilities, which support and foster interaction between public administration and its stakeholders, are key activities.

The Transaction Business Model targets at the initiation, handling, and processing of administrative procedures through the e-government platform. The core aim of this business model is to complement or partially or fully substitute existing offline government services. Therefore, automatization and data processing, service bundling, and service development are, for example, important core competencies that are required for realizing the e-government platform.

The Integration Business Model aims at integrating public stakeholders directly into the value chain of the public sector organization as well as its administrative procedures. This means that the user has the possibility to influence governmental activities through participative and collaborative action.

## Information Business Model

The subcategories of the Information Business Model, mandatory information offer and non-mandatory information offer, serve the purpose to illustrate the range of services provided in an ideal structure. Figure 34 illustrates the public information business model with the respective subcategories.

Figure 34 E-Government Business Model for Information

## ICTI E-Government Business Model Approach Information

- Compiling and packaging of information
- Presentation and provision of information and content on own platform

**Information Business Model**

| **Mandatory information offer** | **Non-mandatory information offer** |
|---|---|
| • Citizenship | • Political information |
| • Civil registration | • Societal information |
| • Company registration | • Educational offers |
| • Immigration | • Arts and culture |
| • Tax declaration | • Tourism |
| • … | • … |

Source: Based on Wirtz 2013b.

Mandatory information offers refer to information that needs to be supplied to public stakeholders in connection with services that have to be provided in accordance with laws or regulations. Examples are information concerning citizenship, civil registration, company registration, immigration, or tax declaration.

The term non-mandatory information offer describes information services that are neither required by law nor associated with any obligatory government service. These may cover various subjects, such as political, societal, educational, arts and culture, tourism, etc.

The most important aspect of the information presented is that it shows a clear informative value-add to the user. Therefore, it should either provide a solution to a specific user problem or increase user convenience by delivering a relevant set of different information from one e-government portal.

From this point of view, especially existing and obtained public sector data are core assets since these are initially not available to other information providers. Another important aspect for mandatory information offers is the public sector organization's knowledge concerning its administrative procedures and internal processes. This enables the information providing institution to particularly create value-added information for its users with regards to its service offering.

User relationship management as well as information and service bundling are important core competencies for effective information provision on the public sector organization's platform. Productive user relationship management allows the provider to identify and select relevant information that is of value to the user. Moreover, the information creation process can be directly tailored to their information requirements.

Target-oriented information and service bundling supports public stakeholders through a clear and convenient presentation of information that is interesting and useful to the user. Furthermore, combining and intertwining internal public sector data with additional external information creates value for the user since this approach generates new insights or supplementary aspects that hardly can be provided by other information providers.

## Communication Business Model

The core target of the Communication Business Model is the provision of online communication possibilities for government-to-user interaction. These can be divided into two subcategories: interactive communication offers and automated communication offers. Figure 35 shows the Communication Business Model.

Figure 35 E-Government Business Model for Communication

## ICTI E-Government Business Model Approach Communication

· Set-up of communication exchange possibilities

· Provision of communication exchange possibilities

**Communication Business Model**

### Dynamic communication offer

- Telephone/call center

- Online chat

- Email conversation

- Social media

- Fax

- ...

### Automated communication offer

- Content/website search

- Automated responses/ status messages

- Automated interactive call center help desk

- ...

Source: Based on Wirtz 2013b.

Interactive communication offers, such as telephone, call centers, online chats, communication via email or social media, foster information exchange between two active participants that have an impact on each other. Therefore, interactive communication refers to a dynamic two-way flow of information.

Automated communication offers may show a one-way or two-way flow of information, but the sender-recipient effect is not dynamic. Therefore, the information exchange does not have a considerable impact from an information content perspective. A content or website search, for example, is based on an automated search algorithm. If the user changes the search terms, the results will vary in accordance with these search modifications.

At first glance, these results seem to be dynamic, but the searched content is static. Moreover, the user does not have a direct impact on this underlying static content. Considering this as well as the automated search procedure, makes a content of website search an automated communication offer.

Further examples are automated responses and status messages, such as automated out-of-office messages or notifications about received user requests, or automated interactive call center help desks, which, for instance, guide the user through a question and answer menu by selecting predefined options with the phone keypad.

Core assets of the Communication Business Model are employees, the IT platform, as well as the technological infrastructure. These resources form the basis for ensuring an effective, efficient, and stable communication service provision that creates a lasting e-government advantage.

User relationship management, experience design, technology and programming, as well as service development are core competencies necessary for transforming the previously mentioned core assets into superior services that have the potential to create user preferences and to increase public value of the e-government communication services provided.

Here, user relationship management and experience design are vital competencies since the communication process needs to be established and implemented in a way that not only satisfies the actual users' requirements, but also makes them want to use the service. Technology and programming competencies are indispensable abilities for the Communication Business Model since they are needed to set up, maintain, and develop the relevant communication services and integrate them into the IT infrastructure.
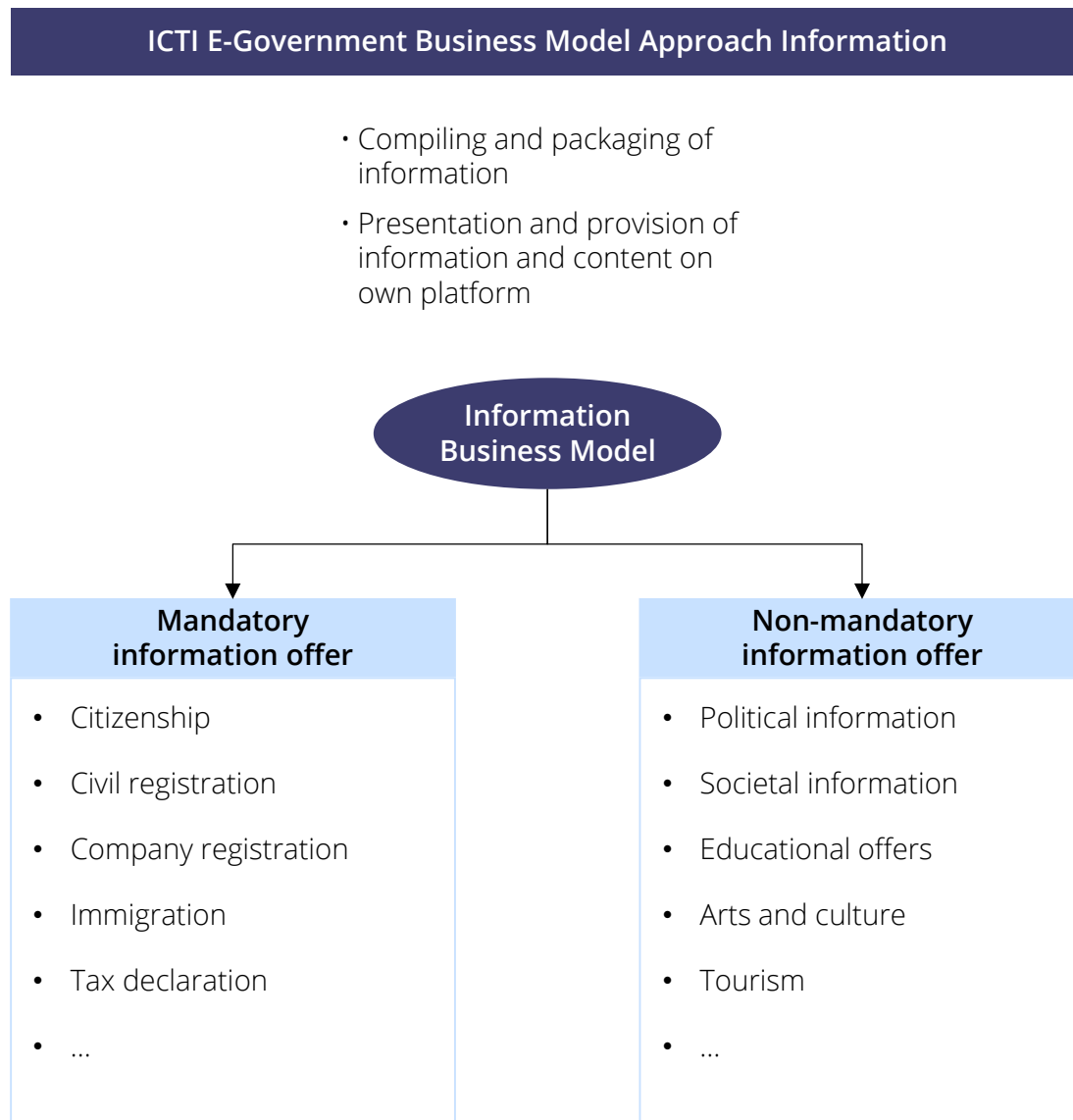
# Transaction Business Model

The Transaction Business Model focuses at the initiation, handling, and processing of administrative procedures through the e-government platform with the aim to complement or substitute existing offline government services. This online service offering can either be partial or full. Figure 36 illustrates the Transaction Business Model setting.

Figure 36 E-Government Business Model for Transaction

**ICTI E-Government Business Model Approach Transaction**

- Initiation of administrative transaction
- Processing of administrative transaction

**Transaction Business Model**

| Partial online offer | Full online offer |
|---|---|
| • Download of application or request forms | • Car registration |
| • Application for government mortgage | • Company registration |
| • Online finalization of services with offline initiation | • Corporate tax |
| | • Customs declaration |
| • ... | • Environment permits |
| | • ... |

Source: Based on Wirtz 2013b.

Partial online offers refer to services that cannot be completed without at least one further media break. Examples are the download of application or request forms, an application for a government mortgage, or an online finalization of services that have been initiated offline. Concerning for instance the download of an application form, the respective document is provided on an e-government platform for the user, who prints out and fills in the form and then sends it back to the public sector organization in question.

Although this kind of service provision brings an improvement compared to offline service provision, because the administrative procedure may be initiated without visiting the public sector organization in person, it does not harness the full e-government potential. The full potential can only be generated through fully automated procedures. A well-known example of a comparable undertaking is electronic banking. While the clients usually needed to visit a branch in person to conduct a manual transaction, people nowadays can settle nearly all banking transactions at any time from home. This form of automatization and outsourcing of activities to the client has for example led to a significant cost reduction of 70% to 90% in e-banking service delivery.

Core assets of the Transaction Business Model are exclusive alliances and networks, the IT platform, as well as the technological infrastructure. These resources form the basis for a comprehensive full online service provision. The realization of this business model requires the following core competencies: automatization and data processing, collaboration, information and service bundling, technology and programming, as well as service development.

Automatization and data processing skills are mandatory since the services provided need to be entirely computerized for realizing the full e-government potential. Collaboration competency is a prerequisite for the Transaction Business Model because different participants of the public sector organization's value chain usually have to cooperate to enable a comprehensive full online service provision.

Moreover, since the establishment of a comprehensive full online service provision demands automated use and interaction of various systems and databases, this also places high demands on the technology and programming abilities of the respective e-government service provider. Apart from that, information and service bundling as well as service development are indispensable skills to develop individual value-adding services and integrate or bundle them into service packages that are attractive for the user.

## Integration Business Model

The Integration Business Model handles the integration of public stakeholders into the value chain of the public sector organization. This integration may take the form of participative, collaborative, or cooperative action. The subcategories of the Integration Business Model are public innovation, public participation, as well as public collaboration and coproduction.

In public innovation undertakings, the user becomes part of the governmental or public sector innovation process. This requires for example access to shared developer suites, open interface systems, open innovation systems, and open government data to allow user access to relevant information and systems. This way, external experts and other interested parties can engage in the innovation process of the public sector to combine public and private sector knowledge and experience with the key aim of enhancing public value and public sector performance.

Public participation is about integrating public stakeholder preference, feedback, and opinion into public policy-making, administrative procedures, and public management. The concept aims at collecting ideas and expertise from the public, information that is widely dispersed in society, aggregating this input into applicable knowledge and thus allowing incorporation into governmental action. Well-known examples of electronic public participation are digital petitions, electronic voting, as well as feedback, reputation, and complaint management systems.

Public collaboration and coproduction takes this one step further. While public participation takes into account public stakeholder preference, feedback, and opinion, the user takes a proactive role in this subcategory. This means that the effectiveness and efficiency of the public sector is improved through active collaboration and coproduction between public sector organizations and individuals as well as private organizations. The Integration Business Model shown in the following figure.

Figure 37 E-Government Business Model for Integration

**ICTI E-Government Business Model Approach Integration**

· User integration into value chain activities

· User integration into innovation cycles

**Integration Business Model**

| Public innovation | Public participation | Public collaboration/ Coproduction |
|---|---|---|
| • Access to shared developer suites<br><br>• Open interface systems<br><br>• Open innovation systems<br><br>• Open government data<br><br>• … | • Digital petitions<br><br>• Electronic voting<br><br>• Feedback and reputation systems<br><br>• Complaint management<br><br>• … | • Collaborative project systems<br><br>• Electronic consultation of public stakeholders<br><br>• Shared decision-making<br><br>• Wiki systems<br><br>• … |

Source: Based on Wirtz 2013b.

Examples of public collaboration and coproduction are collaborative project systems, electronic consultation of public stakeholders, shared decision-making, or e-government wiki systems. In collaborative project systems, citizens, for instance, help other citizens by providing information on administrative procedures in an online forum.

Or if individuals or private organizations are, for example, selected as consultants that collaborate electronically, they play an active role in the modification of the respective activity. The same holds true for public stakeholders that take an active role in a shared decision-making process or help elaborating a wiki system that supports users in handling e-government matters.

Core assets of the Integration Business Model are employees, the IT platform, as well as the technological infrastructure. These resources are prerequisites for an effective integration of the user into governmental and administrative procedures. User relationship management, experience design, technology and programming, as well as service development are core competencies necessary for transforming the previously mentioned core assets into superior services that have the potential to create user preferences and to increase public value of the communication services provided. The associated core competencies that are necessary to take advantage of the benefits that are connected with this business model are collaboration, content creation, user relationship management, and experience design.

In the initial phase of the e-government development, public sector service providers mainly offered informational services online. With the advancement of modern information and communication technologies and the increasing number of best practice examples from private sector e-commerce, the public sector started to develop new e-government business models, each with a specific service range.

Although these individual unifunctional business models may be run stand-alone, overall e-government systems have gradually become multifunctional. For this reason, most e-government portals today are hybrid forms of the ICTI E-Government Business Model, providing services from more than one business model.

In 2014, for instance, it was the first time that all 193 United Nations member states had a national website, running at least an Information Business Model. Even though the majority of these countries does not yet provide complex Integration Business Model e-government services, many already offer communication and transaction e-government services (United Nations 2014).

The three key drivers for the development and rise of hybrid public business models are integrated transaction benefits, multiple user retention, and network effects. Integrated transaction benefits bring several advantages to the user and the e-government service provider. The development of hybrid business models is illustrated in the following figure.

Figure 38 Hybrid Business Model Development
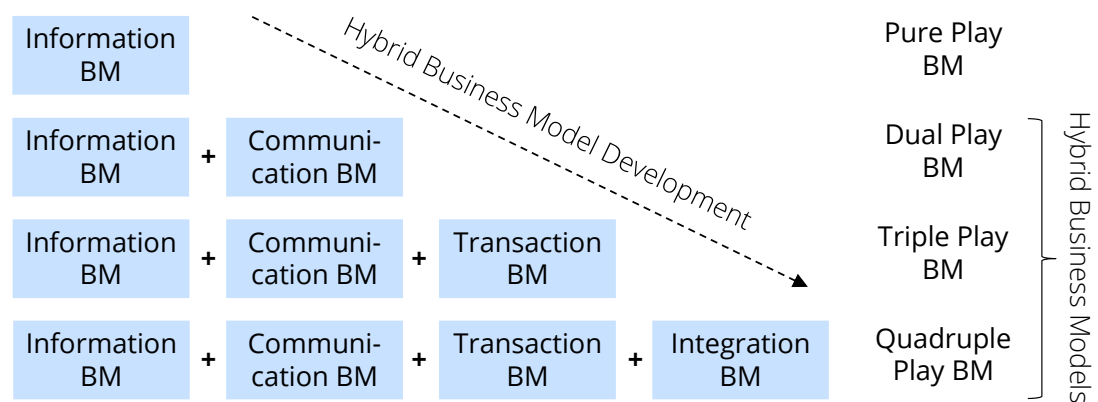


Given an e-government platform that solely offers information as part of their business model, this would refer to a pure play business model. Starting with applying two business models, one can speak of a hybrid business model. In this particular case, a dual play business model. A triple play or quadruple play business model applies three or four different business models, respectively.

From a user perspective, having a single point of access to various information and service offerings is convenient and reduces the user's search effort. From a provider perspective, the shift from offline to online costs through automatization of public services is a major benefit. The cost structure of digitized services is characterized by high fixed costs and low variable costs. This setting carries a vital advantage, because the higher the proportion of the fixed costs, the higher the benefits from economies of scale.

Economies of scale denominate the cost advantages that an organization obtains with increasing output. The underlying principle is that the cost per output unit decreases incrementally as the fixed costs are distributed over more output units. Transferred to e-government, this means that the service unit costs decrease with increasing scale if the number of service units provided increases.

As the major part of the fix costs arises with the initial installment of the basic e-government system, which provides the general e-government functionality, each additional service implementation is generally less expensive. Thus, the bigger the e-government service range offered and the more service units are provided, the higher the potential benefit of online service provision.

Multiple user retention is a further aspect of hybrid public business models. The concept refers to user retention on several business model levels (Wirtz and Lihotzky 2003; Wirtz and Lihotzky 2001). Thus, acquiring and retaining users take place on the basis of more than one business model, which increases the number of e-government relations to the user. The resulting multiple user retention on different levels fosters user loyalty.

Creating intertwined user connections by conveniently providing multiple e-government business model services through a one-stop interface generates lock-in effects through high system change costs. This means that the exit barrier for the user is higher for multiple user relationships than for a singular user relationship. Thus, multiple user retention increases the switching cost for the user to change to an alternative system.

The network effects of hybrid public business models mainly result from economies of scale to expand e-government service provision, and from network effects to strengthen the e-government user base. On the one hand, the economies of scale related expansion of e-government service provision is achieved through extending the service range of existing users (e.g., a user that so far has only used the online tax declaration service starts using other e-government services, such as civil or company registration). This way, existing user traffic can be transferred to other service offerings.

On the other hand, network value increases for both e-government service provider and user with growing network size. For the provider, any additional user potentially reduces the service unit cost and further justifies the means of the e-government system. For the user, a bigger network finally leads to more information through an increased user base and better e-government service provision through economies of scales that demand efficient automated service provision.

The growing value of the network also increases the incentive to participate for new users since people tend to follow strong groups or networks. However, there is also a drawback to the generally positive network effects. If a network loses users and thus, the value of network becomes smaller, leaving a network becomes a viable option for the users, too. The drivers for hybrid e-government business models are presented in the following figure.

Figure 39 Drivers of Hybrid E-Government Business Models
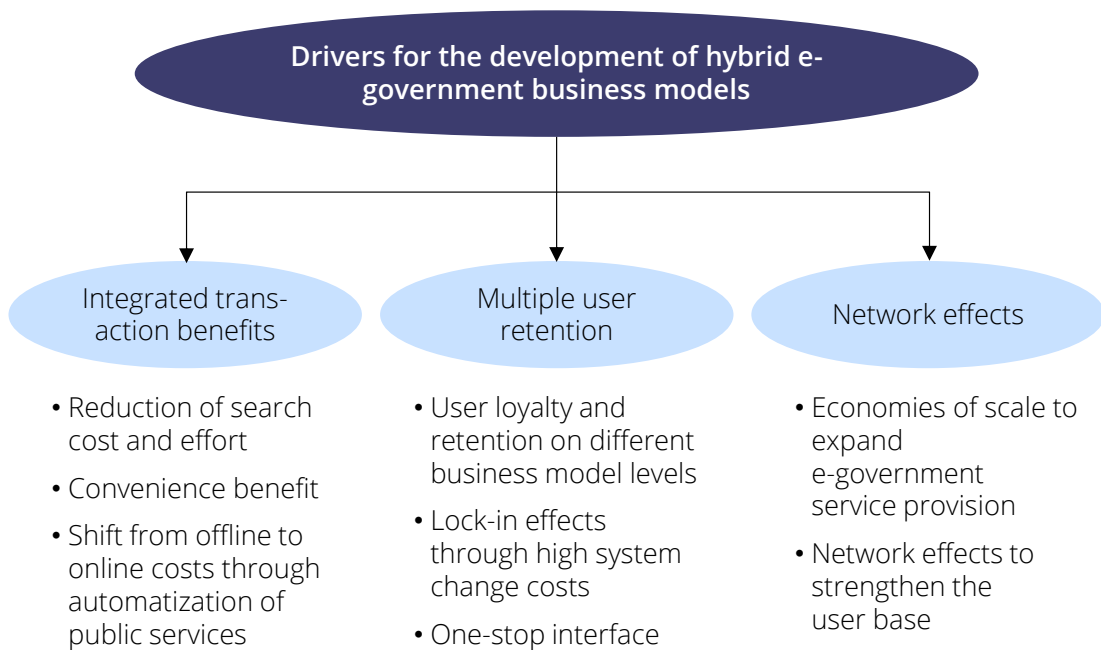


Source: Based on Wirtz 2013b.

The e-government portal of the City of New York, called 311, is an example of a hybrid public business model that combines all four individual e-government business models.[1] This portal shows a very high development stage of their e-government service offering and belongs to the most advanced e-government portals worldwide (Holzer et al. 2014).

The City of New York provides a large quantity of content and various e-government services by using numerous technologies. In 2015 the e-government portal used more than 300 media channels that were spread over 11 different applications, such as Facebook, Twitter, or YouTube. A media channel refers to a specific service offer on the e-government platform, e.g., NYC Mayor's Office on Flickr, New York City Department of Cultural Affairs Facebook site, Twitter earthquake information community. Figure 40 illustrates the public business model of New York City.

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1 The 311 portal is New York City's main source of government information and services. For further information on the portal, please see www.nyc.gov.

Figure 40 New York City E-Government Business Model (Illustrative Example)

**www.nyc.gov**

**Customer/user model**

- **Citizens**
- **Private organizations**
- **Public organizations**

**Tax/fee model**

Service provision
- Presentaton
- Distribution

Interaction
- Input
- Exchange

Tax/fees

**Public demand offer model**

**Information**
- Office of the Mayor
- 311 Data Report
- Budget Information
- ...

**Communication**
- My Neighborhood
- Make a Complaint
- Call 311
- ...

**Transaction**
- Make a Payment
- Various transaction services, e.g, address change, marriage certificate, ...
- ...

**Integration**
- Various integrative services, e.g, Bus Stop Shelter Request
- ...

**Public service provision model**

Information collection | System-atization | Classifi-cation
On-demand provision | Storage

Management of communication services and channels | User interaction

Development of own services | E-government service provision
Provision of third party services

Innovation | E-government user integration
Participation
Collaboration

**Budget model**

Site notification
Site inclusion

Provision

Inclusion/payment

**Public procure-ment model**

**Private providers**
- Communities
- Website operators
- ...

**Commercial providers**
- News and media content providers
- Commercial city portals
- ...

**Public providers**
- Agencies
- Departments
- ...

**Network model**
- Private and public allliances
- Private and public cooperation partners
- ...

**Resources model**
- Public core assets, e.g., exclusive alliances and networks, exisiting and obtained data, IT platform, ...
- Public core competencies, e.g., automatization and data processing, content creation, information and service bundling, user relationship management, ...

**Strategy model**
- Provide users with quick, easy access to all municipal government information and services while at the same time enhancing the level of customer service
- Improve city government and service delivery through focus on core activities, efficient workload management, and analysis and measurement of public service delivery

Source: Based on Wirtz 2011a and own analysis and estimates.

The public procurement model of the 311 page requires content from private, commercial, and public providers, which is further processed for the e-government service offering of New York City. From a budget model perspective, this service offering interaction (site notification, site inclusion, provision, and inclusion/payment) leads to information and payment flows between the respective parties.

The portal shows a clear focus on public demand by providing services that address information, communication, transaction, and integration requirements and the underlying public service provision models are tailored to the specific requisitions.

The tax/fee model is the monetary connection between public service provision and the customer/user model. Service provision and interaction between the e-government service provider and the different users (citizens, private organizations, and public organizations) are fundamental service components that cause particular payments.

According to the 311 mission and vision statement, the portal pursues two key strategic aims: First, to provide users with quick, easy access to all municipal government information and services while at the same time enhancing the level of customer service. Second, to improve city government and service delivery through focus on core activities, efficient workload management, and analysis and measurement of public service delivery.

The resources model of the 311 e-government offering deals with the public core assets and core competencies that are required for effective information and service provision. Considering the extensive provision of full online services, for instance, exclusive alliances and network, IT platform, automatization and data processing, as well as information and service bundling are key core assets and competencies that have to be at hand.

This is also reflected in the network model since private and public alliances as well as collaboration with cooperation partners are important aspects for providing such a comprehensive set of public information and services. From this point of view, effective supervision of network partners is an essential part of New York City's e-government management.

## 4.3   E-Government Business Model Innovation

During the past years, business model innovation has experienced considerable attention within science and management.[1] Especially the requirements, the structure, and the implementation aspects of business model innovations are of great interest for academics and practitioners.

The concept of business model innovation is closely linked to the emergence of business models. After the burst of the new economy bubble, many organizations were forced to rethink and often radically change their business model since in many cases the survival of the company largely depended on the new strategic and operative orientation. It was in this phase that the concept of business model innovation appeared as a term for radical business model change or transformation.

Today, innovating business models is an essential part of management, strategy, and organization theory and a vital leadership approach in the private as well as the public sector. The business model innovation concept has been applied by a myriad of organizations in various situations. Thus, its relevance and originality are only scarcely questioned anymore, as both practice and literature emphasize the importance of successful business model innovation for lasting success.

In 2008, for instance, 98% of 1,130 interviewed CEOs and Public Sector Leaders reported in a worldwide survey that they had already taken advantage of business model innovation and thus also applied changes to their business models. Moreover, approximately 70% of the respondents planned to fundamentally implement business model innovation procedures (IBM 2008).

Like in classical innovation management, public business model innovation shows a linear processual structure. This structure consists of a series of seven consecutive innovation steps, which finally sum up to an overall public business model innovation process presented in Figure 41.

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1 The following is based on Wirtz 2013a.

Figure 41 Public Business Model Innovation Process

| | |
|---|---|
| **Analysis of the initial situation** | · Public business model<br>· Public services<br>· Stakeholders/users |
| **Idea generation** | · Public demand scan<br>· Brainstorming/idea collection<br>· Draft concept |
| **Feasibility study** | · Detailed public demand analysis<br>· Evaluation of potential impact |
| **Prototype** | · Development trajectory<br>· Fine tuning<br>· Development of components |
| **Decision** | · Performance audit<br>· Harmonization<br>· Completion of design |
| **Implementation** | · Implementation plan<br>· Communication and team set-up<br>· Stepwise realization |
| **Monitoring and controlling** | · Performance monitoring and controlling<br>· User feedback evaluation |

**Public business model innovation process**

Source: Based on Wirtz 2013a.

The first phase of the public business model innovation process is the analysis of the current situation, which contains a deviation assessment, showing the discrepancy between the actual and the planned business model course. To begin with, it is of particular importance to identify substantial vulnerabilities of the current public business model.

Next, the stakeholders and the user needs have to be identified and the coverage of stakeholder and user satisfaction has to be assessed. This is an essential step in order to identify the respective user needs and requirements. This phase completes with the analysis of the current e-government service offering.

The second phase, idea generation, serves the identification of potential business model innovations and the systematic generation of ideas. Starting points for innovations can occur within both the public sector organization itself and its environment.

The task for the public leaders here is to recognize public demand and to identify ideas and potential for innovation, which need to be transformed into suitable concepts. In this context, especially the design of the associated value propositions and value constellations are vital aspects. Apart from that, regular brainstorming sessions with internal or external experts are useful to collect ideas for innovation.

The main activities of the third step, feasibility study, are a detailed analysis of the public demand and the estimated impact of the business model innovation. Thus, the ideas for innovation that have been identified in the previous step are scrutinized for their public value creation potential. A reasonable approach for this procedure is to conduct an environmental analysis in the first step.

Often, global e-government frontrunners, such as Seoul, New York, or Hong Kong, or companies from the e-commerce sector have already similar or comparable solutions in place. This allows drawing conclusions for the development and implementation of desired innovation. In a second step, the intended e-government business model change needs to be thoroughly analyzed from a demand, content, management, and technology perspective with respect to its feasibility and expected public value impact.

In the prototype phase, the specific components as well as the prototype of the future business model are elaborated. In this innovation stage, the leadership team may still choose between various development trajectories and paths that need to be balanced before finally determining the dominating alternative. During this process, several detailed or fine-tuned concepts are usually established, which represent the relevant set of possible alternatives.

The selection and finalization of the definite alternative is made in the decision-making phase. For this purpose, the previously elaborated business model

prototypes are detailed in a business plan to analyze and evaluate the cost-benefit ratio. Furthermore, the alternatives are harmonized with regards to their business model structure and design. At this level, final weaknesses and vulnerabilities of the alternatives should be uncovered and weak alternatives discarded.

The implementation phase of business model innovation process covers the planning and integration of activities that are associated with the implementation of the modified business model. Implementation, however, is not a linear process. It rather requires constant revisions and change loops to apply necessary adjustments to the planning or implementation deviations.

The required change management capabilities usually parallel the extent of the model change. Changing, for instance, a detail in a recently added business model component will cause less resistance and demand less change management effort and experience than an entire change of a business model component with a long-lasting organizational tradition.

Since a business model implementation possesses a clear project character, it is reasonable to handle the implementation within a project organization framework. A project refers to an activity that is of novel, risky, and complex nature, finished within a specific period of time, and planned to achieve a particular aim.

The implementation project requires a detailed implementation plan that is prepared on the basis of a stepwise realization of the business model. Furthermore, the project communication as well as the team set-up for the implementation phase are of paramount importance. The selected members of the project team need to have the motivation, the skills, the knowledge, and the empowerment that are necessary to conduct and complete the implementation project.

In the final stage of the public business model innovation process, the project performance is monitored and controlled. For this purpose, the leadership team has to develop relevant project milestones and performance indicators in advance of the project launch. These key figures have to be constantly monitored and evaluated to be able to intervene and make further adjustments if deviations from the planned performance occur.

The success of an implemented public business model largely depends on the fulfillment of the user's needs and requirements. Against this background, many demand factors and user service preferences have been identified in science and public management. These are presented in the following chapter.

# 5 User–driven E-Government

Creating a common interface for various public stakeholders that possess distinctive information and service needs as well as different educational and technical backgrounds inevitably leads to demanding issues. Thus, designing, implementing, and maintaining an e-government system that adds public value to society is a challenging task.

In the early e-government stages, there were diverse discussions on how this should be tackled from an e-government portal layout perspective. Basically two mainstreams were present at that time: a provider and a user perspective. One of the first suggestions how to evaluate e-government portals—therefore, indirectly setting the design targets—was to assess their overall compliance with laws and regulations (Eschenfelder et al. 1997).

Another approach was to elaborate user-centered designs that were supposed to be useful to the users (Huang and Chao 2001) and allowed easy interaction (Bertot and Jaeger 2006). The idea was that only a shift from the traditional provider orientation to a clear user focus in e-government development and implementation would lead to a transformation of government (Jaeger and Bertot 2010).

Today, providing services that are tailored to the users' needs is the dominating e-government approach. For the provider of e-government portals this means that they have to consider numerous essential elements when designing, implementing, and maintaining e-government systems. For this purpose, vital functional aspects and user preferences are presented in the following.

## 5.1 Functional E-Government Demand Factors

By shifting the focus from provider-oriented to user-oriented aspects, e-government is regarded to have the potential to enhance the interaction between the government and its stakeholders. To achieve this, governments need to be aware of the service and resource requirements of their users. Therefore, the major questions that need to be answered are: What do users want and what do they expect from e-government?

There exists an extensive collection of studies in the scientific literature on this topic, which provides various relevant user-oriented e-government factors. These range from elementary factors, such as technology readiness, to complex factors, like trust in the government. It is important to understand that these factors are perceived factors. This means that there is usually not a definite, objective criteria, but only the perception of the individual user who evaluates the respective issue based on personal reflection of reality, knowledge, prior biases, and experiences.

The functional e-demand factors can be organized in three quality packages: **U**se quality, **S**ystem quality, and **S**ervice quality (USS). Use quality refers to user-related factors before, during, and after usage of the e-government system. System and service quality handle factors that are associated with the overall system quality or the quality of the service provided respectively. Figure 42 presents the USS E-Demand Factor System:

Figure 42 USS E-Demand Factor System



**Functional e-demand factors**

**U Use quality**

- Ease of use/ usability
- Usefulness
- Security/privacy
- Satisfaction
- Trust
- Expectation-confirmation
- Technology/ Internet literacy
- Self-efficacy
- Effort expectancy
- …

**S System quality**

- Website design/ visual appeal
- Functionality of the interaction environment
- IT system performance
- IT system reliability
- IT/Internet readiness
- …

**S Service quality**

- Information/ service quality
- Outcome quality
- Responsiveness
- Web assistance/ personal interaction
- Customization
- …

The e-demand factors that are illustrated in the use quality category in Figure 42 are presented in chronological sequence (before, during, and after use). These factors rather show a user-orientation, while system quality and service quality instead are more provider-oriented.

- Ease of use/usability measures the perceived user effort to become acquainted with and learn to use a new technology. It is a factor of the Technology Acceptance Model (Davis 1986), according to which the attitude of a user towards using a new technology is mainly determined through the two factors ease of use and usefulness. These two factors are one of the most important factors for predicting the use of new technologies.

- Usefulness measures a user's subjective perception or impression concerning if the use of a specific technology facilitates tasks or enhances performance. If, for instance, a new technology is not perceived as a value-adding or performance-enhancing tool, then why take the effort and bear the risk of changing the status quo?

- Security/privacy: Security and privacy are important prerequisites for the acceptance of e-government. Here, security and privacy are understood as the perceived safety, secrecy, and confidentiality of individual user data as well as network-based information processing. These factors influence the likeliness of users to perform e-government transactions online. Apart from that, they are closely related to trust.

- Satisfaction: Satisfaction refers to the extent to which a user is satisfied or pleased with a service or the use of a new technology. According to the expectation-confirmation theory, satisfaction is mainly influenced by expectations towards the new technology, perceived performance, and confirmation or disconfirmation of beliefs.

- Trust can be divided into trust in the government or institution and trust in the Internet: Trust in the government "reflects evaluations of whether or not political authorities and institutions are performing in accordance with the normative expectations held by the public" (Miller and Listhaug 1990, 358). It can be regarded as a measurement of the faith and the confidence that the public has in its government. E-government, increasing public transparency and citizens' information, for example, is supposed to enhance trust in the government. While trust in the government refers to party-based confidence,

trust in the Internet is associated with the confidence that the user places in the system or the environment in which the transaction takes place. Concerning online e-government information and service provision this usually is the Internet. A high level of trust in the government, trust in the Internet, and perceived security and privacy, increases the likelihood that public stakeholders use an e-government system.

- The expectation-confirmation concept aims to explain post-adoption satisfaction through expectation, perceived performance, and confirmation or disconfirmation of beliefs (Oliver 1977; Oliver 1980). Simply speaking, a high expectation of a new technology that shows a low perceived performance would lead to a disconfirmation of beliefs and thus would cause a decrease in user satisfaction. Therefore, the active management of expectations is an important activity as raising excessive user expectations can be counterproductive.

- Technology/Internet literacy: A key factor for using e-government portals is the users' ability to successfully use the services provided. This requires two perspectives: a user and a provider perspective. Computer and Internet skill discrepancies, language differences, or disparities in reading literacy are just a few examples that governments have to consider in their online information and service provision. Furthermore, effective interaction requires public stakeholders to understand the procedures and the structure of public administration. Therefore, e-government providers have to provide the content and the services in an informative and constructive way for the users.

- Self-efficacy: Self-efficacy is the extent or strength of a person's belief that he or she is capable of performing a particular action or reaching a specific goal. In connection with e-government, this factor measures, for example, a citizen's belief about his capability to apply for an ID card or to make a tax declaration online.

- Effort expectancy: Apart from being able to use a new technology and believing in one's abilities to do so, the user's expectation about the effort to use a new technology is an important factor. If users, for instance, believe that it takes high effort to use the e-government system, they are more reluctant to use it.

The system quality-related e-demand factors are important aspects from an overall system perspective that should be considered when designing, implementing, and maintaining an e-government system:

- Website design/visual appeal: The appearance of the website and its content are vital factors for the use of e-government portals. Key aspects of this factor are the content's presentation as well as the website layout, which mainly refer to graphical elements such as color, typeface, or illustrations. Together with performance and reliability, this factor forms a group of elements that is of paramount importance from a system quality perspective.

- Functionality of the interaction environment is also seen as an important factor for attracting users and increasing e-government portal use. Examples of the functionalities of the interaction environment are automated completion of forms or electronic contact recommendations.

- Perceived IT system performance is a vital factor for the use of an e-government system. If the user believes that service delivery performance is weak, this may reduce the user's intention to reuse a new technology since he is not satisfied with its input-output ratio.

- The impact of perceived IT system reliability is more or less the same as the effect of perceived performance. If a system is perceived to be unreliable, in other words, it also shows a rather low performance, this leads to a reduction of the intention to use or to reuse a new technology.

- IT/Internet readiness: This factor measures the maturity of the technology used. The origin of technology readiness lies in the method to systematically analyze the current development stage of a new technology. This so-called technology readiness level was first used by the NASA for rating technology developments on a 1 (observation and description of the operating principle) to 9 (qualified system with proof of successful use) scale. Transferred to e-government, a higher degree of readiness will increase the likelihood of using an e-government system.

The service quality-related e-demand factors show a strong connection with the provision of e-government information or services. Like the system quality factors, these are also rather provider-oriented:

- Information/service quality refers to the quality of the services and the information provided. Concerning perceived information quality, for instance, timeliness, completeness, accuracy, and relevance of the information provided, as well as an adequate amount of content are valued aspects. A high degree of, for example, reliability, functionality, and ease of use are crucial elements for high perceived service quality.

- While perceived information/service quality refer to the process of using the e-government portal, perceived outcome quality is concerned with the result of the service delivery, and thus with the person's satisfaction and experience with the outcome of the services provided. If the user is satisfied and looks back to a positive experience concerning the service offering, this positively influences future behavioral intentions to revisit the e-government portal.

- Responsiveness refers to two aspects: first, the degree to which employees or e-government portals provide information and services (e.g., information, communication, transaction, or integration services) and second, the time between inquiry and service provision (e.g., appointment request and confirmation). High responsiveness fosters user satisfaction, which in turn increases the likelihood of using an e-government system.

- Although e-government service provision tends to be of automated technology-based nature that increases the self-serving character of public service offering, the possibility of web assistance or personal interaction makes the e-government system more convenient to the user. Moreover, the opportunity for personal interaction fosters user trust and confidence in using e-government services.

- Customization refers to the possibility of tailoring websites, applications, or other online offers to the personal preferences of the user. A high level of customization, for example, satisfies the desire of users to personalize online offers, which in turn should increase the likelihood of using or reusing an e-government portal.

Summing up, when designing, implementing, and maintaining a user-oriented e-government portal, various important factors must be taken into account. Essential elements are that information needs to be up-to-date, comprehensive, accurate, and relevant, and services require easy, transparent, and performant handling.

In a nutshell, information and service provision demands convenient, appealing, and reliable administration from a user's perspective. Furthermore, especially security, privacy, risk, and trust-related factors are crucial. In addition, expectation management takes a significant role since unfulfilled user expectation may lead to dissatisfaction and thus a decreasing likelihood of sustainable e-government service use. In addition, user abilities, such as Internet literacy and skills, as well as user self-efficacy need to be considered when developing e-government solutions.

The above-mentioned functional e-demand factors represent fundamental e-government elements that provide the underlying cornerstones for the development and maintenance of an e-government portal. In order to appropriately address the public stakeholders, these functional e-demand factors have to be merged with public demand aspects to derive an adequate reflection of their e-service preferences. These are explained in the following section.

## 5.2  E-Government-Service Preferences

An effective e-government portal interaction requires that users find their way around the e-government portal easily and get to the desired services quickly. For this reason, the individual services offered are grouped and usually organized in specific e-government service preference categories. This way, the e-government services are provided in a thematic classification that is built on a multi-level design.

These subject categories should be defined in a logical structure and as mutually exclusive as possible to avoid inconsistencies in their composition. On the first level, these preference categories have to give the user a clear picture of the subject, and thus on the e-government information and services that the user will find in the category. Therefore, the preference categories need to be determined from a public stakeholder perspective, clearly reflecting user needs and user demand.

In the course of an e-government user preference survey, the e-government service preference categories of several e-government portals were analyzed.[1] The services provided and their groupings were compared and filtered in various runs to derive the following generic classifications, which are illustrated in Table 6.

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1 See Wirtz 2015.

Since the scope of the study was on municipal e-government service offerings, the resulting service preference classifications are geared to local and regional e-government requirements, which tend to show a stronger user orientation than e-government portals on national level. Furthermore, e-government on a local and a regional level provide the main platform interfaces for user access (see section 4.1).

Table 6 E-Government Service Preference Categories

| E-Government Service Preferences | Information and Service Examples |
|---|---|
| Civic and immigration services | ID card, residence permit, and driver license application, divorce information, voter assistance |
| Health and medical services | Insurance services, facility information, nutrition information, vaccines information |
| Business and employment services | License application, financial services, legal assistance, job portal, job hunting information |
| Taxes and duties services | Tax declaration service, tax payment service, property tax information |
| Car, transport, and road services | Vehicle registration, public transport information, parking license service, accident information |
| Housing and property services | Affordable housing information, construction permit services, utility information |
| Social and volunteering services | Social security information, community program information, donation service |
| Family services | Child care information, adoption information, day care center information |
| Government, law, and order services | Electoral matters, consumer protection, crime and government reports, coast guard information |
| Arts, culture, and tourism services | Locations, activities, funding and support, visitor information |
| Recreation and sport services | Park and nature information, sport locations, sport activities, youth event information |
| Libraries and education services | Enrollment, e-book services, student support, rules and policies, adult education |
| Environment and recycling services | Garbage and recycling information, animal control, air and water quality information |

Source: Based on Wirtz 2015.

The civic and immigration services preference category summarizes topics that provide public stakeholders with information on and services of responsible agencies and officials (e.g., contact information, communication provision), public record management (e.g., ID card, passport, address), immigration services (e.g., foreign government and embassy information, residence permit), and related statistics (e.g., population data, city management report, city council information).

The health and medical services preference category covers information and services that are associated with the health care system, healthy nutrition, living, and environment. In the employment services preference category, information and services concerning the topics job search, recruitment, labor legislation, employee protection, occupational safety and health, etc. are summarized.

The business and employment services preference category contains information and services that are associated with starting and managing a business as well as employment-related consumer information. In the taxes and duties services preference category, information and services concerning all forms of tax declaration and payment (e.g., income tax, property tax, value-added tax) are provided.

The car, transport, and road services preference category covers information and services for getting around, either by car or by public transport. Thus, this category supports public stakeholders in topics like vehicle registration, parking, tickets, towing, accidents, buses, trains, taxis, bicycles, etc.

In the housing and property services preference category, relevant information and services concerning buildings, construction, properties, property management, land, etc. are summarized. In the social and volunteering services preference category, public stakeholders get information and services that are related to public provision of benefits (e.g., assistance, food, utilities, benefits for disabled people), donations, community groups and programs, and provision of voluntary community services.

The preference category family services covers family-related topics, such as child adoption, child abuse, day care center, domestic violence, home care. In the government, law, and order services preference category, users have the possibility to inform themselves and use services with regards to government structure, government reports and publications, payment of government bills, election-related topics, law and the legal system, crime, emergencies etc. The preference category arts, culture, and tourism services summarizes information and services concerning arts venues, arts organizations, cultural programs, monuments, museums,

sightseeing, travelling and so forth. The preference category recreation and sport services offers its users information and services that closely relate to topics such as leisure activities, beaches, country parks, sport events, as well as sports organizations and facilities.

The libraries and education services preference category provides public stakeholders with information and services on libraries (e.g., library facilities, rules and regulations, library cards application, reading groups and activities), on schools, colleges, and universities (e.g., enrollment, eligibility information, college preparation information), as well as adult education (e.g., literacy information, vocational services). In the preference category environment and recycling services, public information and services concerning, for instance, garbage, recycling, air and water quality, environmental protection, noise protection, and animal control are provided.

This exemplary e-government service preference category structure provides a clear and transparent service offer that supports the user in finding the desired services. Furthermore, by aggregating the information and service offers into 13 categories on the first level, the user is not confronted with an information overload and can access the respective information and services step by step. This way, the user may also discover further relevant information or additional services.

However, the presented e-government service preference categories differ in their importance concerning public demand. According to the e-government citizen preference study by Wirtz (2015), the service preference categories can be divided into three priority areas: top, middle, and low priority.

The four categories (1) taxes and duties services, (2) civic and immigration services, (3) car, transport, and road services, as well as (4) arts, culture, and tourism services were evaluated as important or very important by clearly more than half of the participants. Especially the services of the categories taxes and duties services (64%) as well as civic and immigration services (63%) were regarded as vital online service offers, being rated as important or very important by six out of ten respondents.

The middle priority areas were made up of seven preference categories: (1) libraries and education services, (2) housing and property services, (3) environment and recycling services, (4) government, law, and order services, (5) social and volunteering services, (6) recreation and sport services, and (7) business and employment services. Approximately four to five out of ten respondents see these categories as important or very important for e-government service provision.

Family services as well as health and medical services brought up the rear with 42% and 38% respectively. Although these two categories were considered less important than the other service categories, it needs to be taken into account that still four out of ten respondents rated them as either important or very important. Further details concerning the importance of e-government service categories are summarized in the following figure, which is based on a recent e-government study of Wirtz (2015) with 717 participants.

Figure 43 Importance of E-Government Service Preference Categories
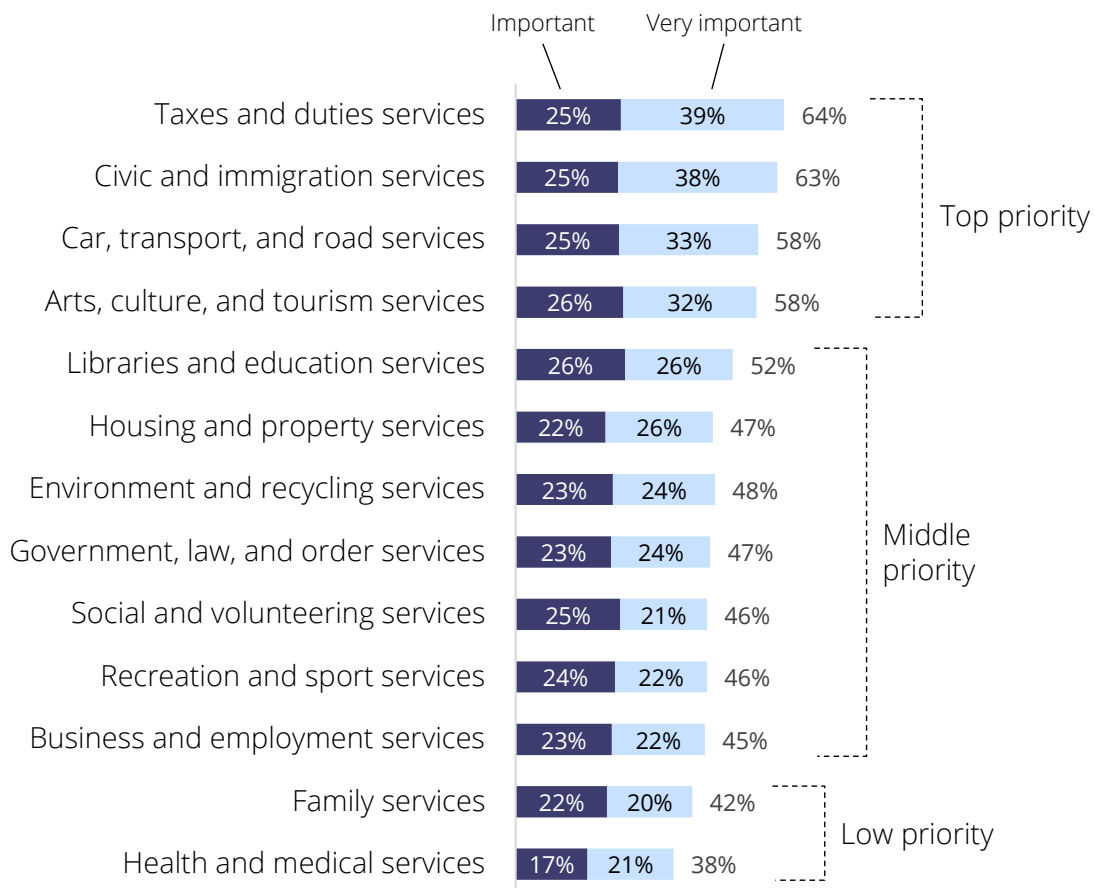


Source: Based on Wirtz 2015.

With regards to the user-centered e-government focus and the resulting importance of the user relation, this relationship requires systematic customer care. Thus, apart from tailoring the e-government service offering to the needs of the user, the relationship between user and e-government provider demands a professional relationship management that puts the user into the center of attention.

## 5.3   User–driven Relationship Management

User-driven relationship management has become an important topic over the past decades.[1] Especially its relevance for systematically fostering user loyalty is seen as a vital factor for enhancing organizational success. The connection of relationship management and user loyalty is supported by Kotler (1994, 48), who states that "the task of creating strong customer loyalty is called relationship marketing".[2]

Since user loyalty is regarded to have diverse positive effects on quantitative organizational targets, the general importance of successful relationship management becomes clear. This connection formed the basis for the advancement of a target-oriented, systematic relationship management.

This development was complemented by the rise of modern information and communication technologies at the end of the 1990s. While the resulting potential for managing user relations was overhyped in the beginning, especially during the Internet bubble, its chances and risks are seen more realistically today.

On the one hand, modern information and communication technologies allow to manage user relations more effectively and more efficiently than ever before. Despite the Internet's mass media nature, its inherent possibilities for interaction allow efficient one-to-one or one-to-many communication.

Apart from that, strategic use of network effects, cost structure advantages of information services, and personalization of websites or services fosters user loyalty. On the other hand, the massive increase in transparency concerning information, services, and product offers lowers change barriers, which can cause a decrease in user loyalty.

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1 The following is based on Wirtz 2013b.

2 Since it is not common to describe public stakeholders as customers, we refer to user relationship management instead of using the term customer relationship management in the following.

Although the concepts of relationship management and user loyalty bare risks, their important role for organizational success is now generally considered beyond dispute. However, since the topic looks back to continuous advancements, there are still differences concerning the understanding of relationship management.

Apart from that, the term relationship marketing is often used interchangeably with relationship management (Parvatiyar and Sheth 2001; Payne and Frow 2005). Against this background, several definitions from the scientific literature are presented in the following:

- "Relationship marketing combines elements of general advertising, sales promotion, public relations, and direct marketing to create more effective and more efficient ways of reaching consumers. It centers on developing a continuous relationship with consumers across a family of related products and services" (Copulsky and Wolf 1990, 16).

- "Relationship marketing refers to all marketing activities directed toward establishing, developing, and maintaining successful relational exchanges" (Morgan and Hunt 1994, 22).

- "Relationship marketing attempts to involve and integrate customers, suppliers and other infrastructural partners into a firm's developmental and marketing activities" (Sheth and Parvatiyar 1995, 399).

- "Customer relationship management strategy, enabled by processes and technologies, is designed to manage customer relationships as a means for extracting the greatest value from customers over the lifetime of the relationship. These strategies typically concentrate on the operational responses required to manage the customer" (Heller Baird and Parasnis 2011, 30).

While early definitions focus on the establishment of a continuous relationship and successful relational exchanges, the last definition moves on to a management perspective that puts value creation into the center of attention. This shall be achieved through process and technology-enabled activities that are conducted to respond to the needs and requirements of the customer/user. Transferred to the e-government context, we therefore derive the following definition:

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**Definition of E-Government-related User Relationship Management[1]**

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E-government user relationship management includes the information and communication technology-based planning, organizing, steering, and controlling of user relationships, with the aim to make a successful contribution to public value.

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User relationship management contains three essential target dimensions: sustainable user loyalty, usage frequency, and length of stay. Thereof, sustainable user loyalty forms the core target dimension, as it always needs to be considered when taking user relationship actions.

The second target dimension refers to the usage frequency of an e-government offer within a certain period of time. Thus, the more often a user uses a particular service, the higher the usage frequency. This target dimension can be divided into an absolute and a relative perspective.

The absolute perspective is determined by the number of page impressions per user. The relative perspective takes this number and builds a ratio by relating the absolute perspective to the overall user page impressions in similar service offerings, therefore, showing the ratio between the portal visits of one provider and other providers with a similar service offering.

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1 Based on Wirtz 2013b.

The third target dimension covers all actions carried out by the provider to maximize the length of stay per e-government portal visit. The intention is that incrementing the length a user stays on the e-government service portal leads to an increase in service usage. In e-commerce, the technical term for the potential that a user stays on a website is called stickiness.

Thus, a sticky website increases the likelihood that users will stay longer and will use more services on this website than on others that are not or less sticky. This is of particular importance to reduce the rush at the expensive physical counters by shifting transactions from the personal offline to the automated online environment.

The three target dimensions, however, are neither substitutes for each other nor competing elements. Thus, user loyalty actions may aim at individual target dimensions or at any combination of them. Many user relationship management initiatives, for instance, pursue all three of them. Figure 44 provides an overview of the three target dimensions of user loyalty.

Figure 44 Target Dimensions of User Loyalty
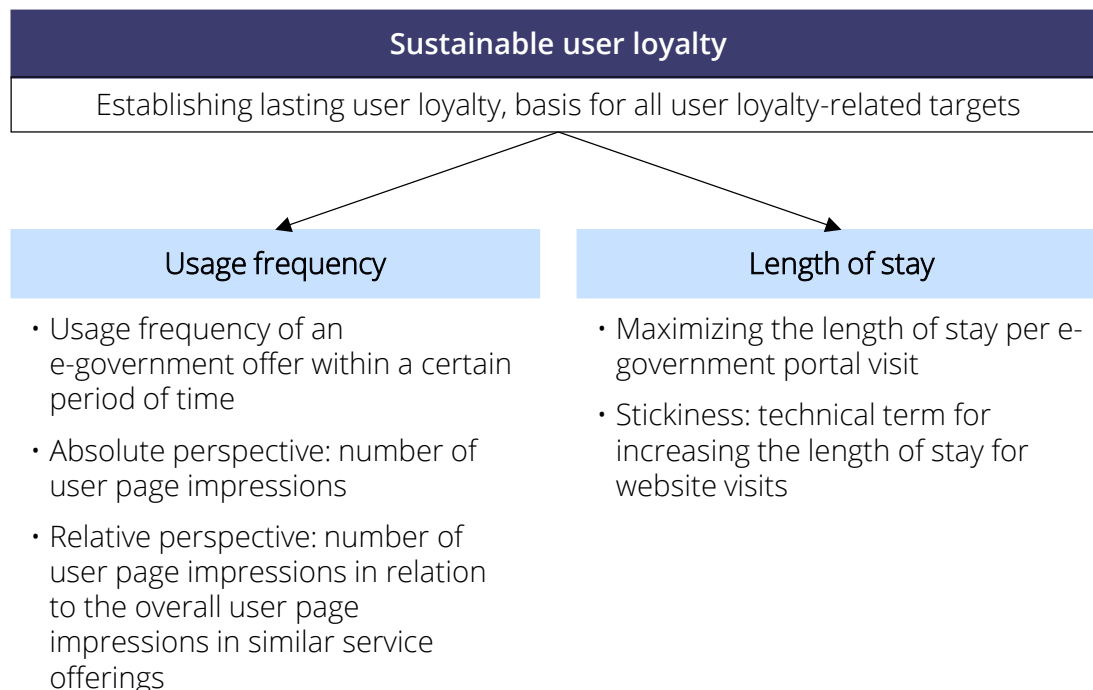


Source: Based on Wirtz 2013b.

Establishing a successful user relationship usually is a complex process. The goal of e-government-related user relationship management is the maintenance of user relations to induce users that have already used a service, to use this service again or to use another service of the service offering. This management process consists of a sequence of phases: awareness, consideration, usage, reconsideration, dissatisfaction, and recovery.

Following the management principle set by Peter F. Drucker 'If you can't measure it, you can't improve it', the planning and steering of the individual phases should be accompanied by appropriate performance indicators that support impartial measurement of the success of the particular activities. The phases as well as selected performance indicators are outlined in the following figure.

Figure 45 E-Government User Relationship Management Process
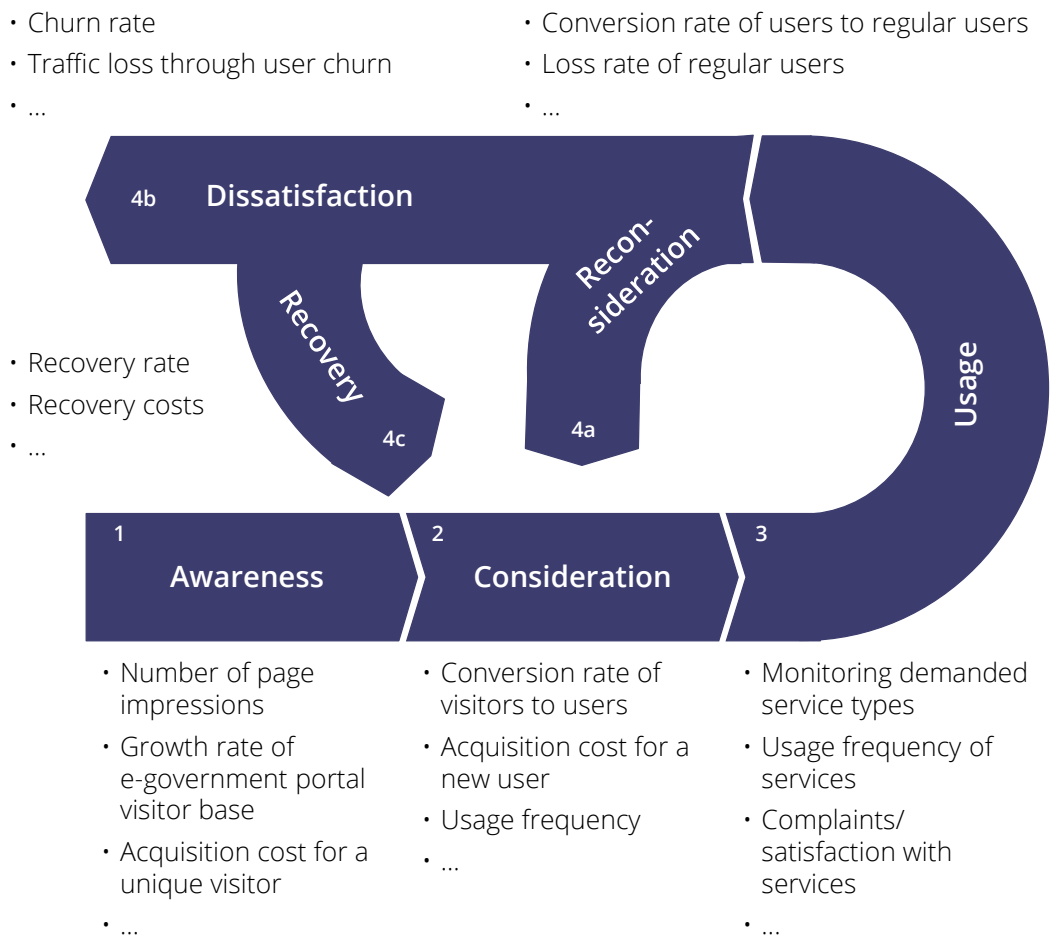


Source: Based on Wirtz 2013b.

The initial key tasks of the awareness phase are to identify the general public demand for e-government services, potential user groups, as well as the needs and the requirements of the individual users. Based on this information, the e-government information and service offering has to be marketed and popularized among the potential user groups.

The overall target is that the user recognizes the availability of the service offering, which suits his needs. Based on this awareness creation, an initial user contact is established via information and communication technologies (e.g., visiting the website). Typical performance indicators of the awareness phase are the number of page impressions, the growth rate of the e-government portal visitor base, and the acquisition cost for a unique visitor.

In the next phase, consideration, the potential user is confronted with the service offerings from the e-government system, which are tailored to the expected user needs. This requires a profound knowledge of public e-government demand as well as the potential user needs and preferences.

The core activities in the consideration phase, are to identify interested users and to create preference by underscoring the benefits and the superior characteristics of the service offering provided. To measure the success of the consideration phase, the conversion rate of visitors to users, the acquisition cost for a new user, as well as the absolute and relative user frequencies are helpful performance indicators.

The overall target of the usage phase is to create user satisfaction with information or service provision. For this purpose, information and service consumption needs to be easy to use and useful to the user: the user expectation has at least to be met or better surpassed.

If the user is satisfied with the service handling and the outcome of the online interaction, the likelihood for reusing the e-government service offering increases. Therefore, the services offered need to be designed and provided in a way that satisfy the users' needs. Furthermore, this point of interaction should be used to examine the level of user satisfaction through user feedback, complaint, and controlling systems that support constant monitoring and evolution of the service offering and its provision.

This is of particular importance since a dissatisfied user may not use the service again, may discourage others from using the service, or may even leave the entire platform. Usual performance indicators of the usage phase are the monitoring of the types of service demanded, the usage frequency of services used, as well as complaint and satisfaction user feedbacks concerning the services provided.

The aim of the reconsideration phase is to turn first users into loyal regular users. Key activities to achieve this aim are to maintain and intensify user preference, inform users about new services and optimizations, and provide easy access and useful content for repeated information and service usage. The conversion rate of users to regular users and the loss rate of regular users are typical performance indicators in the reconsideration phase.

If users are not convinced of the service provision and enter the dissatisfaction phase, actions to prevent upcoming user churn have to be initiated. First, the reasons for the users' lack of satisfaction and thus the rationale for the potential user churn have to be analyzed. Here, user surveys are helpful tools to identify performance discrepancies.

In parallel, the complaint management should be improved and extended to gather additional information on potential hazards. Second, the identified issues and performance gaps have to be solved. Important performance metrics of the dissatisfaction phase are the churn rate as well as the traffic loss through user churn.

In the next step, the user relationship management process enters the recovery phase. This means that dissatisfied users should be approached with the objectives of regaining user confidence and making the e-government service offering attractive again for the user.

Key activities of this stage are the selection of recovery target groups, presenting optimized performance outcomes and benefits, and illustrating recovery incentives to the user. The recovery rate and the user recovery costs are common performance indicators to measure the success of the activities in the recovery phase.

For a successful management of the user relationships all phases of the process have to be managed actively. For this purpose, adequate user interfaces must be set up and maintained that support the establishment of integrated user relationships. In the case of e-government, this particularly concerns the usage of Web 2.0 technologies and applications that are applied according to the inherent business model-related user demand.[1] Since the technologies show differing characteristics, these are suitable for different purposes.

Figure 46 on the following page illustrates the application of Web 2.0 technologies using the examples of a local (the e-government portal of New York City), a regional (the e-government portal of Hong Kong), and a national e-government portal (Germany) for an integrated e-government user relationship management.

While all levels in the example apply multiple technologies with the information and communication business model, the transaction model is built on the own e-government portal. Concerning the use of further technologies, blogs, content communities, and social networking sites are frequently applied.

A blog resides between traditional print and broadcast media, and mainly serves information purposes. Although blogs usually—compared to traditional media like newspapers—only have a little number of readers, they significantly contribute to public opinion formation (Woodly 2008).

The primary purpose of content communities (e.g. YouTube, Flickr) is to facilitate the sharing of media content (John 2014). Collaborative projects, such as online forums and wikis, enable the users to jointly and simultaneously create content. Concerning their subject-related structure, they, for instance, provide the possibility to create sustainable applicable knowledge (Coffey and Woolworth 2004; Meijer, Curtin, and Hillebrandt 2012).

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1 "Web 2.0 is a collection of open-source, interactive and user controlled online applications expanding the experiences, knowledge and market power of the users as participants in business and social processes. Web 2.0 applications support the creation of informal users' networks facilitating the flow of ideas and knowledge by allowing the efficient generation, dissemination, sharing and editing/refining of informational content" (Constantinides and Fountain 2008, 232). Typical Web 2.0 technologies are, for example, blogs, content communities, collaborative projects, and social networking sites (Kaplan and Haenlein 2010), which are often applied within the context of e-government service provision.

Social networking sites like Facebook offer computer-mediated communication that allows individuals to connect and interact with other users (Kietzmann et al. 2011; Song 2010). Apart from that, modern information and communication technologies provide the technological basis that allows to set up and maintain e-government portals that are accessed via the Internet. Thus, an e-government portal is another example of applying Web 2.0 technologies, which shows specific characteristics that are suitable to manage particular user relationships.

Figure 46 Integrated E-Government User Relationship Management

| Business model-related user demand | Information | Communication | Transaction | Integration |
|---|---|---|---|---|
| **Frequency** | daily weekly | daily weekly | weekly monthly yearly | weekly monthly yearly |
| **Local portal (e.g., New York City www.nyc.com)** | · E-government portal<br>· Blogs<br>· Content communities<br>· Social networking sites | · E-government portal<br>· Blogs<br>· Content communities<br>· Social networking sites | · E-government portal | · E-government portal<br>· Social networking sites |
| **Regional portal (e.g., Hong Kong www.gov.hk)** | · E-government portal<br>· Blogs<br>· Content communities<br>· Collaborative projects<br>· Social networking sites | · E-government portal<br>· Blogs<br>· Content communities<br>· Collaborative projects<br>· Social networking sites | · E-government portal | · E-government portal<br>· Collaborative projects<br>· Social networking sites |
| **National portal (e.g., Germany www.bundesregierung.de)** | · E-government portal<br>· Blogs<br>· Content communities<br>· Social networking sites | · E-government portal<br>· Content communities<br>· Social networking sites | | |

Source: Based on Wirtz 2013b.

Considering the four different e-government business models information, communication, transaction, and integration, a smart combination of Web 2.0 technologies with the respective business model purpose fosters effective and efficient user relationship management. Since the creation of a user-oriented e-government service portfolio that adds public value is of paramount importance for a successful e-government portal, it is essential to look at e-government services, which are outlined in the following chapter.

# 6  E-Government Services

E-government services have become an important instrument of public administration. The main drivers for their evolution during the past two decades have been the development of modern information and communication technologies and the public demand for more convenient public service provision.

This has led to the advancement of existing e-government services and prepared the way for new innovative e-government information and service provision. Moreover, it triggers radical process changes in public administration organizations. For example, the introduction of electronic tax declarations, which significantly reduced transmission efforts and processing times since direct electronic data processing substituted former workflows (e.g., mail delivery, digitization of information or documents) and electronic completion of forms drastically limited incorrectly filled out declarations.

This e-government service evolution, however, was not a digital process that only required to flip the switch and all public service offers would automatically be available to the public stakeholders. It rather has been a long and cumbersome way of sequential service development and technology steps to reach the level of today's e-government service provision.

## 6.1  E-Government Service Maturity Models

Following the chronological course of e-government service evolution, various practitioners and scientists divided this process into specific development stages. These development stages represent a categorization that determines particular e-government portal maturity levels.

Therefore, maturity models are used, for example, to compare the development status of different e-government portals, to support public service development, and to serve as a guide for evaluating and improving e-government portal quality. Table 7 presents an overview of e-government maturity models from the literature.

## Table 7 Maturity Models' Stage Names

| Model | Stage 1 | Stage 2 | Stage 3 | Stage 4 | Stage 5 | Stage 6 |
|---|---|---|---|---|---|---|
| Howard 2001 | Publish | Interact | Transact | NA | NA | NA |
| Toasaki 2003 | Publish | Interact | Transact | NA | NA | NA |
| Reddick 2004a | Cataloging | Transactions | NA | NA | NA | NA |
| Deloitte 2000 | Information publishing | Official two-way transactions | Multipurpose portals | Portal personalization | Clustering of common services | Full integration and enterprise transaction |
| Kim and Grant 2010 | Web presence | Interaction | Transaction | Integration | Continuous improvement | NA |
| Alhomod et al. 2012 | Presence on the web | Interaction between citizen & government | Complete transaction on the web | Integration of services | NA | NA |
| Chandler and Emanuels 2002 | Information | Interaction | Transaction | Integration | NA | NA |
| Layne and Lee 2001 | Catalogue | Transaction | Vertical integration | Horizontal integration | NA | NA |
| United Nations 2012 | Emerging information services | Enhanced information services | Transactional services | Connected services | NA | NA |
| Chen, Yan, and Mingins 2011 | Catalogue | Transaction | Vertical integration | NA | NA | NA |
| Accenture 2003 | Online presence | Basic capabilities | Service availability | Mature delivery | Service transformation | NA |
| National Audit Office 2002 | Basic site | Electronic publishing | E-publishing | Transactional | Joined-up e-governance | NA |
| Andersen and Henriksen 2006 | Cultivation | Extension | Maturity | Revolution | NA | NA |
| Baum and Di Maio 2000 | Web presence | Interaction | Transaction | Transformation | NA | NA |
| Windley 2002 | Simple website | Online government | Integrated government | Transformed government | NA | NA |
| Cisco 2008 | Information interaction | Transaction efficiency | Transformation citizen-centric | NA | NA | NA |
| Almazan and Gil-Garcia 2008 | Presence | Information | Interaction | Transaction | Integration | Political participation |
| Wescott 2001 | Setting up an email system and internal network | Enabling inter-organizational and public access | Allowing 2-way communication | Exchange of value | Digital democracy | Joined-up government |
| Hiller and Belanger 2001 | Information | Two-way communication | Transaction | Integration | Participation | NA |
| Moon 2002 | Simple information dissemination | Two-way communication | Service and financial transactions | Integration | Political participation | NA |
| Shahkooh, Fatemeh, and Abdollahi 2008 | Online presence | Interaction | Transaction | Fully integrated & transformed e-government | Digital democracy | NA |
| Siau and Long 2005 | Web presence | Interaction | Transaction | Transformation | E-democracy | NA |
| West 2004 | Bill-board | Partial-service-delivery | Portal | Interactive democracy | NA | NA |
| Lee and Kwak 2012 | Initial conditions | Data transparency | Open participation | Open collaboration | Ubiquitous engagement | NA |

Source: Based on Fath-Allah et al. 2014.

Taking into account all maturity models presented in Table 7, it can be stated that e-government maturity models show up to six development stages, with a minimum of two. Furthermore, although the denominations of the individual stages differ from one maturity model to another, the conceptual approaches—ranging from a basic to an advanced level—are comparable.

Nevertheless, the maturity models clearly differ from each other, which allows to classify them into five groups, according to their overall development scope/highest development stage: (1) transaction, (2) integration, (3) transformation, (4) participation, and (5) open collaboration.

The most basic maturity models, in comparison to the level of the highest development stage, are the transaction-related models (Howard 2001; Reddick 2004b; Toasaki 2003). Howard (2001) and Toasaki (2003) follow a three stage approach that starts with publishing information. The next stage is user-government interaction. The model closes with the transaction stage, which allows to complete public administration procedures online.

Reddick (2004a) broke this down to two stages: cataloging and transactions. In the first stage, the public sector organization presents relevant information online and in the second stage, given public administrative procedures or transactions can be completed online via the Internet.

The second group of maturity models may be formed through integration-related models (Accenture 2003; Andersen and Henriksen 2006; Baum and Di Maio 2000; Chandler and Emanuels 2002; Cisco 2008; National Audit Office 2002; Siau and Long 2005; Wescott 2001; Windley 2002). Although the maturity models differ concerning the number of stages (from three to six), the underlying principle is the same: they start with providing basic information services and close with the integration stage.

Here, integration refers to a horizontal and vertical integration of user and provider processes. This means that systems of different administrative functionalities and jurisdictions are fully integrated and available through a customized one-stop e-government portal that allows the user to administer fully automated governmental procedures.

The maturity models of the transformation group rather focus on the transformation perspective of e-government (Alhomod et al. 2012; Chen, Yan, and Mingins 2011; Deloitte 2000; Kim and Grant 2010; Layne and Lee 2001; United Nations 2012). Instead of focusing on the technology readiness of the e-government system, they refer to the level of achieved e-democracy or citizen-centric transformation.

The participation-oriented maturity models see e-government as a system that finally leads to e-democracy or political participation by citizens via the Internet (Almazan and Gil-Garcia 2008; Hiller and Belanger 2001; Moon 2002; Shahkooh, Fatemeh, and Abdollahi 2008; Siau and Long 2005; Wescott 2001; West 2004). This empowering of the civil society takes place for example via polling, public forums, online petitions, and online voting.

The fifth group, open collaboration, takes the concept of e-government one step further by explicitly integrating open government-related aspects (Lee and Kwak 2012). Already in the third maturity stage, open participation is used for policy decisions and in stage four and five, public open data is integrated and made ubiquitously accessible respectively.

Since the majority of the maturity models was built without being based on other models, they often use different expressions for similar stages. However, as the overall direction of the models is comparable, starting with simple information provision that finally leads to digital administration or e-democracy, the proposed development was generally replicated in various independent surveys.

For a common understanding of e-government maturity levels in the upcoming chapters of the book, the main characteristics of the above-mentioned maturity models are summarized in an e-government development stage model, which is outlined in the following.

Taking into account the findings of previous e-government maturity level studies, we see five key e-government development stages: (1) presentation/information, (2) communication, (3) transaction, (4) participation, and (5) open integration.[1] With each stage, the e-government application reaches a higher degree of interaction, which in turn is also connected to an increase in complexity. Figure 47 schematically illustrates this relationship.

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1 The following is based on Wirtz 2013b.

Figure 47 E-Government Development Stage Model

**Degree of interaction** →

**Stage 1**
Presentation / information
- Static content
- No personalization
- Digital provision of information
- E.g., opening hours of an agency

**Stage 2**
Communication
- Digital communication
- Digital transmission of information
- E.g., citizen inquiries via email

**Stage 3**
Transaction
- Online transactions
- Back-office integration
- E.g., automated processing of a change of address

**Stage 4**
Participation
- Active user participation in administrative processes
- E.g., e-voting or online poll for street naming

**Stage 5**
Open integration
- Direct user integration into administrative processes
- E.g., joint decision-making for urban development

**Complexity** ↓

Source: Based on Wirtz and Piehler 2010.

First-stage e-government systems are limited to present static information, such as opening hours and contact information, online to the user. In the communication stage, e-government systems are amplified by providing the possibility for communication and digital transmission of information. Here, users can, for instance, communicate with the respective public sector organization via email.

In the transaction stage, users can initiate and/or process administrative procedures and services online. For this purpose, the e-government system is integrated into the back-office system, which allows automated processing of the initiated administrative procedure. Thus, a change of address in the civil register is automatically updated in related databases, e.g., address of vehicle owner.

The participation stage permits participatory interaction between the e-government provider and its users. Instead of only initiating a standardized e-government transaction, users can actively play a shaping role in the process through feedback, opinion surveys, or electronic voting. An example of this stage is an online poll for naming a street.

In the open integration stage, the user is directly integrated into public processes and value creation, and manages interconnected administrative procedures that support an automated execution of multiple transactions. Thus, the user is ubiquitously engaged with public administration, openly sharing data and public input through various devices and channels while cooperating and collaborating with the respective public entities.

Although the stages differ greatly concerning the related degree of interaction and the level of complexity that is associated with the respective stage, favoring one of them does not make sense since all play a vital role in e-government. According to the e-government development stages and the associated degrees of interaction and complexity, various e-government interaction patterns are conceivable.

Within these interaction patterns, several public e-government stakeholders form a part of the government-user structure. Against this background and the target to provide e-government services in a user-oriented way, it is important to identify the relevant actors and interaction patterns.

## 6.2  Actors and Interaction Patterns of E–Government

All recipients and providers of e-government information and services within the e-government interaction procedures form the group of actors.[1] This group can be divided into people (citizens), private sector organizations (organization), and public sector organizations (administration), which interact with each other and thus build the basis for the interaction patterns. Figure 48 presents these relationships.

Figure 48 E-Government Interaction Matrix

| | | Organization | Citizen | Administration | Intra |
|---|---|---|---|---|---|
| **Information and service provider** | Administration | Administration to Organization | Administration to Citizen | Administration to Administration | Intra-Administration |
| | Citizen | NA (Not Applicable) | NA (Not Applicable) | Citizen to Administration | NA (Not Applicable) |
| | Organization | NA (Not Applicable) | NA (Not Applicable) | Organization to Administration | NA (Not Applicable) |
| | | **Information and service recipient** | | | |

Source: Based on Wirtz 2013b.

The providers of e-government information and services establish the basis for service provision within the underlying electronic networks. They supply services that can be used by the recipients. For e-government, public administration (administration) is the prevalent information and service provider.

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1 The following is based on Wirtz 2013b.

**Administration to organization:** This interaction pattern belongs to the most relevant ones since it includes important administrative procedures to handle the interaction between private organizations, such as small, medium, and large companies, as well as non-profit organizations, and public administration (e.g., transactions related to income tax, value-added tax, social security).

**Administration to citizen:** This interaction pattern mainly serves public administration in providing information and services to citizens. Most of these offers are provided free of charge, such as an online job portal of the employment agency. However, there are also fee-based interactions that require payment to complete the transaction (e.g., auctions of confiscated goods, visa application).

**Administration to administration:** With growing data and service exchange as well as increasing collaboration between public sector entities on a national and international level, this interaction pattern becomes more and more important. Here, vivid examples are the Federal Administration Office, which provides services for other public sector organizations, or the improved cooperation between judicial authorities and police forces with particular emphasis on the central role of Europol.

**Intra-administration:** Automated one-stop e-government portals also require well-functioning exchange of information and services within the respective public sector organization providing the e-government service. Therefore, this interaction pattern is mainly concerned with network-based, intra-organizational online procedures (e.g., connecting registration office data with vehicle registration data).

**Citizen to administration:** Here, public administration is the recipient of information and services that are provided by citizens. Thus, in the citizen to administration interaction pattern, citizens, for instance, send information to public institutions via online devices. An example is the electronic transmission of income tax returns.

**Organization to administration:** This interaction pattern is the equivalent to the citizen to administration interaction pattern, but with organizations as information and service providers. Therefore, it is mainly concerned with the handling of administrative tasks (e.g., tax declarations) or business relation tasks (e.g., electronic procurement) of private organizations.

The interconnection among the e-government actors and the associated interaction patterns can lead to complex structures.[1] In the following, a schematic e-government actors and interactions structure is presented (see Figure 49) to better illustrate potential relationships that need to be established and managed.

The Internet service provider maintains the system between the user and the Internet, supplying the technological prerequisites for accessing the e-government platform. This access may take place via stationary or mobile devices. The Internet service provider works closely with the infrastructure providers, who connect the various Internet service providers with fast backbone networks across different countries and continents.

The e-government information and service provider develops, designs, and manages the e-government portal as well as the associated content and service offering. While service transactions are still mainly executed under their own direction, content creation is partly outsourced to content providers. In addition, other public sector organizations regularly take an expert role and provide content concerning e-government transactions within their scope of functions. Moreover, user-generated content plays an increasingly important role.

In combination, Internet service providers as well as infrastructure providers offer e-government service providers to host their system and/or the technological infrastructure for digital information and service provision. Usually depending on their size, the e-government service provider either possesses the necessary know-how internally or buys it on the market from external technology providers or software developers and programmers.

Another essential aspect is the e-government service provider's focus on the user since increasing user acceptance leads to a wider dissemination of the services provided. This in turn, leads to a release of public administration because services that have previously been provided face-to-face are then processed automatically. Figure 49 illustrates a schematic structure of e-government actors and interactions.

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1 The following is based on Wirtz 2013c.

Figure 49 Schematic E-Government Actors and Interactions Structure
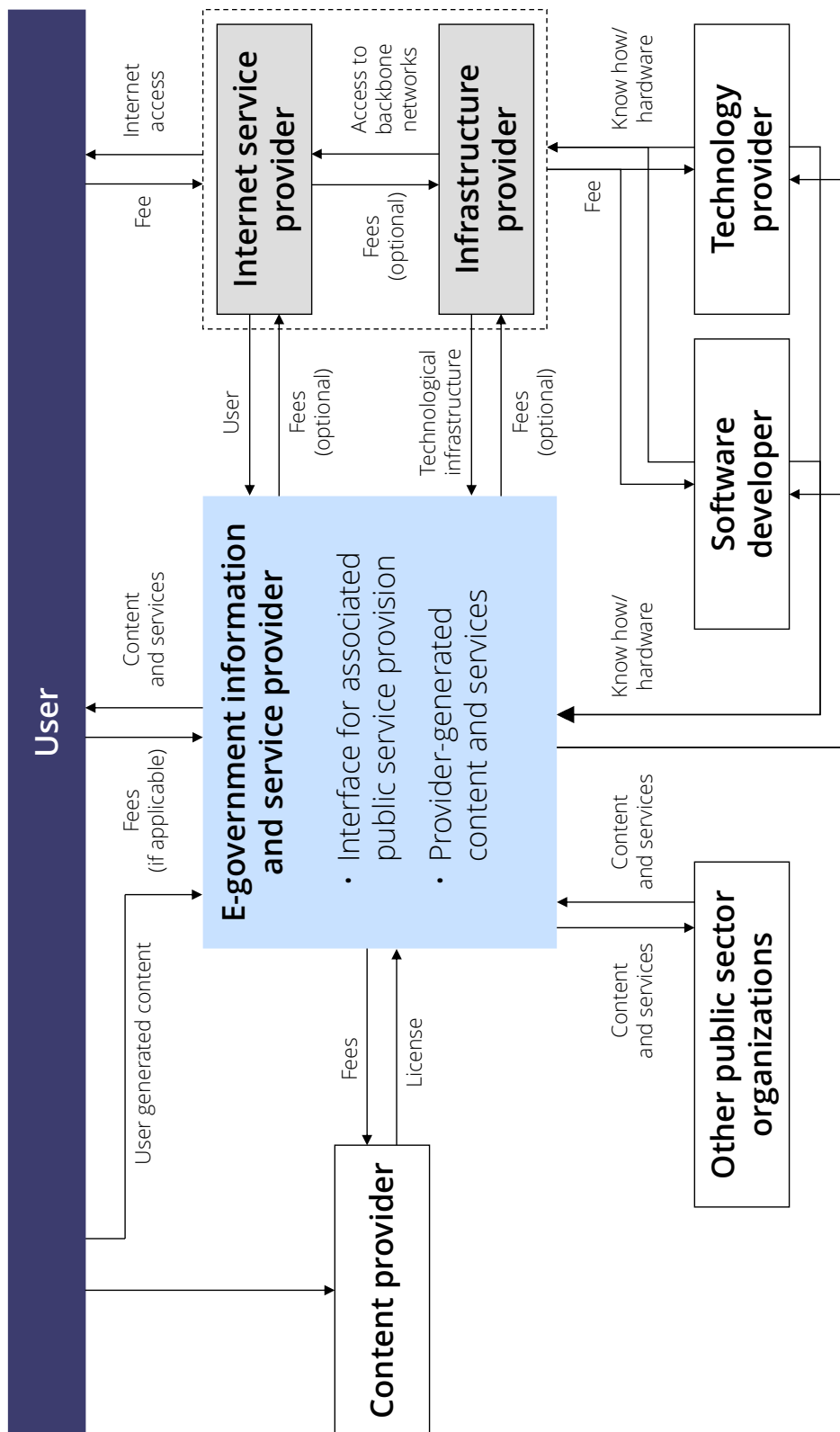


Source: Based on Wirtz 2013c.

Having defined the relevant e-government actors, interaction patterns, and interaction structure leads to determining the information and service offering. Thus, a broad set of e-government services that has been identified in the scientific literature is presented in the following two sections.

## 6.3 Government–to–Citizen Services (G2C)

E-government services have become an important part of public service provision. For this reason, this topic is a frequently discussed subject within science as well as public management and administration. Against this background, there exists a large number of scientific publications that study e-government services.

These studies either investigate a particular service, look at a specific service cluster, or analyze e-government service provision in general. Since a comprehensive overview of e-government services that also provides a systematic taxonomy for this field could not be found, it is developed in the following.

To derive an exemplary set of available e-government services, the investigation was conducted by means of the peer-reviewed scientific literature since this source represents state-of-the-art research (Arduini and Zanfei 2014). Moreover, this approach ensures that an adequate and comparable level of service cluster detail is maintained without running the risks of introducing too much detail or being too generic—issues that easily occur if services are directly collected from various e-government platforms.

The collected services were classified according to their service offering since this gives users and providers the possibility to distinguish between the respective categories in accordance with their desired utilization requirements. Furthermore, considering the historical development of e-government services, e-government service diversity has grown significantly in recent years. This growth was accompanied by an increase in e-government service complexity, which also suggests a classification of service offers.

Since a business model represents an abstracted, simplified system behind an organization's service offer and service provision, the ICTI E-Government Business Model is used for service classification and clustering.[1] This approach carries an additional advantage: The ICTI E-Government Business Model also serves as management instrument, which allows to directly link e-government services with the e-government business model management. Figure 50 again presents the ICTI E-Government Business Models with the respective subcategories.

Figure 50 ICTI E-Government Business Models with Subcategories
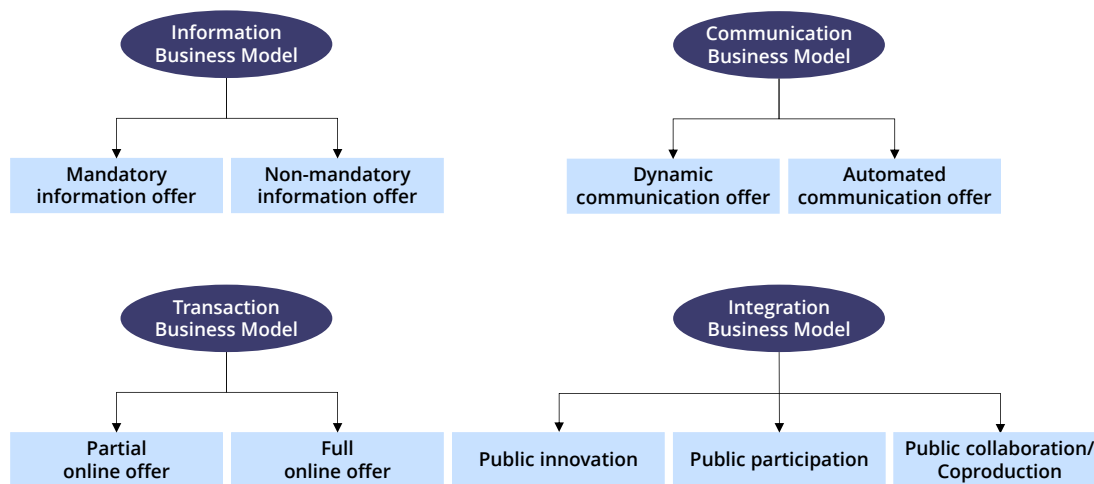


In the following, the e-government services that were identified in the scientific literature are presented according to their affiliation with the respective e-government business model and the corresponding subcategory.[2] Considering that the overview of e-government service offerings is based on a literature review and the ongoing, dynamic development of e-government services, the list cannot claim to be complete. But in light of the extensive analysis, it is considered more than acceptable to provide a thorough synopsis of e-government services.

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1 For further information on the ICTI E-Government Business Models, please refer to section 4.3.
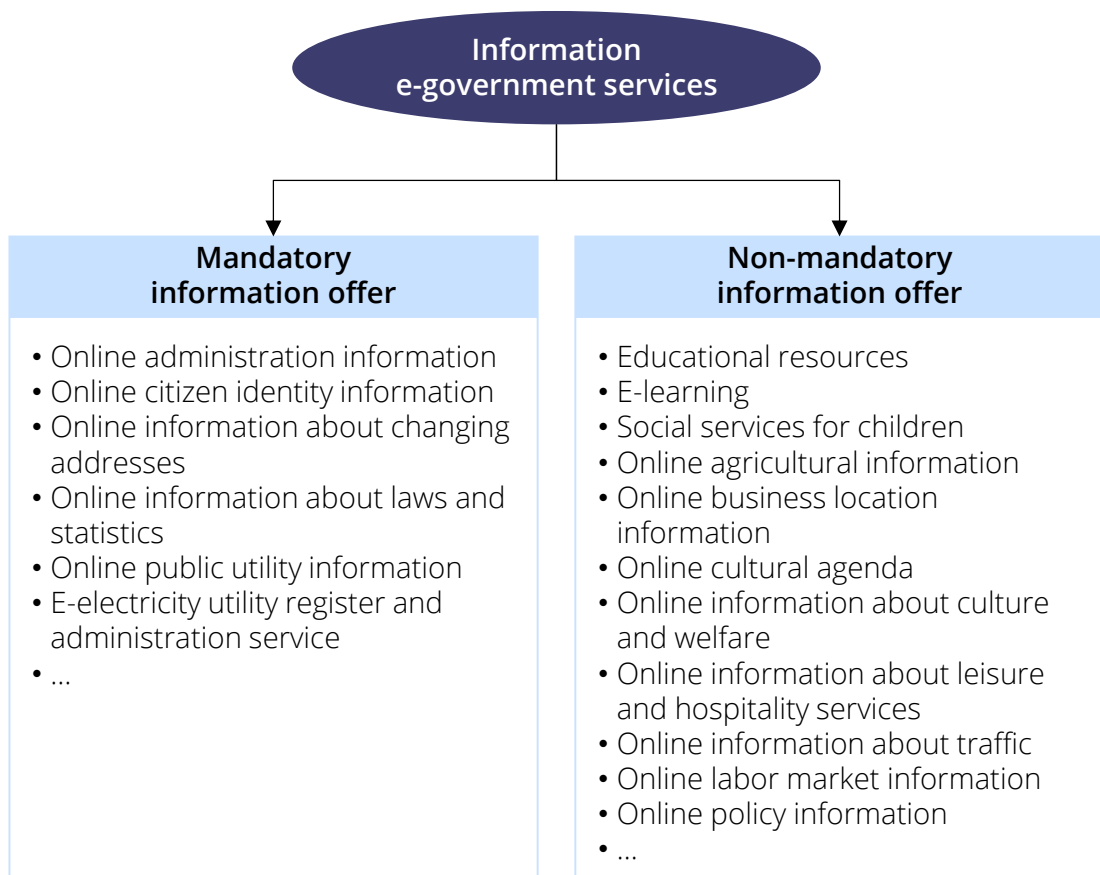2 The following is based on Wirtz, Daiser, and Balzer 2015.

Information-related e-government service offers can be divided into mandatory information offers and non-mandatory information offers. Mandatory information offers refer to information that needs to be supplied to public stakeholders in connection with services that have to be provided in accordance with laws or regulations. Examples are online administration information, online citizen identity information, and online information about laws and statistics.

Non-mandatory information offers describe information services that are neither required by law nor associated with any obligatory government service. Thus, non-mandatory information offers refer to services such as educational resources, online business location information, online cultural agenda, and online information about culture and welfare. Figure 51 shows typical information e-government services in a government-to-citizen setting.

Figure 51 Information E-Government Services (G2C)

**Information e-government services**

| **Mandatory information offer** | **Non-mandatory information offer** |
|---|---|
| • Online administration information<br>• Online citizen identity information<br>• Online information about changing addresses<br>• Online information about laws and statistics<br>• Online public utility information<br>• E-electricity utility register and administration service<br>• … | • Educational resources<br>• E-learning<br>• Social services for children<br>• Online agricultural information<br>• Online business location information<br>• Online cultural agenda<br>• Online information about culture and welfare<br>• Online information about leisure and hospitality services<br>• Online information about traffic<br>• Online labor market information<br>• Online policy information<br>• … |

The target of communication e-government services is the provision of online services that serve as communication possibilities for government-to-user interaction. These are made up of two subcategories: interactive communication offers and automated communication offers. Interactive communication services, such as call center services, help desk services, mailing services, online courses, or online consulting, require a two-way flow of information. The information exchange takes place between two active participants that have an impact on each other, and thus these communication services are of dynamic nature.
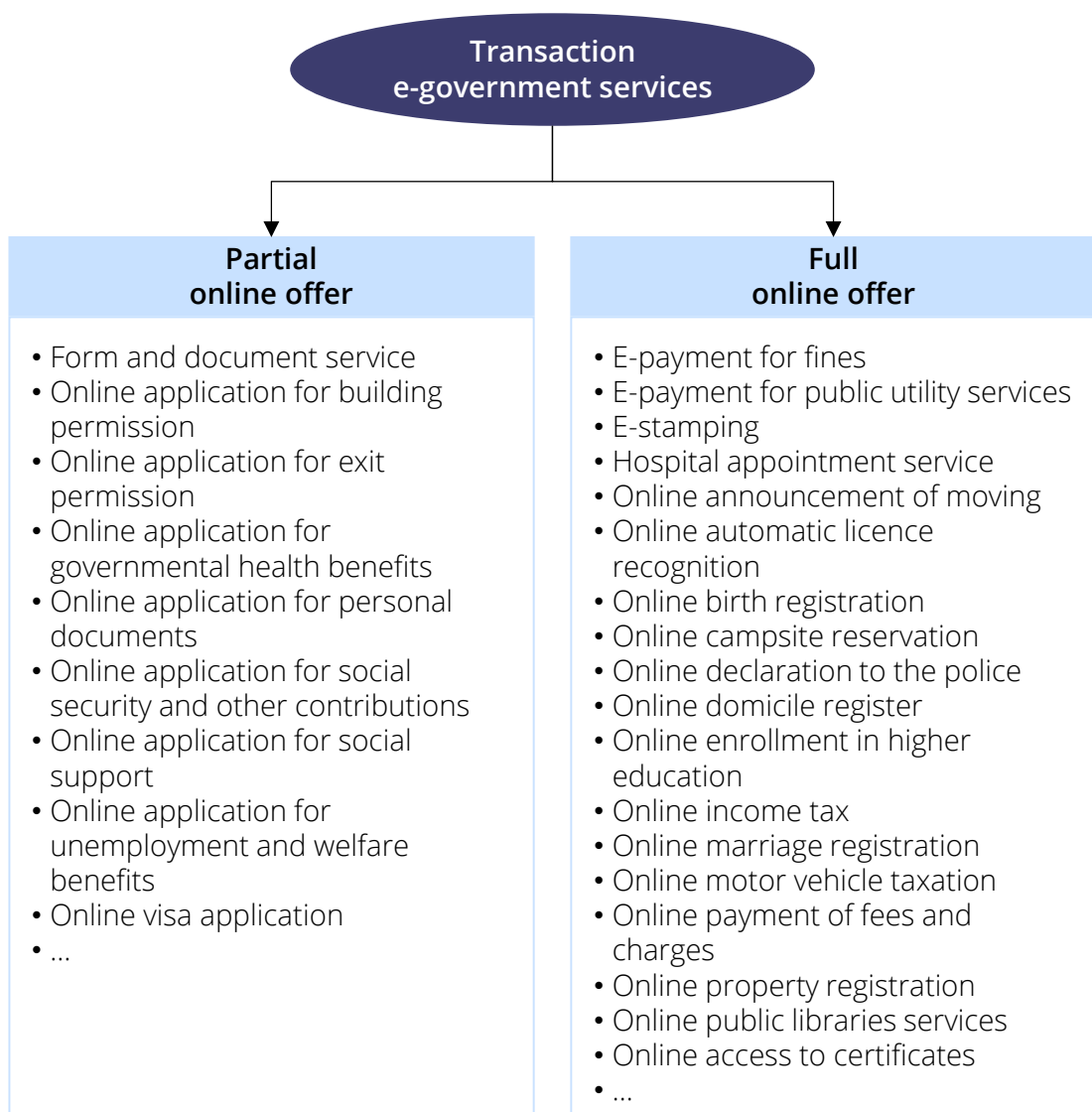
Automated communication services may show a one-way or two-way flow of information, but at least one participant of the communication is a machine or computer that exchanges information based on predefined algorithms. This means that automated communication takes place human-to-computer or computer-to-computer. E-government service examples of automated communication services are automated email notifications, information kiosks, mobile SMS-based notifications, online job searching portal, and online map service. Dynamic and automated communication e-government services are presented in Figure 52.

Figure 52 Communication E-Government Services (G2C)
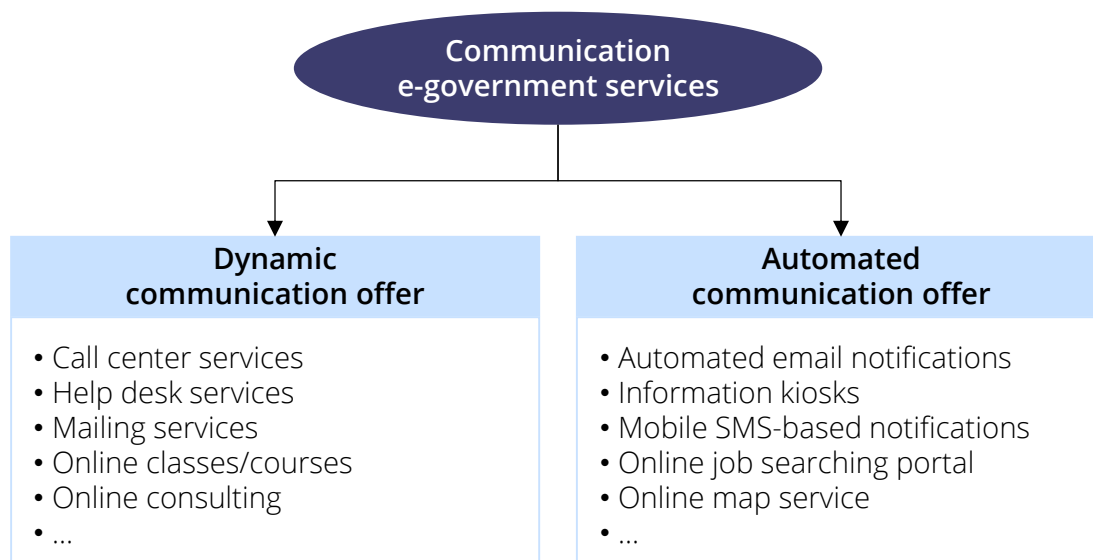
Transaction e-government services serve to initiate, handle, and process administrative procedures online. Their service offering can either be partial or full. Partial online offers refer to services that cannot be completed without at least one further media break. Examples of partial transaction e-government services are form and document service, online application for welfare benefits, and online visa application. Figure 53 presents typical transaction e-government services.

Figure 53 Transaction E-Government Services (G2C)

**Transaction e-government services**

**Partial online offer**

- Form and document service
- Online application for building permission
- Online application for exit permission
- Online application for governmental health benefits
- Online application for personal documents
- Online application for social security and other contributions
- Online application for social support
- Online application for unemployment and welfare benefits
- Online visa application
- ...

**Full online offer**

- E-payment for fines
- E-payment for public utility services
- E-stamping
- Hospital appointment service
- Online announcement of moving
- Online automatic licence recognition
- Online birth registration
- Online campsite reservation
- Online declaration to the police
- Online domicile register
- Online enrollment in higher education
- Online income tax
- Online marriage registration
- Online motor vehicle taxation
- Online payment of fees and charges
- Online property registration
- Online public libraries services
- Online access to certificates
- ...

In contrast, full online offers, such as e-payment for public utility services, online automatic number plate recognition, online enrollment in higher education, and online public libraries services, allow to initiate, process, and complete an administrative procedure entirely online.
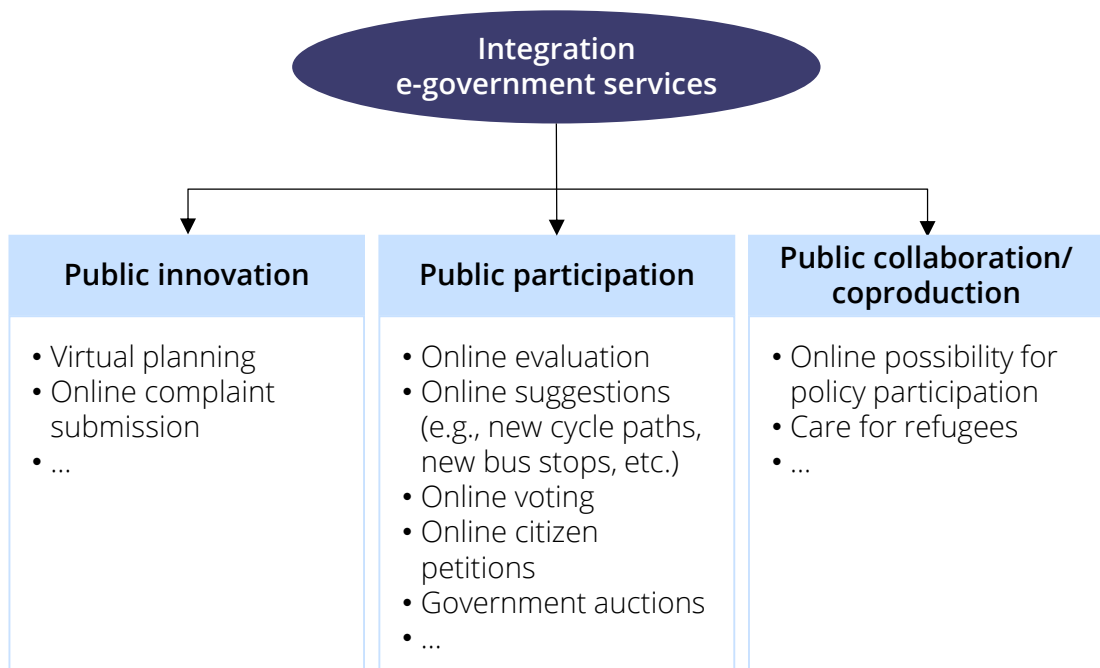
Integration e-government services serve to integrate users into the value chain of the public sector organization via participative, collaborative, or cooperative action. These services can be divided into the following subcategories: public innovation, public participation, as well as public collaboration and coproduction.

Public innovation e-government services enable the user to become part of the governmental or public sector innovation process. Examples are virtual planning and online complaint submission services. This way, external groups and individuals can engage in the public sector innovation process to complement public with citizen knowledge and experience and create higher value for the public.

Public participation e-government services enable users to indirectly shape public decisions and policy-making by calling attention to their preferences through user feedback, opinion polls, online petitions, etc. Typical public participation e-government services are online suggestion systems for new cycle paths or new bus stops, government auctions, and online citizen petitions.

While public participation e-government services allow indirect exertion of influence, public collaboration and coproduction e-government services directly involve the user into public decisions and policy-making by giving the user a proactive role in the respective process. Examples of integration e-government services in a government-to-citizen environment are shown in the following figure.

Figure 54 Integration E-Government Services (G2C)



<table>
<thead>
<tr><th>Public innovation</th><th>Public participation</th><th>Public collaboration/ coproduction</th></tr>
</thead>
<tbody>
<tr>
<td>• Virtual planning<br>• Online complaint submission<br>• …</td>
<td>• Online evaluation<br>• Online suggestions (e.g., new cycle paths, new bus stops, etc.)<br>• Online voting<br>• Online citizen petitions<br>• Government auctions<br>• …</td>
<td>• Online possibility for policy participation<br>• Care for refugees<br>• …</td>
</tr>
</tbody>
</table>

## 6.4  Government-to-Business Services (G2B)

Although government-to-citizen and government-to-business e-government services appear similar at first glance, there are significant differences embedded in these two service streams. These differences can be broken down into explicit and tacit dissimilarities.

Explicit dissimilarities are e-government services that de facto can only be used by either citizens or businesses. Examples of services that only apply to individuals are online birth registration, online marriage registration, or election services. Since companies do not fall in love and do not possess the right to vote, these e-government services are not relevant for business entities. Tacit dissimilarities refer to differences in content and trait of the e-government services provided as well as distinct characteristics of the service recipients.

While government-to-citizen e-government services aim at serving a huge number of citizens that are subject to manifold socio-cultural impacts, looking for convenient public service provision, and mainly driven by individual choices, preferences, and decisions, the government-to-business e-government services environment differs considerably from these attributes.

Business organizations represent a considerably lower number of service recipients and rather follow a rational cost-benefit approach. Moreover, their efficiency-oriented actions are usually based on collective, formalized decision-making. Against the background of the explicit and tacit dissimilarities between government-to-citizen and government-to-business e-government service provision, the e-government service provider always has to ensure to cover both perspectives.
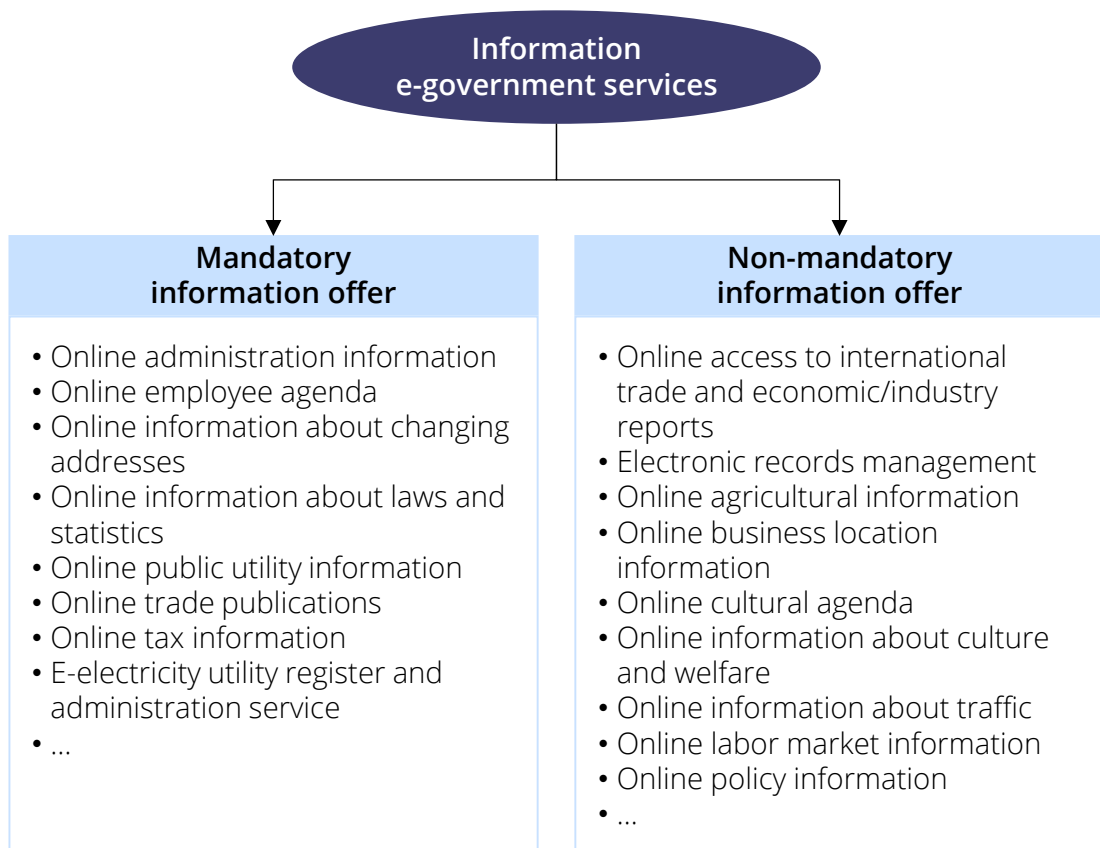
The e-government portal of Hong Kong is a good example to demonstrate this circumstance. Here, this issue has been solved by entirely separating public online e-government service provision for the two target groups.[1] When accessing the e-government portal, the user has the possibility to switch between citizen and business service offerings. Even though many services still appear to be similar, the service provision is completely tailored to the needs and requirements of the respective users. This boosts clarity, transparency, and user-orientation of the e-government service offering.

Similarly to the government-to-citizen setting, information-related e-government service offers are broken down into mandatory information offers and non-mandatory information offers. Although many services have the same denomination and show similar functionalities like in government-to-citizen service provision, the presentation and the content of the information has to be specified to the needs and requirements of business users. Figure 55 shows typical information e-government services in a government-to-business setting.

1 See http://www.gov.hk.

Figure 55 Information E-Government Services (G2B)



**Information e-government services**

| **Mandatory information offer** | **Non-mandatory information offer** |
|---|---|
| • Online administration information<br>• Online employee agenda<br>• Online information about changing addresses<br>• Online information about laws and statistics<br>• Online public utility information<br>• Online trade publications<br>• Online tax information<br>• E-electricity utility register and administration service<br>• … | • Online access to international trade and economic/industry reports<br>• Electronic records management<br>• Online agricultural information<br>• Online business location information<br>• Online cultural agenda<br>• Online information about culture and welfare<br>• Online information about traffic<br>• Online labor market information<br>• Online policy information<br>• … |

Concerning communication e-government services, which refer to the provision of online services that serve as communication possibilities for government-to-user interaction, greater differences between the service offerings of the two target groups can be seen.

In the e-government service subcategory dynamic communication offer, for example, particular business services, such as assistance on complying with local, state, and federal regulations, business online network/contractors, and videoconferencing services, are provided. Figure 56 outlines common communication e-government services.

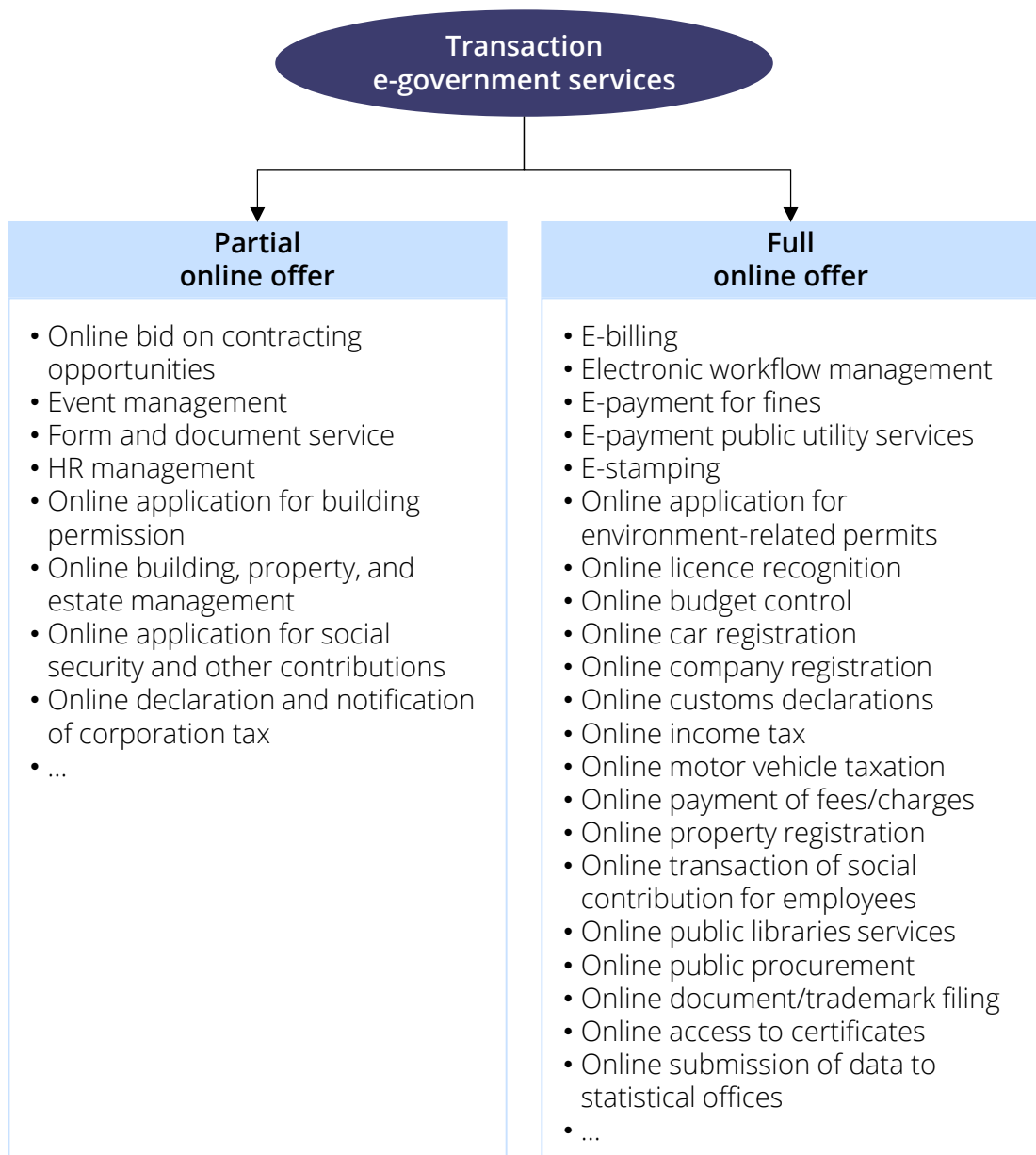Figure 56 Communication E-Government Services (G2B)
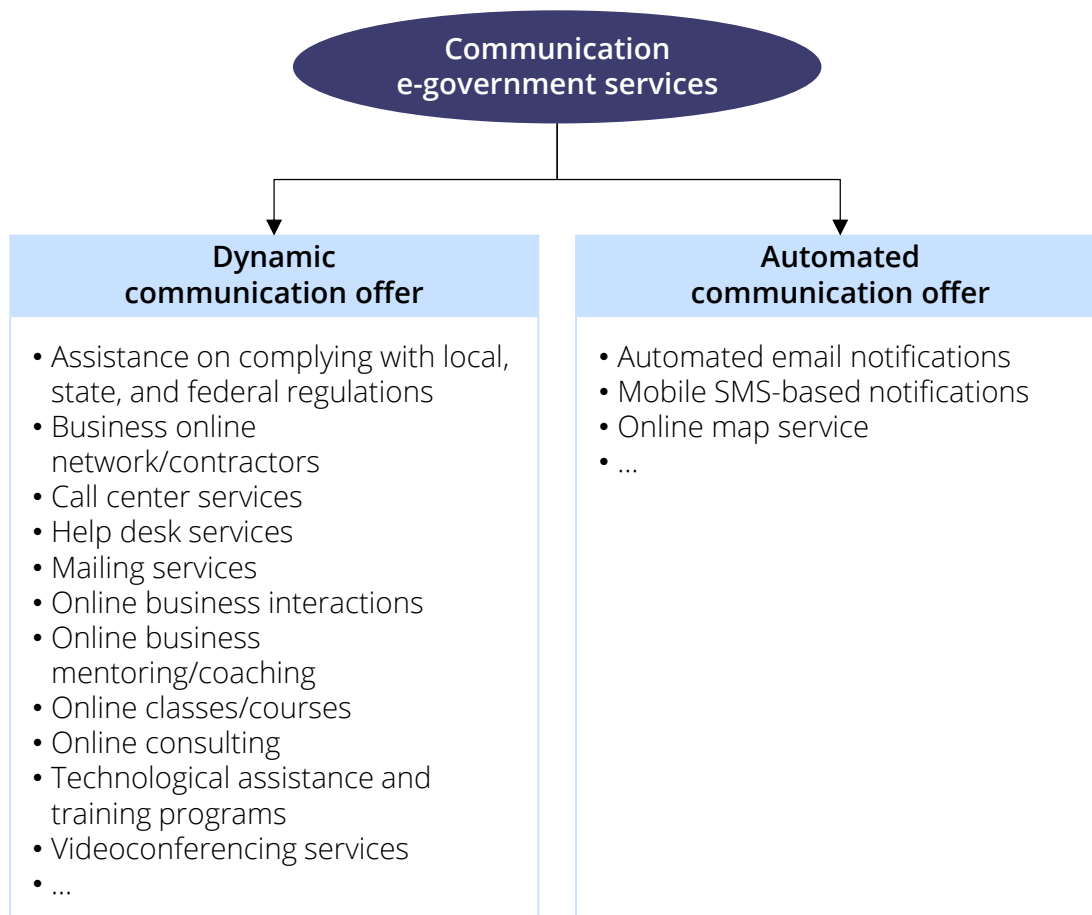


When comparing transaction e-government services of a government-to-citizen and a government-to-business setting, which serve to initiate, handle, and process administrative procedures online, several different services can be identified. In the case of partial online offers, examples of typical transaction e-government services in a government-to-business setting are event management, HR management, as well as online declaration and notification of corporation tax services.

The same holds true for full online offers. Here, e-billing, electronic workflow management, online transaction of social contribution for employees, online public procurement, online document and trademark filing, online submission of data to statistical offices are examples of e-government services that particularly fit the needs of business users. Figure 57 presents typical transaction e-government services in a government-to-business setting.

Figure 57 Transaction E-Government Services (G2B)



**Transaction e-government services**

**Partial online offer**

- Online bid on contracting opportunities
- Event management
- Form and document service
- HR management
- Online application for building permission
- Online building, property, and estate management
- Online application for social security and other contributions
- Online declaration and notification of corporation tax
- …

**Full online offer**

- E-billing
- Electronic workflow management
- E-payment for fines
- E-payment public utility services
- E-stamping
- Online application for environment-related permits
- Online licence recognition
- Online budget control
- Online car registration
- Online company registration
- Online customs declarations
- Online income tax
- Online motor vehicle taxation
- Online payment of fees/charges
- Online property registration
- Online transaction of social contribution for employees
- Online public libraries services
- Online public procurement
- Online document/trademark filing
- Online access to certificates
- Online submission of data to statistical offices
- …

Integration e-government services integrate users into the value chain of the public sector organization via participative, collaborative, or cooperative action. Sticking to the ICTI E-Government Business Model methodology, these services can be divided into the subcategories public innovation, public participation, as well as public collaboration and coproduction.

For public innovation services, no particular differences regarding e-government services (e.g., virtual planning and online complaint submission) could be identified between the government-to-citizen and the government-to-business e-government service offering. In the public participation service category, the government-to-business setting shows less e-government service offers since daily life services, online voting, or online petitions are pure citizen services.

Concerning the findings of the literature review, which was conducted to identify the set of e-government services that serves as a basis for this e-government service overview, no government-to-business service could be identified that fits the public collaboration and coproduction service subcategory.

Figure 58 Integration E-Government Services (G2B)
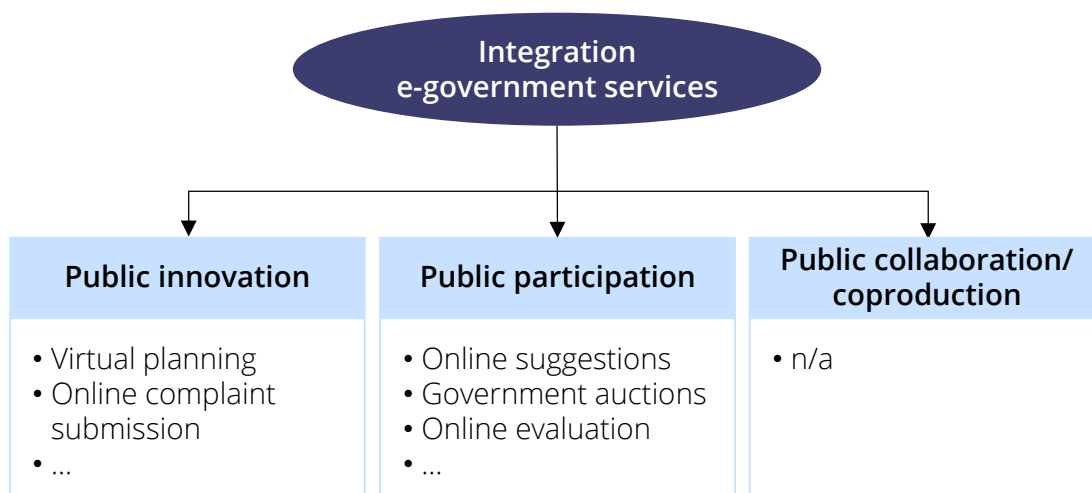


Summing up, the high number of already available e-government services, ranging from information to integration purposes, demonstrates that e-government has come a long way since the first digital public information provision. Moreover, this shows that e-government service provision has become an important instrument of public governance and administration.

This impression is underlined by the variety of e-government maturity models, which indirectly confirm the progress achieved and the high current state from a technology as well as a service provision view by generally showing high development levels in the final stage of the models.

From an e-government management perspective, e-government service provision needs a clear focus on the target groups that ought to be covered by the e-government portal. When selecting actors and interaction patterns citizens, private sector organizations, and public sector organizations have to be taken into account.

Although the e-government service offering can conceptually be built straightaway on the ICT E-Government Business Model and its respective service subcategories, the dissimilarities of a government-to-citizen and a government-to-business setting have to be kept in mind when designing, developing, and maintaining the e-government portal.

Apart from that, it has to be mentioned that the service overview—despite the extensive underlying literature review—cannot claim to be exhaustive. Even if it could, it would not reflect the services of top-notch e-government portals anymore by the time of publication since information and communication technology is advancing and the digitalization of public sector organizations is increasing.

However, the overview should provide acceptable insights into e-government service provision. Especially, the systematic allocation of e-government services to the ICTI E-Government Business Models seems useful for managing online public service offers and provides a clear-cut approach to e-government service supervision.

The next step of successful e-government service provision is to develop the ability to interact with existing and potential users on various channels and platforms to make the e-government services ubiquitously available to the stakeholders of the respective public sector organization. This is outlined in the following chapter.

# 7   Multichannel E–Service Delivery

As part of the dissemination and commercial use of modern information and communication technologies and the Internet as well as the public acceptance of these media, online-based channels were put in place that have created various new e-service delivery possibilities. These stationary or mobile Internet-based interaction channels have become a vital factor for public service provision and user relationship management (Wirtz, Büttner, and Schwarz 2003).

In e-commerce, for instance, the Internet and the forms of distribution based on this technology represent up-to-date distribution channels that are used in numerous ways to either replace or complement traditional sales channels. The particular importance of combining online and offline channels lays in the additional advantages that are related to Internet-based service offering benefits as well as to the specific cost structure of the Internet.

Online banking is a textbook example of multichannel e-commerce service delivery. Today, clients can use several channels to carry out their banking transactions (e.g., via counter, telephone, mail, or Internet). The increasing shift of activities from traditional face-to-face counter interactions to automated modern online transactions brings along tangible benefits for the banking institutions.

If all factors remain constant, an increase in online banking activities leads to a reduction in offline banking activities because customer traffic is relocated to automated online service provision. Therefore, banks could reduce the size of their expensive branch network, which led to a significant cost reduction of 70% to 90% in e-banking service delivery.

Concerning e-government service provision, efficiency gains and cost benefits of e-government services compared to traditional public service provision are undisputed (United Nations 2014). In a UK government survey, for instance, the consulting firm PriceWaterhouseCoopers (2009) estimated cost benefits of online public service provision at 3.30 to 12.00 GBP per transaction.

In addition to the efficiency and monetary benefits that multichannel e-government service delivery offers providers, there are also various advantages for users, such as 24/7 availability and an overall improved customer service (Teerling and Pieterson 2011). "As a result, the delivery of public services is becoming increasingly multichannel: over the counter, by mail and telephone, over the Internet, via text and television, etc." (Gagnon et al. 2010, 213).

But since the reasons to provide online e-government services are mainly driven by rational arguments like cost efficiency and the reasons to utilize them rather depend on personal and situational characteristics, there still exists a strong mismatch between government and citizen channel preferences (Ebbers, Pieterson, and Noordman 2008). Generally speaking, citizens still prefer to use the more expensive personal offline channel (Teerling and Pieterson 2011).

Since users do not directly have to bear the costs of e-government service provision, the latter have to be tailored to the users' needs and preferences to incentivize them to switch to cost-efficient online services (Gagnon et al. 2010; Teerling and Pieterson 2011). Here, the challenge for public administration is to provide e-government services that are suitable for all citizens and organizations. Thus, effective multichannel e-government service delivery requires a clear multichannel strategy.

## 7.1   Multichannel E–Government Strategy

Multichannel e-government management consists of a strategic and an operative component that both aim at harmonizing the different user preferences with the constraints of public administration and the limitations of the channels used. This task is cumbersome since public sector organizations usually do not adapt to pressure from competition or the market. What makes them move is public demand or political will (Lynn 1998).[1] For this reason, multichannel e-government service delivery often lacks user orientation (Reddick and Turner 2012), and thus new service channels sometimes just emerge because of certain add-on trends instead of establishing them in a purposeful and target-oriented way. Apart from that, this evolutionary process may carry further essential disadvantages.
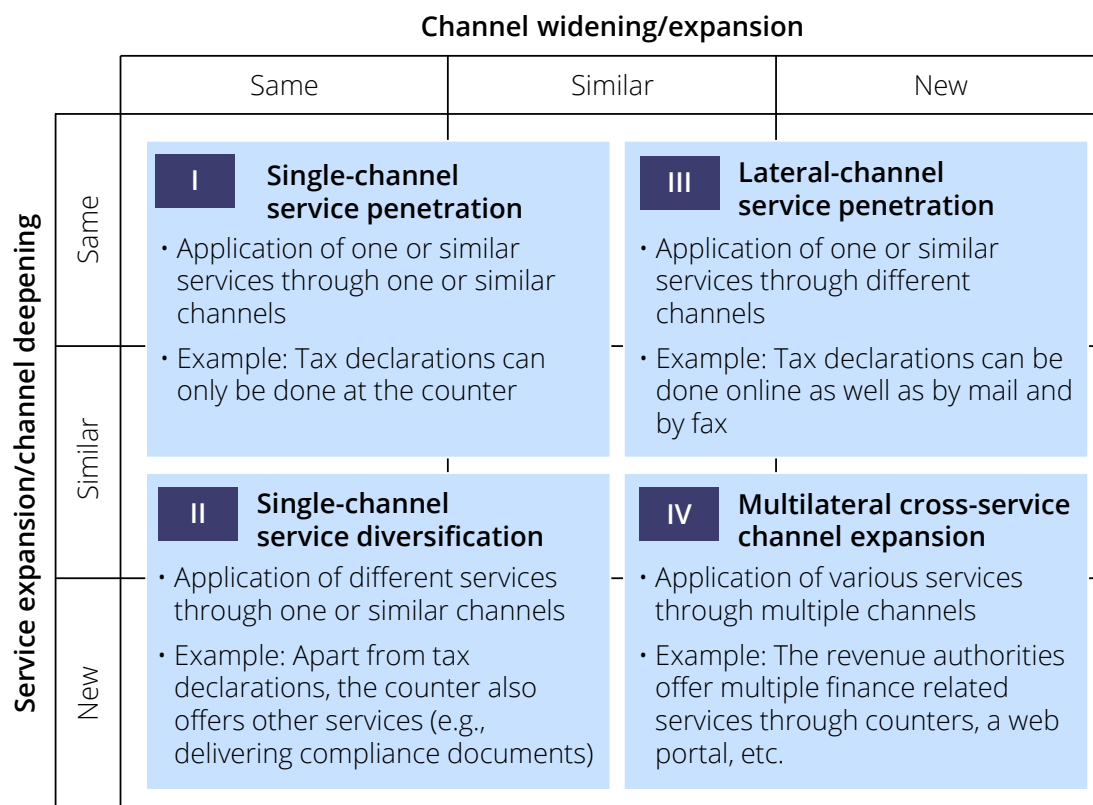
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1 The following is based on Wirtz and Langer (2015).

Normally, channel structures and the underlying technology follow path dependencies that are not designed for interdependence with other channels (Wilson and Daniel 2007). Moreover, it is often neglected if the channels actually have been proven to be particularly useful or if their complementary use provides additional value (Ebbers, Pieterson, and Noordman 2008).

From a strategic e-government perspective, public sector organizations have the choice to expand their e-government service delivery through new channels or broaden existing channels. Following Ansoff's approach for strategic diversification, the Service-Channel Diversification Model (see Figure 59) helps to explain whether and how e-government service delivery should be expanded.[1]

Figure 59 Service-Channel Diversification Model (SCD Model)

**Channel widening/expansion**

| | Same | Similar | New |
|---|---|---|---|
| **Same** | **I** **Single-channel service penetration**<br>· Application of one or similar services through one or similar channels<br>· Example: Tax declarations can only be done at the counter | | **III** **Lateral-channel service penetration**<br>· Application of one or similar services through different channels<br>· Example: Tax declarations can be done online as well as by mail and by fax |
| **Similar** | **II** **Single-channel service diversification**<br>· Application of different services through one or similar channels<br>· Example: Apart from tax declarations, the counter also offers other services (e.g., delivering compliance documents) | | **IV** **Multilateral cross-service channel expansion**<br>· Application of various services through multiple channels<br>· Example: The revenue authorities offer multiple finance related services through counters, a web portal, etc. |
| **New** | | | |

*Service expansion/channel deepening*

Source: Wirtz and Langer 2015.

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1 The original Ansoff matrix (1957), which showed product-market strategies for business growth alternatives, differentiated existing and new markets and existing and new products.

The SCD Model is based on the two perspectives of channel widening/expansion and service expansion/channel deepening. This leads to a fourfold table providing the following four generic strategies: (1) single-channel service penetration, (2) single-channel service diversification, (3) lateral-channel service penetration, and (4) multilateral cross-service channel expansion.

Single-channel service penetration focuses on a particular service within a particular channel. This can be an effective strategy for e-government services that are already successfully provided to the users. However, this one-channel strategy may also aim at further improving the specific service within the existing channel and thus tailoring it even better to the users' needs and requirements. This e-government service development refers to the single channel service diversification strategy.

Lateral-channel service penetration strategy refers to taking an existing service but offering it through various channels. In the case of a multilateral cross-service channel expansion strategy, a new e-government service is provided to the users via new channels. Although one could think that a maximum strategy (using as many channels and services as possible) may be the best way to go, this does not necessarily lead to better user orientation or to more effective service provision. Here, a proper multichannel e-government management that suits the particular requirements is the better solution (Gagnon et al. 2010).

Before going further into the e-government multichannel strategy subject, we will have a look at the channel characteristics of public service delivery. According to the public multichannel model of Wirtz and Langer (2015), public service provision and customer relationship management can be conducted via several channels in an e-government multichannel context (see Figure 60).

In a first step, they categorized relevant e-government service channels and distinguished between online and offline-based service provision. At first glance, it may seem unusual to see telephone and telefax services in the online service category since these were established long before the rise of the Internet. However, telephone and telefax were switched from analogue to digital IP-based technology and thus clearly classify as online channels.

In a second step, the determined channels (e.g., counter/service desks, postal mail, social media, etc.) were evaluated according to their communication capacity and their service delivery capacity, which are two important channel characteristics from a provider perspective, describing their particular e-government value.

A channel provides value to the multichannel e-government system if it is useful, effective, and efficient. These dimensions are reflected in the two criteria communication capacity, which refers to communicative characteristics of the channel, and service delivery capacity, which refers to the ability to support financial and legal interaction.

Personal service provision through the service desk, for instance, allows immediate personalized interaction. This generally provides the highest possible communication capacity. However, this form of interaction also carries significant inefficiencies: regularly providing repetitive or similar information to individual visitors, including media breaks, expensive to maintain, etc. Therefore, the communication capacity is still seen as high, but not complete.

On the one hand, online channels generally support service provision with lower transaction costs than offline channels, especially when taking into account automated online communication channels. On the other hand, automated service provision is limited with regard to communication interaction.

Service provision capacity refers to a channel's ability to provide or support financial and legal interaction. Similarly to the former category, usefulness, effectiveness, and efficiency determine a channels' level of service capacity. While public gazettes and private papers, for example, allow communication, they do not support financial or legal interaction. Hence, they are not regarded to possess any relevant service provision capacity.

Considering the service provision capacity of the counter/service desk, all financial and legal services provided by the public sector organization can be used. For this reason, the service provision capacity of this channel is rated as complete, which represents the highest degree of service provision capacity.

The customer touch points, which function as customer interfaces, present the connection between the offline and online service channels and e-government. Similar to the different service channels, customer touch points vary in their communication and service provision capacities. Wirtz and Langer (2015) identified the following constellations: information points, communication points, service points and transaction points.

Information points represent the interface with the lowest level of user-provider interaction since these only allow one-way communication and thus do not provide any feedback or communication option. Examples are static websites that only show information content as well as newspapers or television, which in principle do not support two-way communication.

Communication points enable two-way communication between the e-government provider and its stakeholders. These customer touch points mainly serve personalized consultation purposes. Typical examples are telephone, citizen-to-citizen, social media, and messenger/chat service channels.

Service points are customer touch points that allow physical non-legal interaction between the user and the e-government service provider. At the service points, which function as a kind of public service receptions, citizens can collect forms and documents, receive garbage stamps, etc.

Transaction points represent the most comprehensive interface between the user and the e-government provider. At these customer touch points, public stakeholders can execute legal and financial procedures, such as applying for IDs and passports, birth certificates, marriage certificates, payments, etc. Examples of transaction points are counter/service desks and full online service e-government portals.

In addition to the service channels and customer touch points that are established and used by the e-government service provider, public stakeholders are also influenced by effects that are much more difficult to control. These influences, which are, for example, caused by word-of-mouth and review information, come from so-called reference points that are not directly controllable by the service providing organization (Reichheld 2003; Wirtz 2013d).

All public stakeholders—citizens, private organizations, and public organizations—possess certain reference points, which are beyond an e-government provider's direct control but influence their opinion about particular topics. For this reason, e-government providers should try to follow reference point information flows to take appropriate measures in case these become conducive and constraining forces. Figure 60 provides an overview of relevant e-government online and offline channels as well as the associated customer touchpoints.

Figure 60 Channel Characteristics of Public Service Delivery
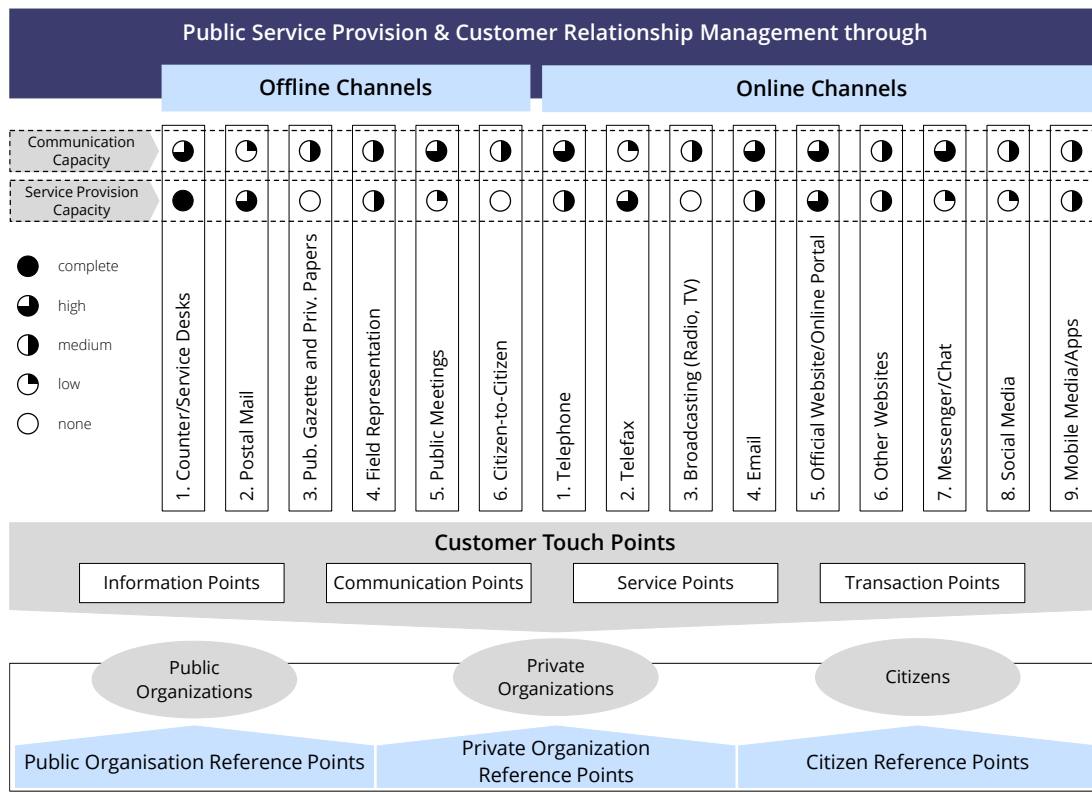


Source: Wirtz and Langer 2015.

Designing and implementing an efficient multichannel management demands a strategic and target-oriented approach. But so far, only little knowledge concerning systematic management of multichannel e-government is available for public managers. Inspired by the multichannel model that is applied within the field of media and Internet management (cf. Wirtz 2002), Wirtz and Langer (2015) elaborated a public multichannel strategy framework, which is outlined in Figure 61 on the following page.

The framework breaks public multichannel management down into three different strategies: Isolated Channel Strategy, Combined Channel Strategy, and Integrated Channel Strategy. An isolated Channel Strategy refers to the situation that the individual channels of the multichannel system are run independently and are not linked to each other. This means, the individual channels compete with one another since users have to decide which channel to use and stick to their decision.

This structure often is the outcome of an evolutionary multichannel management, where additional channels have been added over time (Kernaghan 2005). In this respect, usually one channel (e.g., counter/service desk) serves as a key channel and the other channels (e.g., postal mail, mobile apps, etc.) are run as a kind of add-on service provision. Summing up, an Isolated Channel Strategy places high responsibility on the individual channels and is characterized by a generally decentralized structure.

Figure 61 Public Multichannel Strategy Framework



| Approach / Aspects | Isolated Channel Strategy | Combined Channel Strategy | Integrated Channel Strategy |
|---|---|---|---|
| Coordination | • Uncoordinated channels/ channel-inherent management<br>• Closed channel structure<br>• Channel competition | • Partially coordinated channels/channel-inherent management<br>• Loosely linked channel structure<br>• Channel competition | • Completely coordinated channels/comprehensive channel management<br>• Interdependent channel structure<br>• No competition between channels |
| Formation | • Lead channel structure<br>• Channel-specific management | • Mostly lead channel Structure<br>• Comprehensive channel management | • Multichannel structure<br>• Centralized overall channel management |
| Organization | • High individual responsibility<br>• Low coordination<br>• High decentralization | | • High interdependence<br>• High coordination<br>• High centralization |

Source: Wirtz and Langer 2015.

The Combined Channel Strategy also follows the approach of having a lead channel, but distinguishes itself from the Isolated Channel Strategy through the symbiotic use of additional channels that complement the lead channel. Instead of pursuing individual stand-alone channels, the Combined Channel Strategy requires a comprehensive multichannel approach.

An example of Combined Channel Strategy use is an online scheduling platform that supports visitor management at the counter/service desks. Although the counter is the primary channel, waiting lines can be avoided and e-government providers can enhance their personnel planning.

This way, the advantages of different channels can be combined into the overall service provision. Moreover, a target-oriented, value-creating application of various channels leads to cost and convenience benefits for the user and the provider.

The Integrated Channel Strategy aims at providing e-government services through interconnected and interchangeable service channels. This means that users can conduct administrative procedures in person or remotely and switch to another service channel during the process. For instance, a user begins a service online from a stationary personal computer, continues the service processing by handing in particular documents that he or she does not want to transmit via mail or Internet at the counter, and follows the status of the administrative procedure on a mobile device, such as a tablet or mobile phone.

In this setting, the channels are interdependent, their management demands high coordination efforts, and the multichannel system shows a centralized structure. This is required since the e-government service provider needs to plan, coordinate, and control the entire multichannel service portfolio. This approach allows to tailor the e-government service offer specifically to the needs and preferences of particular user groups and to combine them reasonably for achieving value-adding synergies.

From an organization perspective, the three strategies demand a different handling. While the Isolated Channel Strategy usually requires less coordination effort from a central management view, the Integrated Channel Strategy follows a centralized approach that needs a key responsible person or department that coordinates the e-government service provision. The Combined Channel Strategy lies in between the other strategies. Thus, it is a management process of give and take between central, staff, and decentral departments. It can be stated that an increasing e-government service integration level leads to a rising central coordination effort.

The design and implementation of a public multichannel management system demands a coordinated approach, involving all internal stakeholders of the e-government provider. For this reason, a systematic proceeding is recommended, which is explained in the following section.

## 7.2  Design Multichannel Strategy and System

The process of designing the multichannel system consists of four consecutive steps, which illustrate the entire progress of an ideal development of multichannel strategies and systems.[1] These four steps comprise the analysis of the initial strategic situation, a markets segmentation, the strategic definition of the multichannel management strategy, and the design of the multichannel management system.

Strategic decision-making is long-term oriented. The planning process for strategy development starts with an analysis of the initial strategic situation of the e-government-providing public sector organization.[2] Thus, in the first step, the external and internal influences need to be analyzed and an analysis of the strengths, weaknesses, opportunities, and threats of the e-government multichannel endeavor has to be conducted.

The overall aim of this step is to get a transparent view on the specific user and market needs as well as requirements. Furthermore, the internal analysis, which focuses on the organization's competencies and resources, should deliver the organization's status concerning personnel and technical readiness for approaching the respective strategies.

Based on the results of these analyses, the market segmentation step divides the market into particular target groups. These target groups have to be determined in a way that allows a successful, target group-oriented market cultivation. For this purpose, geographic, socio-demographic, behavioristic, psychographic, and use-oriented market segmentation approaches are frequently applied.

The third step of multichannel strategy and system design is the strategic definition of the multichannel management strategy. In this part of the process, the responsible decision makers determine the thrust of the e-government multichannel system. Thus, the definition of the market cultivation strategy and the user-oriented strategy are key parts of this step.

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1 The following is based on Wirtz 2013d.
2 For further details on strategic management, please refer to section 3.2.

The final step, design of the multichannel management system, can be broken down into four substeps: potential channels and user-oriented strategy, multichannel management layout, selection of multichannel system channels, and selection of channel participants. Figure 62 shows the schematic overall flow of the strategic multichannel management process.

Figure 62 Strategic Multichannel Management Process
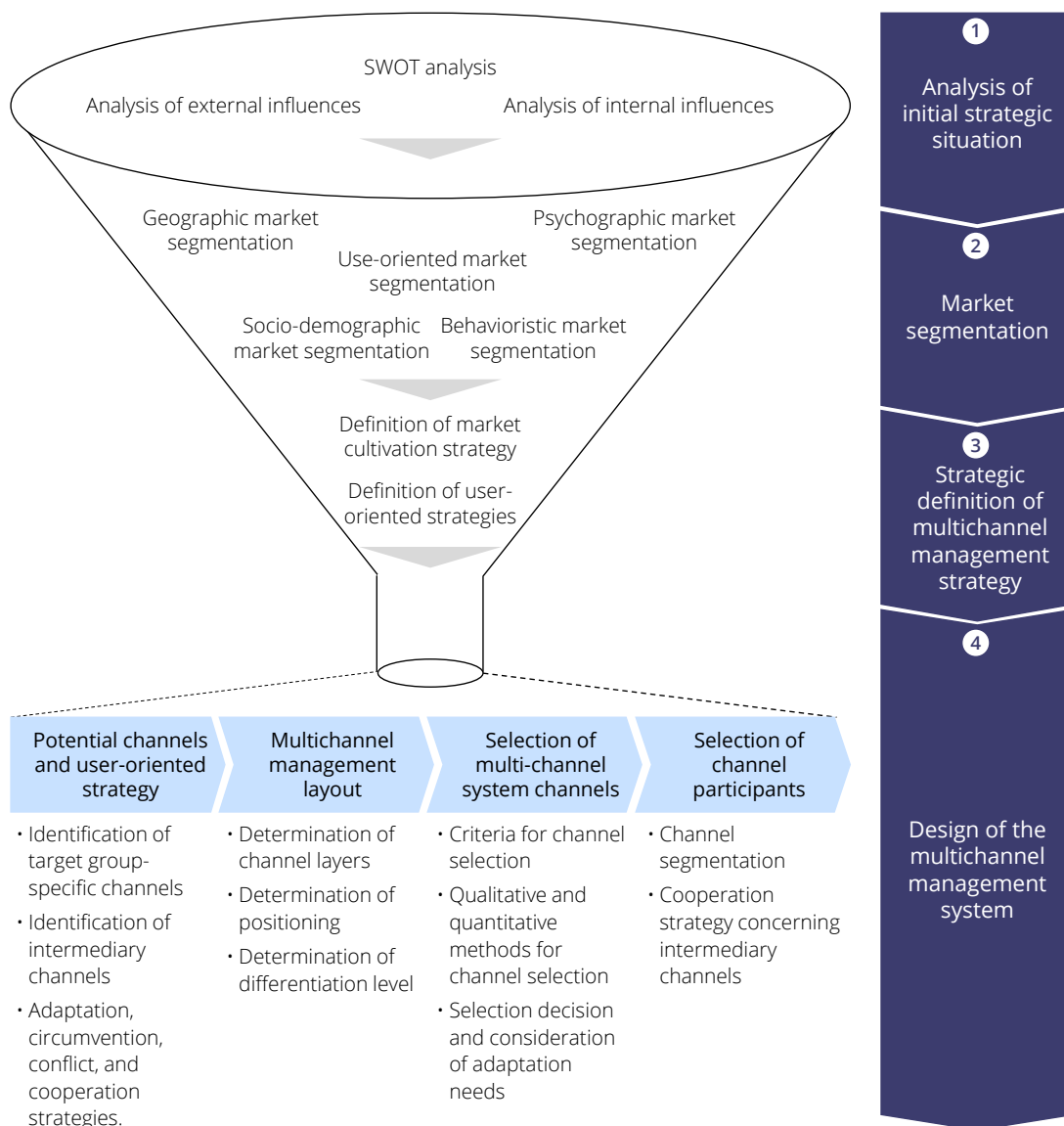


Source: Based on Wirtz 2013d.

The process step potential channels and user-oriented strategy covers activities that are associated with the identification of group-specific channels, identification of intermediary channels, as well as the definition of the adaptation, circumvention, conflict, and cooperation strategies. Concerning e-government multichannel management, intermediary channels summarize the channels that are operated by third parties, but used within the e-government service provision (e.g., Facebook, Twitter, TV channels, city portals, etc.).

The substep multichannel management layout refers to the activities that define the number of channel layers, the positioning of the system, and the level of differentiation that the channels shall possess. The number of channel layers determines the number of distribution steps that are necessary from service initiation to service completion. The positioning of the system brings in the marketing perspective by dealing with the positioning activities that are necessary to attract user attention. Concerning the variety of the channels, the level of differentiation determines the distinctiveness of the e-government services.

The selection of multichannel system channels begins with the definition of channel selection criteria. The following selection process should be supported by using qualitative and quantitative methods that allow a holistic and rather objective picture to compare the different channel solutions. Based on the result of the selection analysis, a selection decision must be made, which should already take into account the potential management of changes.

Having defined the multichannel approach and associated channels, the desired structure of the multichannel system with regards to own and intermediary service channel provision has to be defined. This means that the channels follow a clear segmentation approach that allocates them to the respective process participants and thus determines who operates and who takes responsibility for the channel. This is especially important for service offers that are provided by intermediary channels since the technical handling is not made in-house.

When looking at the technological development of modern information and communication technologies as well as the associated innovations in e-government service provision, mobile technology and social media have significantly expanded the possibilities of public multichannel management. These two topics and their leveraging potential for e-government are outlined in the following section.

## 7.3 Mobile and Social Media Channel Strategy

The basis for successful usage of mobile technology are powerful mobile networks and a sufficient amount of users that use these networks.[1] With rising performance of the mobile networks and an increasing number of mobile devices and applications that support the use of mobile networks, this market has grown substantially over the past 20 years.

According to the estimate of the ITU (2015), there will be more than 10.5 billion active mobile-cellular telephone and mobile-broadband subscriptions at the end of 2015. Figure 63 presents the worldwide development of mobile network connections from 1995 to 2015.

Figure 63 Worldwide Development of Mobile Connections[2]



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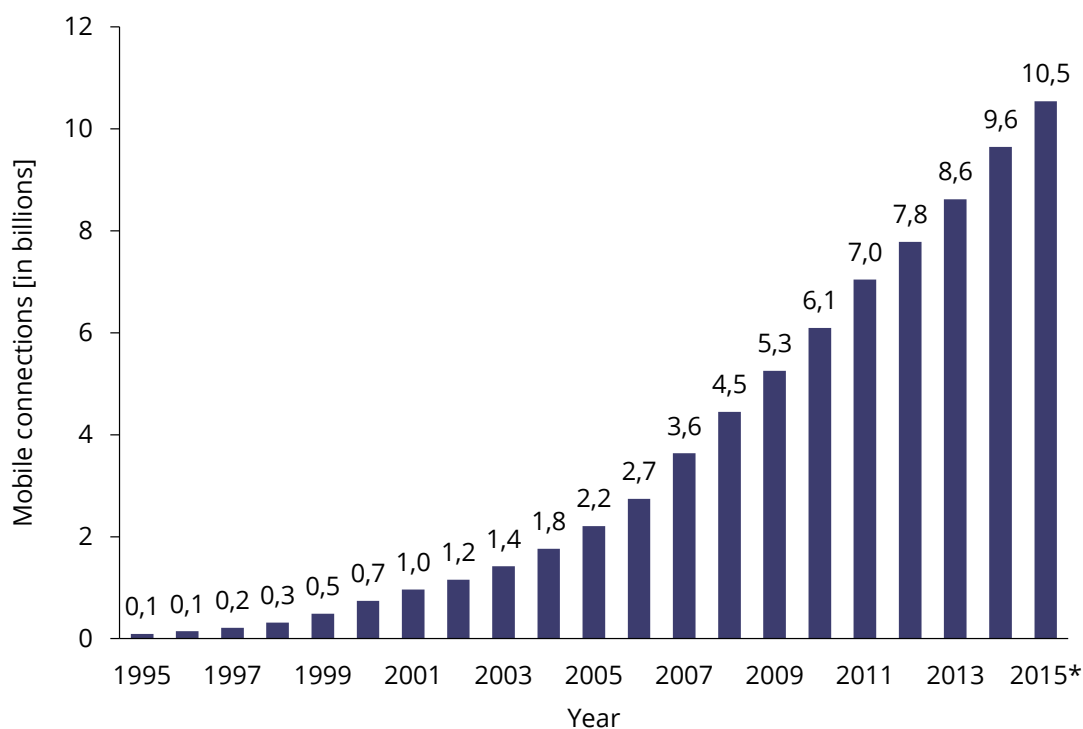
1 The following is based on Wirtz 2016.
2 All figures based on ITU (2015) data "Key ICT indicators for developed and developing countries and the world" (sum of mobile-cellular telephone and active mobile-broadband subscriptions). * 2015 estimated.

A driving force behind this development may be the growing enthusiasm for data-intensive mobile applications and their use in private and professional life. Especially the possibility of accessing personal and important information without any temporal or local restriction is a vital factor.

Mobile Internet uses radio-based wireless devices that allow the establishment of mobile networks. Thus, users are not bound to use stationary devices anymore—they can do this now basically from wherever they want. Moreover, this technology provides new and interesting service offers (e.g., location-based services) that serve as a basis to further develop digital service provision (Kim, Chan, and Gupta 2007).

Transferred to the e-government context, it "[...] is a subset of electronic government comprising an alternative provisioning channel of governmental information and services" (Ntaliani, Costopoulou, and Karetsos 2008, 699). This new technology, however, also demands a precise assessment of the potentials and the risks of associated mobile applications. Thus, apart from the understanding of technological prerequisites and mobile Internet diffusion, it is essential to possess sound knowledge concerning the availability and use of mobile services.

Comparing stationary and mobile Internet offerings, TNS Infratest (2014) found out that stationary Internet is still the dominant form of using online services. Nevertheless, mobile Internet usage becomes increasingly important and therefore, must be taken into account in e-government strategies.

Concerning stationary Internet service usage, emails (86%), news (73%), online shopping (64%), local information services (63%), and movies/videos (54%) are the top five services, which are all used by more than 50% of the participants. Instant messaging (38%), email (35%), news (33%), location information services (33%), and social networking occupy the top positions regarding mobile Internet service use.

Massive discrepancies between the two forms of service usage were identified in online shopping (64% vs. 15%), movies/videos (54% vs. 17%), online banking (47% vs. 9%), tickets (40% vs. 7%), and voice over IP (40% vs. 7%). Here, e-commerce has a persisting need for action to develop technological solutions to increase mobile service usage. This nevertheless provides a good indication of overall mobile service usage. Figure 64 illustrates the differences in the usage frequency of Internet applications depending on stationary and mobile Internet access in Germany.

Figure 64 Usage of Stationary and Mobile Internet Offerings



| | Stationary Internet | Mobile Internet |
|---|---|---|
| Emails | 86% | 35% |
| News | 73% | 33% |
| Online shopping | 64% | 15% |
| Local information services | 63% | 33% |
| Movies/videos | 54% | 17% |
| Online banking | 47% | 9% |
| Social networking | 44% | 26% |
| Tickets | 40% | 7% |
| Voice over IP | 40% | 7% |
| Instant messaging | 39% | 38% |
| Gaming | 32% | 12% |
| Audio | 24% | 10% |
| Cloud services | 23% | 8% |
| Mobility services | 6% | 7% |
| Data collection | 5% | 3% |
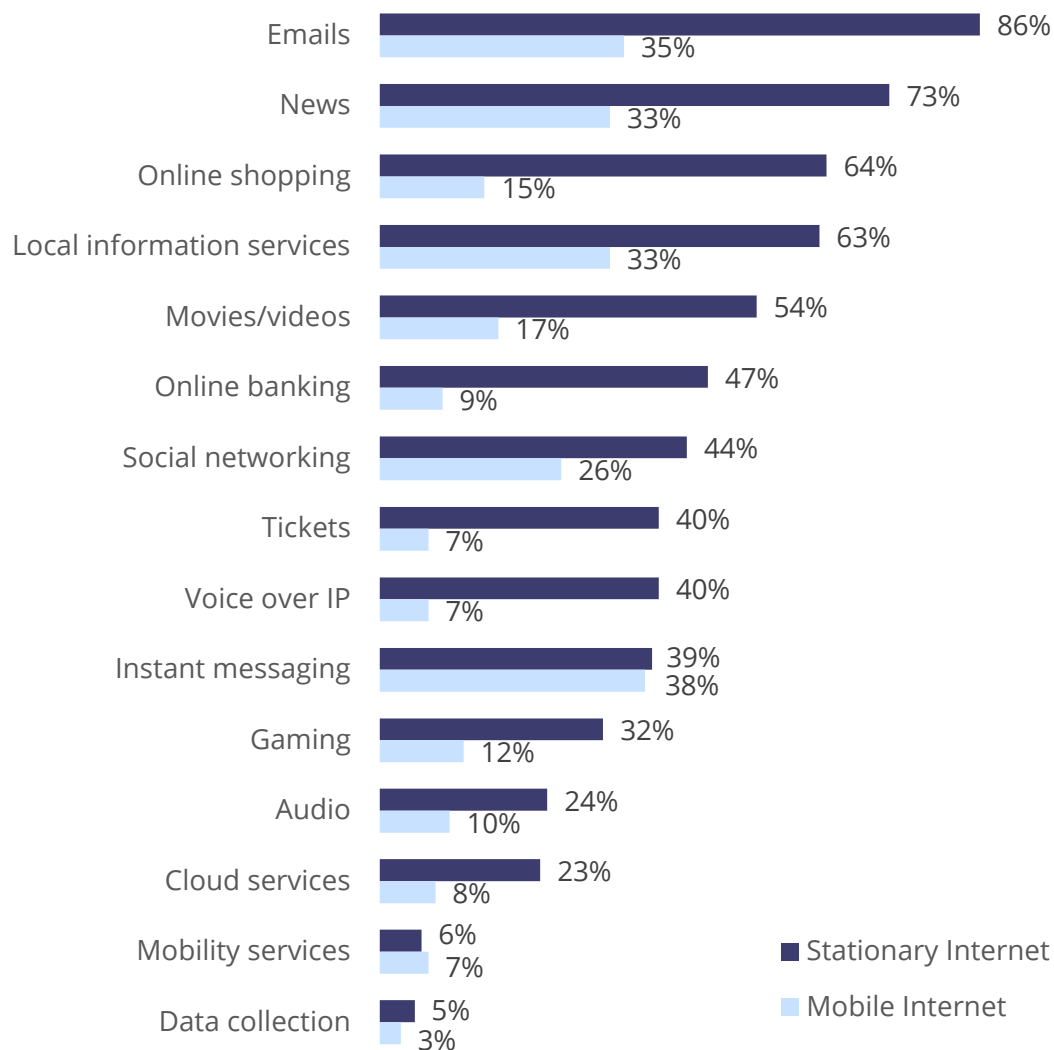
Source: Based on Wirtz 2016 and TNS Infratest 2014.

Mobile technology, which provides new service opportunities, can be applied within various fields of public service provision. These are mobile search, mobile information, mobile communication, mobile transaction, mobile payment, mobile advertising, and mobile participation (see Figure 65 and Figure 66).[1]

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1 Apart from these fields, mobile innovation and mobile collaboration are further possible areas of application. Since these do not have practical relevance in e-government service provision so far, mobile innovation and mobile collaboration are not considered in this section.

Figure 65 Mobile E-Government Application Areas (1)

| | Tools/Instruments | Key Benefits | Description |
|---|---|---|---|
| **Mobile Search** | • Portal search engine<br>• Mobile search engines (e.g., Google mobile, Yahoo mobile, Bing mobile, etc.)<br>• … | • For the user: Provision of search results that are of particular relevance for the user, to find information<br>• For the provider: Adequate tailoring of search results to the users' needs | • Providing pull mechanism-based information to e-government users<br>• Providing search results tailored to the user's location in form of a location-based service or personalized to the user preferences |
| **Mobile Information** | • Contextual information provision<br>• Location-based information provision<br>• Portal subscriptions<br>• … | • For the user: Direct mobile information and knowledge connection<br>• For the provider: Provision of personalized service information and user preferences | • Mobile information news or updates for e-government users<br>• Mobile knowledge management<br>• Location-based information provision |
| **Mobile Communication** | • SMS<br>• Skype<br>• Messenger<br>• … | • For the user: Provision of a direct communication channel<br>• For the provider: Direct response to and interaction with the user possible | • Single or multilevel dialogue between user and provider via mobile channels<br>• Allows individual and personalized user attention |
| **Mobile Transaction** | • Mobile e-government portal<br>• E-government apps<br>• Mobile city portals<br>• … | • For the user: E-government transaction ubiquitously available<br>• For the provider: Additional channel for shifting offline transaction into the online environment | • Mobile access to e-government procedures<br>• Mobile conduction of transactions<br>• Location-based transaction suggestions |

Source: Based on Wirtz 2012.

Figure 66 Mobile E-Government Application Areas (2)

| | Mobile Payment | Mobile Advertising | Mobile Participation | Support Functions |
|---|---|---|---|---|
| **Description** | • Conducting payment procedures with mobile devices<br>• Paying remotely or at the point of sale with mobile device | • Mobile form of advertising<br>• Push-advertising, for example, depending on location-based criteria<br>• Pull-advertising, depending on user preferences | • Participating in public decisions and policy-making through mobile devices<br>• Access through own apps or apps of intermediaries | • Mobile software<br>• Mobile browsing<br>• Mobile navigation<br>• Mobile telemetry |
| **Key Benefits** | • For the user: Quick and easy payment procedures<br>• For the provider: Efficient form of payment processing | • For the user: Additional value through personalized advertising, ads ubiquitously available<br>• For the provider: Supports multichannel management | • For the user: Ubiquitous participation possible<br>• For the provider: Direct interaction, supports multichannel management | • Functions for realizing mobile e-government application areas<br>• Form the basis for complex mobile service provision |
| **Tools/Instruments** | • Mobile payment procedures (e.g., Near Field Communication, Quick response codes, etc.)<br>• PayApps<br>• … | • Mobile display ads<br>• In-app advertising<br>• Location-based advertising<br>• … | • Mobile e-government portal<br>• Mobile intermediary apps<br>• Participation apps | • Operating system for mobile devices (e.g., Android, Windows, iOS, etc.)<br>• Mobile browser (e.g., Opera Mini, Chrome, etc.)<br>• Complex tools in telemetry and navigation<br>• … |

Source: Based on Wirtz 2012.

Although their impact and service offering is comparable to stationary online search procedures, the importance of mobile search services has grown significantly over the past years. Similar to the traditional search engines, mobile search delivers context-based search results, adapted to mobile devices though. For example, search results that are tailored to the user's location in form of a location-based service are a particular add-on of mobile search services.

Such services allow to provide additional value to the user because supplementary information, like the user's location and associated network information, can be used to personalize search results. This can be realized in the own e-government portal search engine or through search engine integration of intermediaries, such as Google, Yahoo, Bing, etc.

Mobile information services are closely related to mobile search services since both provide information to the user. However, the mobile information service generally follows a push principle instead of a pull principle. Thus, mobile information news or updates for e-government users are, for example, automatically provided when entering certain service areas. This, for instance, enhances mobile knowledge management through location-based information provision.

This provides the user with direct mobile information and connects knowledge with the geographical area of application without requiring user input. From a provider perspective, personalized service information and user preferences help to further customize public service provision. To exploit the full potential of mobile information services, contextual information, location-based information, and user preferences need to be available and monitored.

Mobile communication services summarize communication-based services. The decisive factor in this field of application is the adaptation of interfaces and devices to the mobile context. Apart from pure information brokering, the mobile channel suits all forms of communication between the user and e-government provider. The associated types of mobile communication can range from simple answering to complex models, and multi-stage exchange dialogs with a high depth of interaction.

A clear advantage for the user is the provision of mobile communication services that allow interaction via various channels. From a provider perspective, this form of communication reduces the costs of interaction and allows direct responses for quicker completion of administrative processes. Examples are SMS-based service provision, Skype, or messenger services.

Mobile transaction services provide the possibilities to access, initiate, and handle administrative processes through mobile technologies. Here, mobile technology provides additional service features compared to stationary Internet services since complementary services, such as location-based services, can be integrated into the mobile transaction service provision process.

This way, e-government transactions become ubiquitously available and users benefit from additional offers, which they had not realized without the automated stimulation. For the provider, mobile transaction services provide further potential for shifting offline transaction to an online environment. Typical applications for mobile transaction services are mobile e-government portal applications, e-government apps, and mobile city portals.

Through the basic characteristics of mobile devices, its personal nature, and mobility features, these devices provide ideal characteristics for easy payment anywhere and anytime. In addition, mobile payment services support the completion of administrative procedures that are free from media breaks since these processes can be entirely handled online.

The major advantage for the user is the quick and easy payment procedure. For the e-government provider, mobile payment services reflect an efficient form of payment processing. So far, no mobile payment standard has been established. However, there are many solutions in the market that already allow mobile payment services.

Mobile advertising describes advertising via the mobile channel. This type of advertising has gained considerable importance in e-commerce in recent years. While simple forms, such as SMS-based advertising, have been already around for many years and have played an important role in the marketing mix of numerous companies, recent advertising innovations that apply more complex and more bandwidth-intensive applications have developed well.

Although mobile advertising within an e-government context is still in its infancy, first movers take the opportunity to use ads that provide value to their users, while at the same time improving their revenue situation. This may be applied as push advertising (for instance, in combination with a location-based service, informing a user about a stage play next to the restaurant he is having dinner at) or pull advertising (for instance, advertising that is tailored to the users' preferences).

Mobile advertising provides additional value to the user through personalized advertising and by making ads ubiquitously available. From a provider perspective, mobile advertising represents a channel expansion and thus supports multichannel management. Moreover, it allows to learn more about the users' behavior. This insight can be applied to further customize e-government service provision to the needs and requirements of the users.

Mobile participation refers to participating in public decisions and policy-making through mobile devices. Access to the respective platforms may be granted through own programmed apps that are directly linked to the e-government portal or through intermediaries that provide a participation platform.

Mobile participation brings e-democracy directly to the users by providing them the possibility to ubiquitously participate in and be up-to-date with public matters. For the provider, mobile participation increases direct interaction and supports multichannel management by expanding the multichannel range. Typical applications for mobile participation are mobile e-government portal versions, own participation apps, or mobile intermediary participation apps.

Next to the seven fields of mobile public service provision, there are further mobile technology application areas. Although these rather reflect supporting or enabling technologies, these provide the necessary functions for realizing mobile e-government services since solutions like mobile software, mobile browsing, mobile navigation, and mobile telemetry form the basis for mobile service provision.

When talking about mobile Internet, social media is frequently mentioned in the same breath, as social networking has contributed substantially to increasing user-acceptance of mobile solutions.[1] The term social media refers to "[...] a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content" (Kaplan and Haenlein 2010).

Social media has attracted massive user attention. Millions of users regularly interact on social networking platforms, such as Facebook, LinkedIn or Twitter, that offer computer-mediated communication, enabling individuals to connect and interact with other users.

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[1] The following is based on Wirtz, Daiser, and Mermann (2015).

Thus, social media has fundamentally changed the way how many people communicate today (Kietzmann et al. 2011; Solomon and Schrum 2010; Wirtz, Piehler, and Ullrich 2013). Concerning the development of information diffusion and handling that has been caused by the Internet and in particular by social media, both technologies are highly relevant to public administration for political communication and interaction. Thus, it is expected that social media provides ground-breaking transformation potential for public administration.

For this reason, social media should be used as a further significant pillar to leverage e-government. This view is supported by Mergel and Bretschneider (2013), who claim that the aim of social media use by public sector organizations is to leverage interaction with public stakeholders and include them in public actions through collaborative processes.

Here, the same holds true as for private e-business, where social media-related developments have created entirely new ways of stakeholder interaction. Against this background, it is indispensable for responsible public managers and e-government officials to be aware of the relevant social media characteristics and success factors and how it can be used as a leverage strategy for e-government.

These factors are outlined according to the classification of the Social Media Four Factors Model, which provides the key factors that are associated with social media characteristics and success. This model is based on the Web 2.0 Four Factors Model by Wirtz, Schilke, and Ullrich (2010), which is a framework for developing business models and adapting them to social media requirements.

Web 2.0 and social media, which forms a major part of Web 2.0 technology, are often used synonymously since these two concepts show widespread similarities (Bryer and Zavattaro 2011; Kaplan and Haenlein 2009). Due to the closeness of these concepts, the model of Wirtz, Schilke, and Ullrich (2010) can be applied to the social media context with only negligible modifications.

The four factors of the Social Media Four Factors Model are interaction orientation, customization/personalization, user-added value, and social networking (see Figure 67).[1] It proclaims that the better these factors are fulfilled when applying social media, the higher the probability of application success.

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1 The following is based on Wirtz, Schilke, and Ullrich 2010.

Figure 67 Four Factor Social Media Model
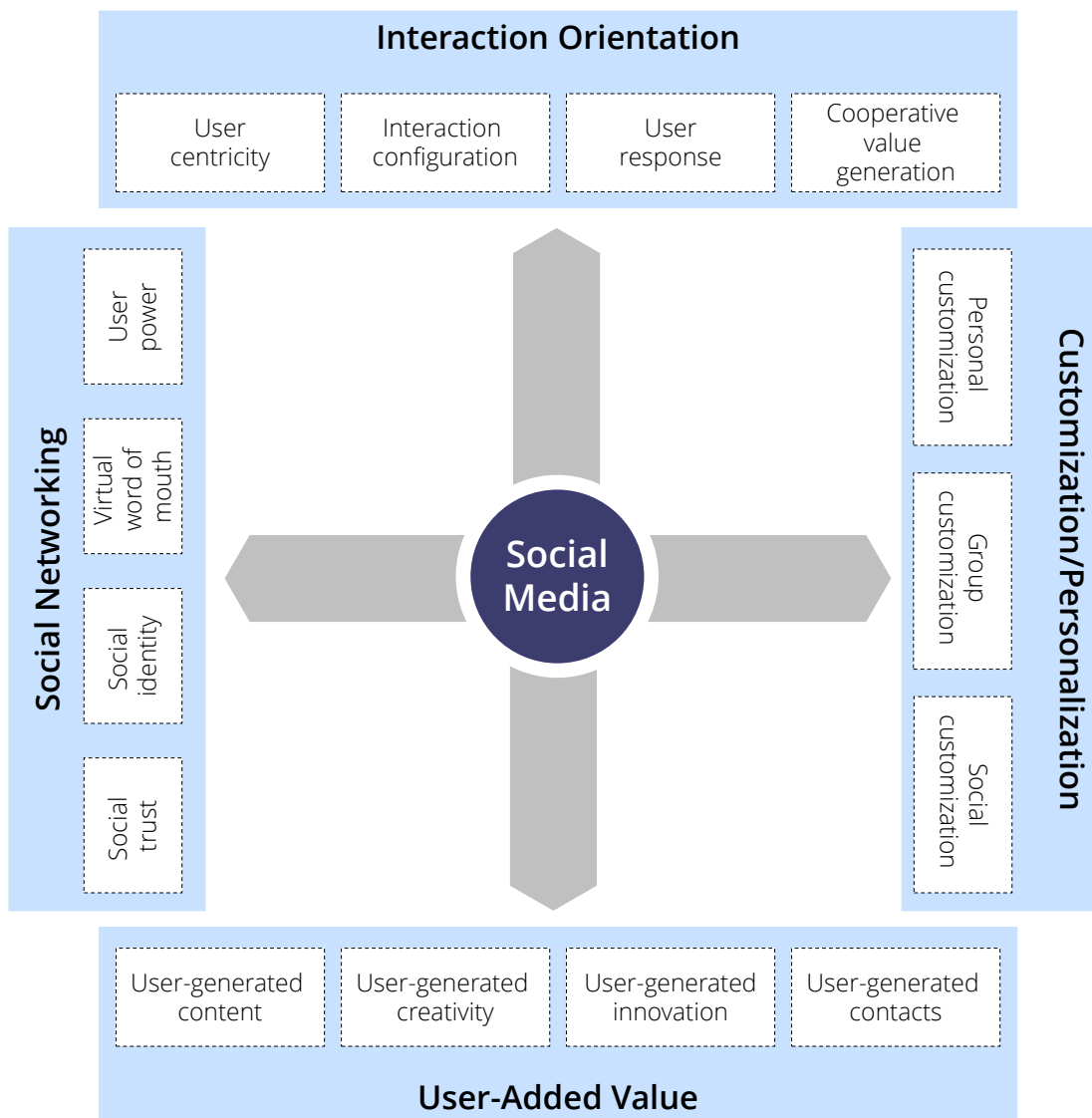


Source: Wirtz, Schilke, and Ullrich 2010.

Interaction orientation represents the ability to effectively manage the demand of the general public for more intense and more authentic two-way communication with public and private organizations (Rayport, Jaworski, and Kyung 2005). This factor is manifested in four important subfactors: user centricity, interaction configuration, user response, and cooperative value generation.

User centricity puts the user at the center of attention. This approach represents a major paradigm shift for many public sector organizations that requires a strategic and operative reorientation. Interaction configuration refers to the structure and the content of the interaction process.

User response describes the ability to react to user requests or feedback and manage the dialogue with the user. Cooperative value generation reflects the ability of the e-government provider to integrate the users into the respective processes.

The factor customization and personalization refers to the possibility for the user to customize websites, applications, and online offers to their needs and preferences. It is composed of the subfactors personal customization, group customization, and social customization.

Personal customization offers users the possibility to reconfigure a portal or website to their particular needs and preferences. Group customization enables a collection of individuals that are connected through the Internet to design, build, or reconfigure platforms, products, services and so on. Cities, for example, started to consult citizens for the naming of streets. Their suggestions are rated by other citizens and an official jury who finally decides. Social customization refers to customized products or services that are offered to distinct social layers.

User-added value is concerned with value creation through integration of users that contribute content, creativity, innovation, and contacts. This way, users add value through new information and innovation. Concerning user-generated content, this subfactor covers various content types including profiles, video or audio files, as well as other website content (e.g., recommendations or reviews).

In the same way, users can contribute through user-generated creativity. Within a public administration environment, citizens could be consulted and directly integrated into the establishment process of new e-government service offers. Concerning user-generated innovation, open source software development is a typical example. User-generated contacts refer to the possibility of expanding the e-government service offer range through user contacts.

Social networking consists of the four subfactors social identity, social trust, virtual word of mouth, and increasing user power. Its underlying concept is the connection of individuals and social groups via online applications and platforms. User participation in social networks is mainly driven by the search for social approval and the desire of group membership. Social networks are of vital importance since the information put online in these networks becomes a trusted source of knowledge for various personal decisions.

The subfactor social identity refers to the users' desire to belong to a specific group and manage their image in particular online environments. Social trust is similar to social identity. This concept builds upon the behavior of people who believe that beneficial behavior in their interactions with others will conversely lead to beneficial behavior from their side. This underlying belief creates confidence in the information provided by other users. Examples are wiki projects and collaboration projects.

Virtual word of mouth is also closely related to the two previously mentioned subfactors. This concept, however, rather refers to informal information exchange between users through email, blogs, review websites, and so on. The rising interaction through social media increases user power since it creates transparency and user opinions become ubiquitously available (Wirtz, Nitzsche, and Ullrich 2014).

Summing up, the Social Media Four Factors Model provides a clear conceptual guidance as well as the key characteristics for using and adapting the correct social media application. Transferred to the channel perspective, there are particular social media channels that have to be taken into account. These are presented in Table 8, showing the respective application's business model, service offer, and user value.

Blogs and RSS feeds provide online publishing opportunities for citizens and organizations and allow the visual presentation of content. These technologies reside more or less between traditional print and broadcast media and mainly serve information purposes. On the whole, these applications are quickly and easily set up and thus reflect helpful tools to keep public stakeholders informed.

File exchange and sharing applications allow users to share media content, which here primarily refers to file transfer and content distribution. These applications can provide a lot of potential for e-government by informing users through additional media channels. Unfortunately, professional and sustainable file exchange or sharing communication usually requires expensive and complex preparation, like video shootings, photographers, etc.

Table 8 Overview of Social Media Channel Applications

| Application | Business model | Service offer | User value |
|---|---|---|---|
| **Blogs & RSS feeds** e.g., blogger.com | - Systematization and compilation of online diaries<br>- Revenues through ad sales | - Provision of an authoring tool for the creation of blogs<br>- Hosting of blogs<br>- Categorization of blogs | - Unfiltered personal publishing for "everyone"<br>- Visual presentation of content |
| **File exchange & sharing** e.g., youtube.com | - Archiving and systematization of user-generated content (e. g., videos)<br>- Revenues through banner ads and performance ads | - Provision of online storage<br>- Systematization of content, e. g., through categorization and ratings | - Broadcasting for "everyone"<br>- Provision of an audience |
| **Wikis** e.g., wikipedia.com | - Collection, systematization, and further development of information<br>- Revenues from donations | - Tools for creating and editing content by users<br>- Provision of a platform for searching and presenting information/knowledge | - Aggregation of subject-specific information<br>- Freedom concerning content and authors<br>- Users as a collective editorial |
| **Podcasts** e.g., podcast.de | - Provision of audio or video content<br>- Revenues through pay-per-use, subscription and banner advertising | - Topic-specific audio and video content<br>- Possibility of subscription | - Location and time-independent consumption of content<br>- Automated updates |
| **Tagging/social bookmarking** e. g., delicious.com | - Classification and systematization of Internet offers<br>- Revenues, e. g., from the sale of click streams to data mining purposes | - Central archiving and ubiquitous availability of bookmarks<br>- Tagging of bookmarks<br>- Access to link collections of other users | - Individual editorial work-up of the Internet |
| **Social networking** e.g., facebook.com | - Compilation and provision of user-generated-content on a single platform<br>- Revenues through banner advertising | - Self-presentation of the user<br>- Networking among users<br>- Networking among users and contents | - Mediation of social contacts through virtual interaction |
| **Valuation portal** e.g., ciao.com | - Aggregation and systematization of product and product-related information<br>- Revenues from agency commissions and banner advertising | - Aggregation of product information<br>- User-generated product reviews<br>- Price comparisons with links to online stores | - Independent product reviews from users<br>- Simplifying and supporting decision-making and the procurement process |

Source: Enderle and Wirtz 2008, Wirtz 2011c, and Wirtz 2016.

Wikis are collaborative platforms, serving as community-based knowledge-creation and sharing exchange stations. Users aggregate subject-specific information and participate as collective editorial, creating extensive knowledge encyclopedias. Thus, wikis provide an excellent opportunity for collaborative knowledge creation between users and governments in an e-government setting.

Podcasts are helpful tools that enable the user to consume online content at any place and at any time. Similarly to blogs and RSS feeds, podcasts allow a quick and easy set-up of an additional online information channel. Users can subscribe to these podcasts and stay informed about the respective contents.

Tagging or also called social bookmarking applications classify and systematize Internet offers through the individual editorial work-up of bookmarks. In this context, users can share their links with other users and create common collections. Here, e-government service providers can market their portal by creating the possibility to tag their service offer. Apart from that, e-government providers should strive to be present on tagging platforms, such as delicious.com, to create user awareness and actively market own bookmarks.

Social networking refers to platforms that use computer-mediated communication to link individuals in groups or communities, so-called social networks. This way, users can present their profiles on the web and interact or network with other users. Examples of social networking sites are Facebook, Tumblr, or Twitter. These social media applications can be quickly and easily set up to start user-government interaction and thus, are highly relevant within an e-government setting.

Valuation portals are important social media applications since these foster independent product and service reviews. This creates market transparency, supporting and influencing decision-making processes of users. Especially this characteristic, makes valuation portals a double-edged sword. Digital word-of-mouth recommendation enjoys considerable trust among users, and thus negative impressions may hinder e-government service provision. Hence, e-government service providers have to care for objective online feedback and actively manage associated web content.

Given these social media application characteristics, social media can in general be expected to become more and more important for citizen communication and interaction. Against this background, e-government-related social media adoption will constantly increase, making it a top priority on every e-government agenda.

It is, however, essential to carefully consider the desired social media purposes with their respective e-government benefit potential. Against this background, it may be summarized that blogs and content communities should be mainly used for information purposes, while social networking sites are rather suitable for citizen-government interaction. Apart from that, wikis are helpful instruments to build up knowledge-creation platforms and podcasts as well as file exchange and sharing platforms that support information diffusion through digital channels.

Nevertheless, the right mix of multichannel e-government service delivery also strongly depends on the fulfillment of relevant success factors. Important e-government success factors that should be maintained from a provider perspective are outlined in the following chapter.

# 8 Success Factors of E-Government

Today's society has come a long way to a modern and efficient e-government. But at the same time, it is also obvious that there are still many challenges that have not been solved yet.[1] The increasing digitalization of our society demands a further strengthening of e-government systems and service provision.

This calls for a new e-skill profile for public administration. Important components of this profile are consistent citizen orientation, compelling cooperation, participation and transparency, high transaction interactivity with distinctive dialogue and responsiveness of public management, and last but not least a comprehensive multichannel e-government.

Since local e-government portals are the main Internet interface between the government and citizens (see section 4.1), a further expansion and optimization of local online portals is required that clearly focuses on the users' needs as well as on increasing user-friendliness of the e-government services.

This development needs to go hand in hand with broadening the full online e-government service range and increasing service depth. In addition, online communication with the users should be further intensified and the provision of participation and collaboration e-government services expanded.

From an organizational point of view, public sector organizations have to carry on with the establishment of an e-government service culture and the stepwise relocation of resources from offline to online e-government service provision. In order to keep track with the pace of the ongoing e-government development, small municipalities that do not possess the necessary resources should aim at creating regional e-government network solutions to benefit from the partner's economies of scales and experience.

From a public manager's perspective, the realization of this further e-government development demands a clear understanding of and a target-oriented focus on highly relevant e-government success factors. These are outlined in the following three sections.[2]

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1 The following is based on the results of the e-government study conducted by Wirtz (2015).
2 The presented success factor terms tend to overlap with the e-government demand factor denominations in section 5.1. The following outlines the success factors from a provider perspective instead of a demand perspective.

## 8.1   User–centered Success Factors

From a provider perspective, there are five key user-centered success factors that an e-government system should provide by all means. These are ease of use/usability, usefulness, website design/visual appeal, assistance/support, and multichannel e-government service usage.

Ease of use/usability measures the perceived user effort to become acquainted with and learn to use a new technology. If user effort is perceived to be high, then this reduces the probability that users actually use the technology (Davis 1986). Transferred to the e-government context, this means that the e-government portal needs to be set up in a way that is easy to understand and to use for the users (Wirtz, Piehler, and Daiser 2015).

Usefulness measures the user's subjective perception or impression that using a specific technology facilitates tasks or enhances performance (Wirtz and Piehler 2016). If, for instance, a new technology is not perceived as a value-adding or performance enhancing tool, then why take the effort and bear the risk of moving on to a new technology or system. Thus, the e-government system needs to provide a clear value for the user.

Website design/visual appeal is a further vital factor for the set-up of an e-government system (Wirtz et al. 2016). In summary, this refers to a user-friendly, transparent, and clear structure of the e-government portal or website. Key aspects are the presentation of content and the website layout, which mainly refer to graphical elements, such as color, typeface, or illustrations that should be deployed in a way to achieve a professional, harmonious, and appealing design.

Although e-government service provision tends to be automated technology-based, web assistance or personal interaction are very important factors for the users (Piehler, Wirtz, and Daiser 2014). Furthermore, it fosters user trust and confidence in using e-government services. Here, e-government providers have to ensure that assistance and support staff are technically well-trained and that they provide help in a polite, convenient, caring, respectful, and friendly way.

Multichannel e-government service usage has become a vital factor for user relationship management, especially against the background that the key reasons for providing e-government services are mainly driven by rational arguments like cost efficiency.

E-government providers need to be aware of the persisting mismatch between government and user channel preferences and thus have to adapt their service offering specifically to the users' needs and requirements. The challenge for public administration is to provide e-government services that are suitable for all citizens and organizations. Thus, effective and efficient e-government service delivery requires a clear multichannel focus that aims at reaching all relevant public stakeholders. The following figure illustrates the main user-centered success factors from a provider perspective.

Figure 68 User-centered Success Factors
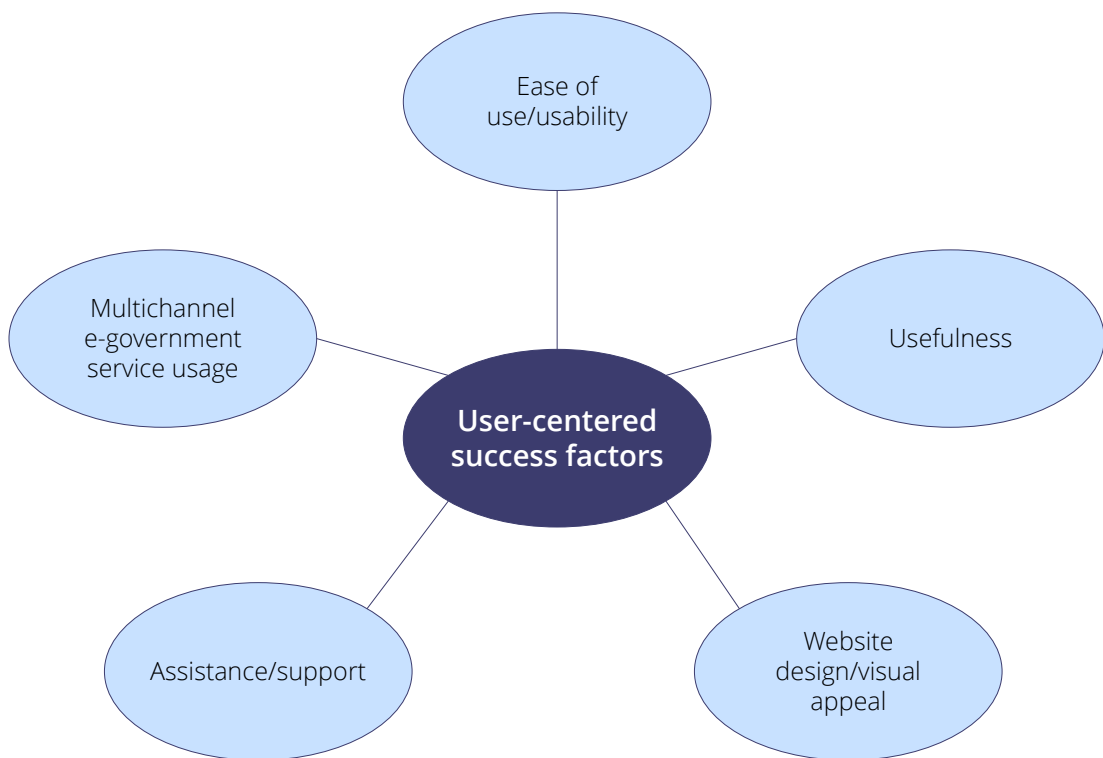


Another set of highly relevant success factors is directly associated with the e-government services and their provision. While user-centered success factors rather present important framework aspects on a meta-level, e-service success factors specifically address vital factors and characteristics of the e-government service portfolio. These are presented in the following section.

## 8.2 E–Service Success Factors

Today's e-government portals provide manifold services, ranging, for example, from comprehensive e-government offerings on citizenship, registration, and traffic to e-health offers or online job portals.[1] In addition, many e-government providers present services for complaint management, for online appointment service, for checking the processing status online, for booking local sport and leisure activities online, and for online newsletters concerning local information.

However, it is not just about providing e-government services to the users. It is also important to tailor the e-government offers to the needs and the requirements of the users. For this reason, there are particular success factors that are specifically associated with e-government service provision. These can be divided into two categories: service-oriented and function-oriented success factors (see Figure 69).

While service-oriented success factors are primarily concerned with the question what services should be offered, function-oriented success factors deal with the question how these services should be offered. Thus, the latter also take into account behavioral aspects of the e-government-providing public sector organization, such as responsiveness to citizen requests.

From a service-oriented perspective, providing an extensive set of full online e-government service offers is of vital importance. If users have the possibility to benefit from a far-reaching e-government service offering that can be entirely conducted online, this substantially increases user convenience.
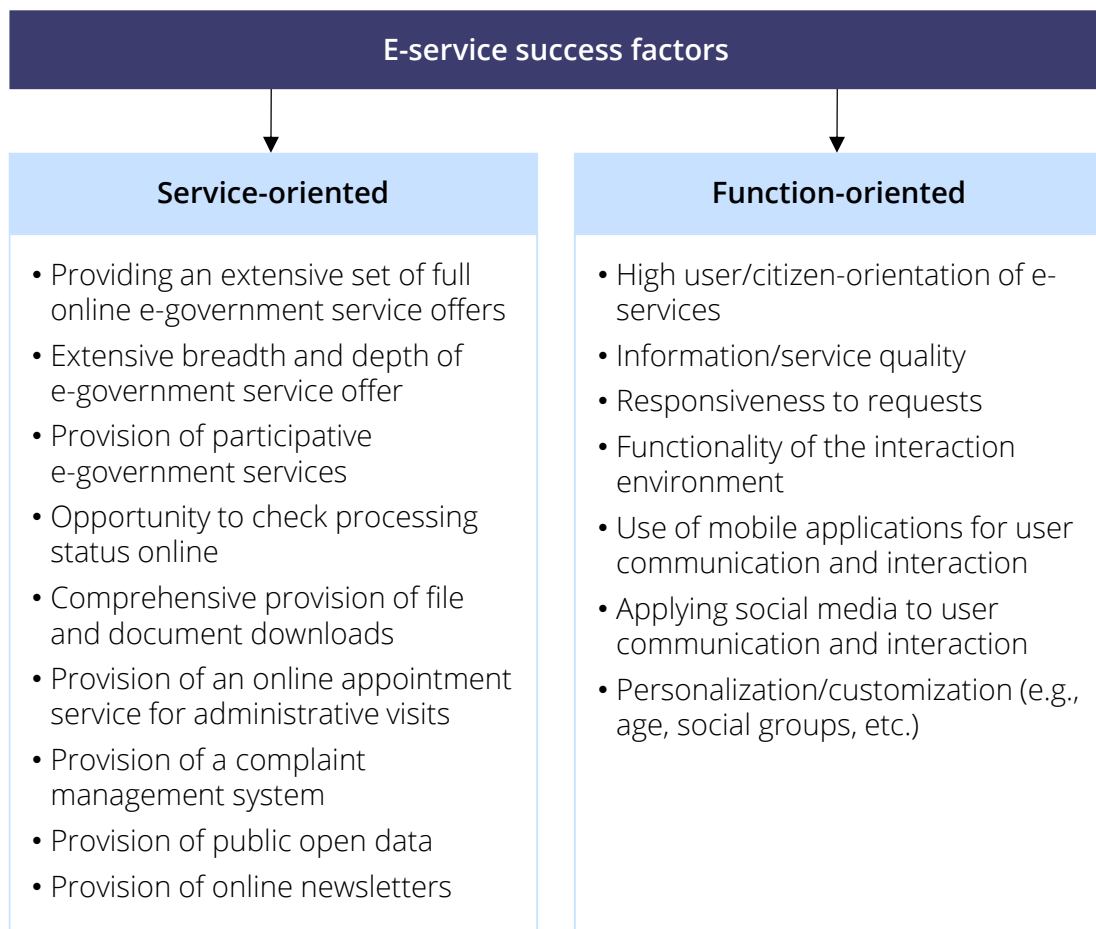
Moreover, the provision of participative e-government services is recommendable and online checks of the processing status, online appointment service for administrative visits, as well as a comprehensive provision of file and document downloads should be available on the portal.

Further important e-government services that should be in place are a complaint management system, public open data provision, and the possibility to subscribe to online newsletters. This way, the user can stay in touch with the e-government provider, can give feedback, and stay informed about system changes and new e-government services.

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1 The following is based on the results of an e-government study with 717 participants that was conducted by Wirtz (2015).

Figure 69 E-Service Success Factors

| E-service success factors | |
| --- | --- |
| **Service-oriented** | **Function-oriented** |
| • Providing an extensive set of full online e-government service offers<br>• Extensive breadth and depth of e-government service offer<br>• Provision of participative e-government services<br>• Opportunity to check processing status online<br>• Comprehensive provision of file and document downloads<br>• Provision of an online appointment service for administrative visits<br>• Provision of a complaint management system<br>• Provision of public open data<br>• Provision of online newsletters | • High user/citizen-orientation of e-services<br>• Information/service quality<br>• Responsiveness to requests<br>• Functionality of the interaction environment<br>• Use of mobile applications for user communication and interaction<br>• Applying social media to user communication and interaction<br>• Personalization/customization (e.g., age, social groups, etc.) |

Considering function-oriented success factors, it is indispensable that e-government service providers align the services provided with the needs and the requirements of the users. Thus, a strong focus on user/citizen-orientation is highly recommendable when designing and implementing e-government services.

A further important aspect is information and service quality. This means that the e-government offers—the information and services provided—need to meet high standards. Therefore, all e-government information and services have to be reliable, relevant, credible, helpful, and usable.

Responsiveness to requests is another vital success factor for e-government service provision. Here, responsiveness refers to the time needed to respond to user enquiries as well as the perceived quality of the response. Responsible employees should be well-trained to be able to provide helpful support in a competent and emphatic manner.

The functionality of the interaction environment is a further relevant point that e-government service providers should take into account. Since modern information and communication technologies allow automated information exchange with other applications, which clearly facilitates user-government interaction and makes their interplay more convenient, e-government providers should take full advantage of this opportunity.

Considering the increasing use of mobile devices, e-government service providers should make use of mobile applications for user communication and interaction. This way, users can access e-government information and services without any temporal or local restriction. Moreover, mobile technology provides new service possibilities that can be applied to public service provision (compare section 7.3).

The same applies to using social media applications for user communication and interaction. Social media has had a considerable impact on the relationship between the government and its stakeholders by providing a new channel for fostering information exchange between two active participants that have an impact on each other. Therefore, social media has massively expanded the possibilities of public multichannel management and should be used as a further significant pillar to leverage e-government.

A further important aspect of e-government service provision is personalization and customization (e.g., age, social groups, etc.) of the online offering. This refers to two aspects: first, modification of web offers to meet personal expectations of the users and second, customized web offers on the provider side.

The digital native generation, for example, demands better public service provision in terms of convenient access and interaction as well as ongoing personalization and customization possibilities. Considering elderly people, specific web offers that are already tailored to the needs of this particular target group are beneficial.

Having outlined user-centered success factors as well as e-service success factors, there remains a third category of relevant e-government success factors: IT success factors. These success factors, which are rather technological, are presented in the following section.

## 8.3 IT Success Factors

Concerning the success of an e-government system, there are a couple of important IT success factors that should be considered when designing, implementing, and maintaining such as system. Since these factors refer to technology-related aspects, it is necessary to possess the respective technical IT skills and competencies—either in-house or out-house. Figure 70 summarizes the IT success factors.

Figure 70 IT Success Factors
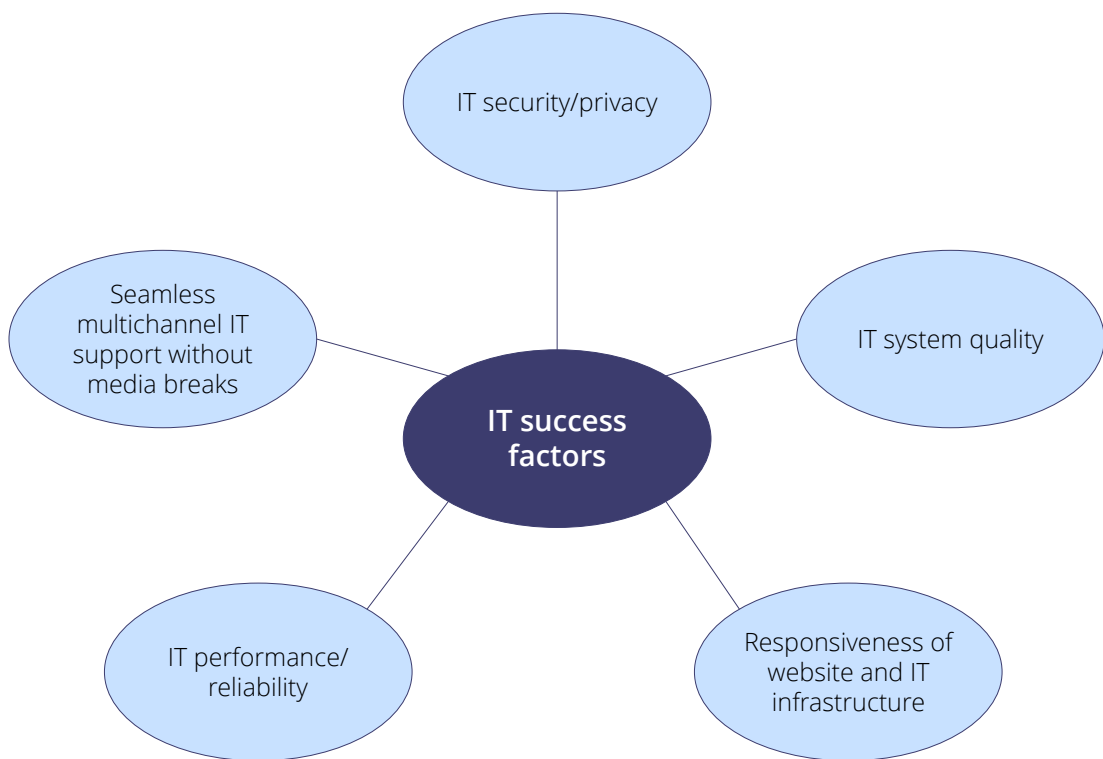


Very crucial factors are IT security and privacy, which are two important prerequisites for e-government user trust and user acceptance. In this context, security and privacy are understood as perceived safety, secrecy, and confidentiality of personal user data and network-based information processing.

If users believe that their personal information is not safe, they will be more reluctant to perform e-government transactions online or will not conduct them online at all. For this reason, public managers have to take care that adequate security guidelines are in place and that these are communicated to the relevant public stakeholders to establish an adequate IT security and privacy awareness.

IT system quality is another key success factor for creating a favorable e-government environment. It includes all technological aspects of an information system as well as the associated e-government processes and resources. From a system management point of view, the e-government provider has to take care that a transparent performance monitoring with a clear focus on system quality is in place.

IT infrastructure fault tolerances, server performance capabilities, as well as inspection and security procedures, for example, are important facets of IT system quality management. In addition, the entire e-government team needs to be aware of the detrimental effects of portal downtime, unreliable service provision, and so on. In case of a potential IT attack or breakdown, effective contingency plans have to be immediately at hand.

Responsiveness of website and IT infrastructure is closely related to IT system quality. Here, e-government providers have to ensure that the website responds and the data exchange takes place within a reasonable period of time. Today, long waiting times for new pages or data processing are not tolerated by users anymore.

Perceived IT performance and reliability is a vital factor for using an e-government system. Like the previous factor, it is also associated with IT system quality. If performance or reliability of the e-government system are perceived to be weak, this finally reduces the user's desire to use the e-government services provided.

Another important factor from a technology perspective is seamless multichannel IT support without further media breaks, meaning that users should be technologically enabled to make use of full online e-government services through different online channels. This sets high demands on the interoperability of the applied e-government system and channels.

Taking into account the key e-government success factors from a user, e-service, and IT perspective, should provide a solid basis for designing, implementing, and maintaining a successful e-government system. However, there are further important aspects that have to be considered when implementing an e-government system. These are outlined in the following chapter.

# 9 E-Government Implementation

The development and design of a high-quality, citizen-centric e-government offering is a demanding challenge.[1] In particular for smaller local authorities, it is often difficult to provide the required resources and competencies. In this case, it usually makes sense to consider cooperation potential with other public sector organizations at an early stage of the e-government implementation design. This way, additional economies of scale and synergy advantages regarding significant cost items and system performance can be developed and achieved.

Despite the size of the e-government-providing public sector organization and the disposable resources and competencies, successful e-government implementation should at least include two major parts: First, a systematically developed e-government roadmap that provides a transparent overview of the necessary implementation activities and milestones. Second, an e-government audit and evaluation concept that determines the respective performance indicators as well as the monitoring and controlling processes, and allows early intervention or to take mitigating action in the event of adverse changes.

## 9.1 E-Government Roadmap

The development of an e-government roadmap usually moves through five phases: (1) analysis of strengths and weaknesses of the portal, (2) benchmarking with best practice e-government, (3) analysis of user needs and requirements, (4) e-government strategy/concept development, and (5) e-government test, roll-out, and monitoring. The e-government implementation roadmap process is illustrated in Figure 71 on the following page.

In the first phase, the e-government service provider needs to develop a clear understanding of the strengths and weaknesses of the existing e-government portal or solution. For this reason, a related analysis has to be conducted from an internal public administration view as well as from an external expert perspective. The results of these two analysis angles are then combined into an integrated strengths and weaknesses e-government concept.

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1 The following is based on Wirtz 2015.

Figure 71 Five Phases Model Roadmap for E-Government Implementation

| ① Analysis of strengths and weaknesses of the portal | ② Benchmarking with best practice e-government | ③ Analysis of user needs and requirements | ④ E-government strategy/ concept development | ⑤ E-government test, rollout, and monitoring |
|---|---|---|---|---|
| • Analysis of the strengths and weaknesses of the e-government portal from a public administration perspective<br>• Analysis of the strengths and weaknesses of the e-government portal from the perspective of external experts<br>• Creating an integrated strengths and weaknesses concept | • Selection of best practice e-government portals<br>• Benchmarking analysis of the e-government portals based on particular criteria<br>• Development of lessons-learned concept | • Analysis of the user needs and require-ments through interviews and online panels on the e-government portal<br>• Evaluation of current portal as well as expectations and future demands<br>• Establishing a user require-ments concept | • Integration of strengths and weaknesses analysis, best practice in-sights, and user analysis into a basic e-government concept<br>• Potential assessment of shifting offline to online service provision<br>• Design of future portal strategy<br>• Deriving target state with milestone plan for imple-mentation<br>• Establishment of implemen-tation concept | • Prototype design<br>• Prototype testing<br>• Rollout of new e-government portal<br>• Monitoring and controlling of user access data, user feedback, and complaints<br>• Yearly user panel to identify optimization potential<br>• Continuous improvement of the e-gov-ernment portal |

Source: Wirtz 2015.

The second phase of the e-government roadmap development serves to compare the existing e-government processes and performance to best practices from other e-government portals in order to identify further optimization potential for the present e-government offering.

The first step of this phase is to select best practice e-government portals, which are analyzed, compared, and evaluated based on particular performance criteria in the second step. The final step of this phase is the development of a lessons-learned concept, which summarizes the findings, implications, and conclusions for the own e-government offering.

The next phase is the analysis of user needs and requirements. The key task of this activity is the creation of a concept that summarizes current and expected user needs and requirements. To get this information, user needs and requirements need to be collected through interviews and online panels. Here, it is important that apart from only inquiring the current situation, also information about future expectations and demands has to be collected.

Having finished the third phase, the e-government provider can start developing the e-government strategy/concept. The key target of this set of activities is the development of a target state for the e-government system with a clearly defined implementation concept and action plan. For this purpose, the results of the previous phases (strengths and weaknesses analysis, best practice insights, user needs and requirements) have to be integrated into a basic e-government concept, which reflects the future portal strategy.

In the final phase, e-government test, roll-out, and monitoring, the e-government system is put into practice and the evaluation and improvement cycles are set up. To achieve this, a prototype of the e-government system has to be designed in a first step. This prototype is tested and modified until the e-government systems works as planned. Then it is rolled-out, meaning that the e-government system is put online for the users.

Having the system running, the e-government provider has to start monitoring and controlling the user access data, user feedback, and complaints, as well as yearly user panels to identify optimization potential. These activities have to go hand in hand with the continuous improvement of the e-government portal.

The implemented e-government system should be subject to regular audits and evaluations to ensure that it constantly meets the needs and requirements of the users as well as the providers. The key aspects of this approach are outlined in the following section.

## 9.2 E–Government 3+3 Audit and Evaluation System

The audit and evaluation of an e-government system principally refers to a systematic and transparent way of assessing the performance of all associated e-government activities. This approach is embedded in a continuous improvement circle that focuses on a constant enhancement of the overall e-government system. The umbrella guideline for this activity is the entire value chain workflow of the e-government service creation process—from initial concept to final implementation and operation.

For a comprehensive picture on the e-government situation, the audit approach is divided into two main components: assessment areas and assessment levels evaluation. The assessment areas pursue the aim to control the e-government system from a workflow and performance perspective, while the assessment levels look at the different e-government layers. All assessment areas and levels are consistently examined from both perspectives, which allows a holistic assessment of the entire e-government system and its value chain.

There are three e-government assessment areas, which from a continuous improvement view influence each other through systematic feedback circuits: design, process, and outcome. Although the sequence of these three areas generally is linear, identified gaps or discrepancies during the evaluation process may lead to modifications in prior areas (see Figure 72).

Design deals with the aspects that are related to the development and the intended aims of the e-government system. This means that the auditor has to evaluate if the e-government system pursues the right goals, if the content of the e-government service provision suits the overall e-government targets, if the design of the e-government system supports the achievement of objectives, and so on. In particular, if the e-government system is still up-to-date and maintained in an adequate manner.

The process assessment area covers the technical realization-related and service creation-related aspects of the e-government system in logical continuation of the design assessment area. Here, the auditor evaluates if the technical execution or implementation of the e-government system—usually the portal or website—and the service creation process fulfill the initially defined conceptual requirements as well as anticipated developments. In the case of discrepancies, the result of the process evaluation may impact the design area if modifications are required.

Figure 72 E-Government 3+3 Audit and Evaluation System
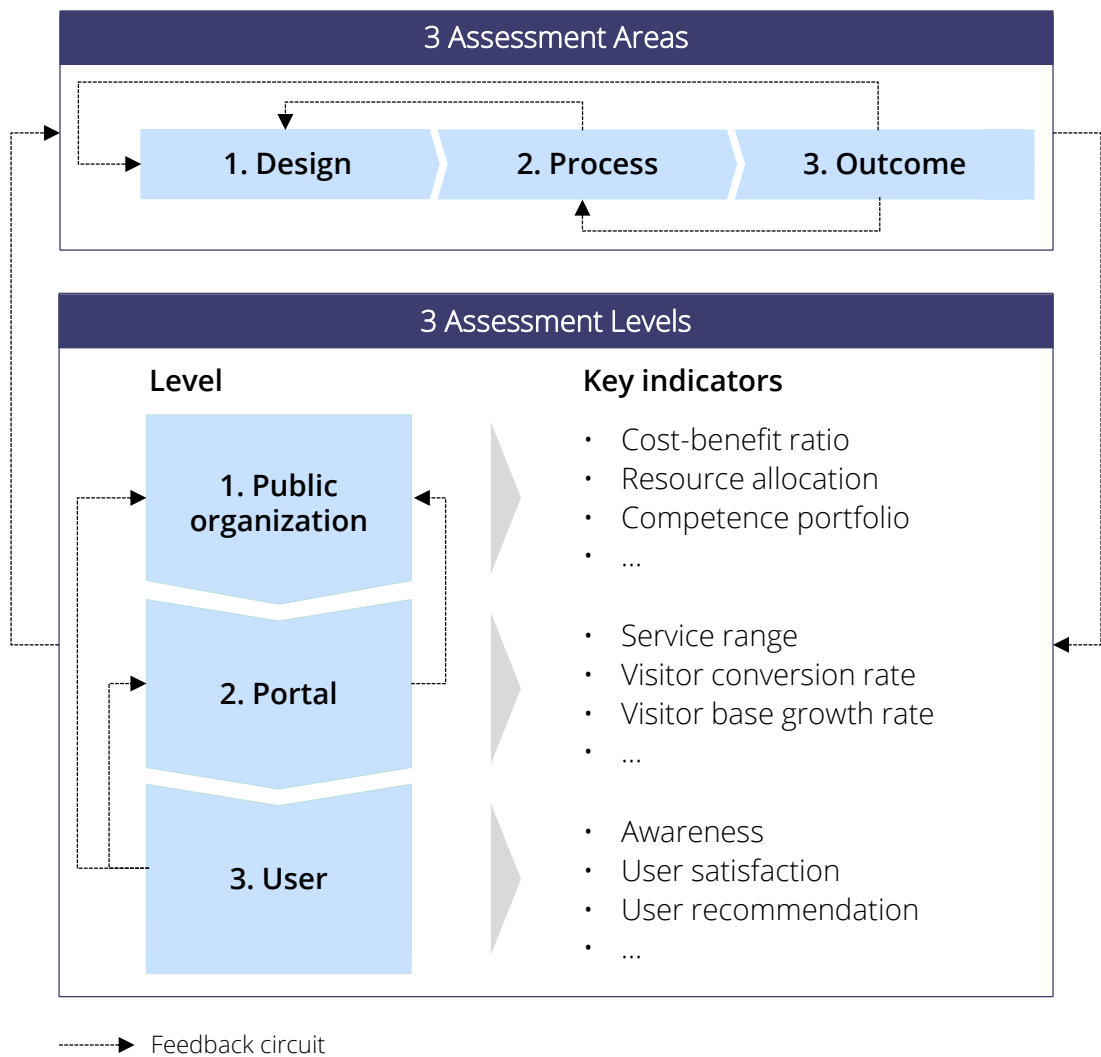
The outcome assessment area deals with the performance of the e-government service provision as well as the fulfillment of supply-driven and demand-driven success factors. For this purpose, the auditor evaluates the actual performance of the provided e-government services from a user-perspective and a provider-perspective, meaning if the corresponding success factors are adequately fulfilled or not. And again, if outcome gaps between the actual and the desired e-government state should be identified, this may lead to modifications within the design or process assessment areas.

Following this integrative approach, the three assessment levels—public organization, portal, and user—have to be examined. These are set up in terms of a dependent layer structure, meaning that the public organization level may influence the portal level, which again may influence the user level and vice versa through the respective feedback circuits.

The public organizational layer serves to evaluate the e-government performance from a public sector organizational view. Therefore, important organizational performance indicators, such as the cost-benefit ratio of the implemented e-government system, the resource allocation between offline and online service provision, and the available competency portfolio, have to be controlled according to the design, process, and outcome logic of this level.

The portal level refers to directly measureable indicators of the portal or website level. Key performance indicators are, for example, the service range, which shows the depth and breadth of the services provided, the conversion rate of visitors to e-government users, or the growth rate of the visitor base.

These indicators are of particular importance since they directly refer to the target of shifting users from the offline to the online environment and thus, to the overall aim of increasing public value. The great thing about measuring these indicators is that the relevant data can be collected straightaway from the e-government portal.

The evaluation on the user layer is more elaborate and complex, and thus it is generally more expensive since the respective performance indicators cannot be directly captured from the e-government system. Crucial indicators for this layer are, for example, awareness, user satisfaction, and user recommendation. Awareness is the primary step to attract visitors to the e-government portal. If they are satisfied with the information and service provision, they may turn into regular users. In this context, user recommendation is a valuable asset that again fosters awareness.

The collection of this data usually requires additional surveys, such as interviewing users or carrying out user panels, in order to get evaluable information with regards to these indicators. However, this effort is unavoidable since this knowledge forms an elementary part of a user-oriented e-government service provision. The e-government audit and evaluation cycle is illustrated in the following figure.

Summing up, evaluating an e-government system is an ambitious task that demands profound auditing expertise, technical knowledge, and managerial experience, because the procedure requires comprehensive examination of all activities that are associated with e-government service provision.

In addition, some performance indicators may be of tacit nature, which makes measurement sometimes problematic. Irrespective of this difficulty, public management needs to elaborate adequate ex-ante and ex-post comparisons for system evaluation and justification, which makes e-government auditing and evaluation an indispensable activity in e-government management (Homburg 2008).

However, systematically examining the three assessment areas (design, process, and outcome) as well as the three assessment levels (public organization, portal, and user) provides a clear guidance for an e-government audit or evaluation. Apart from that, considering e-government implementation in general, one can learn much by comparing and benchmarking existing e-government platforms. For this reason, three e-government best practice examples are presented in the following chapter.

# 10  E–Government Case Studies

In the previous chapters, essential e-government concepts, strategies, processes, and instruments are outlined. To enrich these rather conceptual explanations with practical illustrations, offer additional public managerial insight on e-government portals in practice, and provide further context from best practice examples, three case studies of top-tier e-government portals—New York, Hong Kong , and London— are presented in the following.

A case study is a detailed analysis of a specific case that deals with the particular characteristics of the case in question and allows an examination of the respective setting (Bryman 2012). It usually provides a supplementary context for observed phenomena (Eisenhardt 1989), which in this particular case should provide public managers with inspiration and best practice suggestions on how to make the best of their public sector organization's e-government offering.

Since local e-government portals provide a wide range of services and are often the first point of contact between the e-government user and provider (Wirtz and Nitzsche 2013), the selected best-in-class e-government portals are regarded as suitable for this purpose.

## 10.1  New York City

With round about 8.5 million inhabitants, New York City is the most populous city in the United States of America. It exerts a significant impact on worldwide commercial, cultural, societal, political, and technological trends and thus, has also been described as the cultural and financial capital of the world. The city spreads over a total area of 468.9 square miles and accommodates as many as 800 languages that are spoken in this municipality.

In the sixth global e-governance survey, a worldwide comparison of municipal digital governance that was conducted by the E-Governance Institute of the Rutgers University, New York City's e-government offering earned the second place. The survey examined the respective e-government portals according to five key criteria: privacy/security, usability, content, services, and citizen/social engagement.

Within the three selected examples, New York City performed particularly well in usability, content, and services (see Holzer et al. 2014). This seems sensible when having a look at the landing page of New York City's official website 311, which is the city's main source of government information and non-emergency services for citizens, businesses, and visitors (New York City 2015). Figure 73 presents an annotated screenshot of the first sections of the information and service offering of New York City's official e-government website.

Figure 73 Landing Page of New York City's Official Website (top)
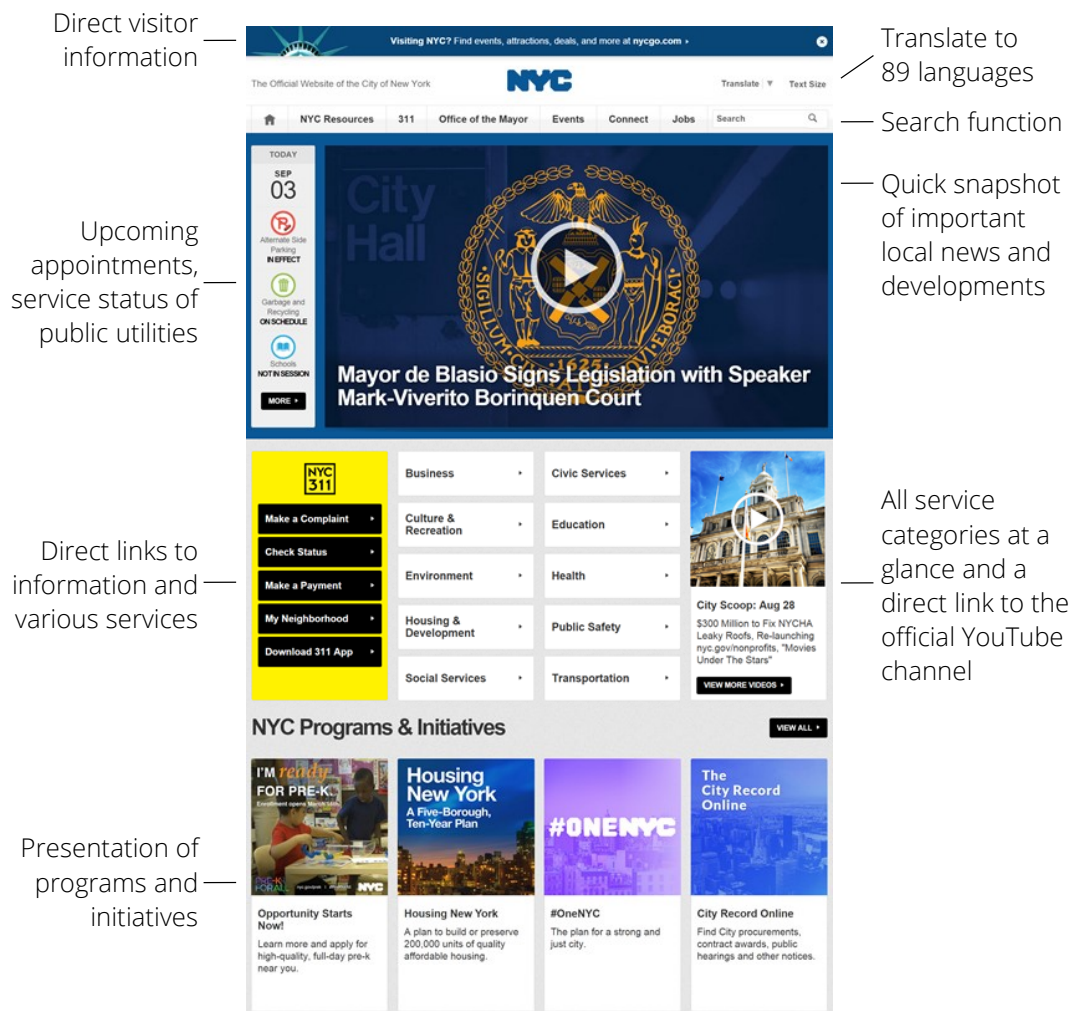


Source: New York City 2015.

When entering the portal, the visitor finds a user-oriented and service-oriented structure that is divided into several sections and that provides an overview of and direct access to the particular topics. Right at the top, e-government portal visitors encounter a link with customized offers and have the possibility to switch between 89 languages. This is followed by a search function next to the navigation.

In the next page section, a quick snapshot of important local news and developments as well as a direct link to upcoming events and service status of public utilities is provided. This is a convenient collection of information for the users, which provides a clear added value by summarizing relevant public local information in a single spot.

Following, direct links to information and services are provided in two forms. On the left, the user can directly access often requested services and in the middle, the top level service categories, which are divided into further subcategories on the next level, are presented at a glance and can be directly accessed. On the right, portal visitors find a link to the official YouTube channel of New York City.

In the next section of the landing page, programs and initiatives are presented to the user (e.g., New York City housing, pre-school enrollment, serving in non-profit agencies). Apart from the given selection, the user has the possibility to directly access the complete list of programs and initiatives.

An interactive application for users to find local events follows the NYC Programs and Initiative section. Here, users can filter according to specific dates, locations, and event categories or can access the overall event database. Directly below, the e-government portal presents hyperlinks to access mobile and social media channels that enable users to download required applications or to subscribe to the respective channel.

In the following section, the elected officials of New York City as well as a link to their area of responsibility are presented. At the end of the landing page, the user finds an overview with direct links to the most requested e-government information and services, such as pay a parking ticket, job portal access, and so on. The page closes with important links and legal information. Figure 74 presents an annotated screenshot of the later sections of the information and service offering of New York City's official e-government website.

Figure 74 Landing Page of New York City's Official Website (bottom)



Interactive overview of local events

Channel links to mobile and social media offers to stay in touch

Direct link to the elected officials

Overview with direct links to the most requested information and services

Disclaimer, copyright, and important links

Source: New York City 2015.

Summing up, New York City's e-government portal provides an extensive set of public services and a wide range of useful information to public stakeholders. The entire service provision shows a clear user-orientation and aims at providing full online offers within a vast multichannel offer.

Against this background, New York City's e-government offering shows a very strong social media presence. They make use of eleven different social media applications: Facebook, Flickr, Foursquare, Google+, Instagram, LinkedIn, Tumblr, Pinterest, Twitter, YouTube, and WordPress. In total, nyc.com applies 330 social media channels for communicating and interacting with their e-government stakeholders.

In addition, mobile integration is a vital factor that is considered in the entire process of e-government service provision. With the 311 app, for example, users of the portal have far-reaching mobile access possibilities, allowing them to use public services whenever and wherever they want. Apart from that, New York City offers apps free of charge for finding restaurants, second-hand exchange, local discount programs, health care, environmental protection, building search, locating drinking water, waste and recycling information, as well as police and emergency services.

A further important aspect is the high degree of full online service provision. There are manifold services that already can be handled completely online, e.g., notification of a street festival, application for a parking permission, or application for building a garage or house rebuilding.

Of particular importance is the sophisticated complaint management system, which is already presented on the landing page. Here, users can complain online about various public services (e.g., damaged infrastructure, vandalism, pollution, animal welfare) and can provide detailed online feedback on the public service offering. It is used as an important monitoring and controlling system to enhance public and e-government service provision.

Moreover, New York City's e-government portal possesses an innovative full online e-payment system and already provides various participative services and suggestion systems for the users (e.g., suggesting new bus stops, fire hydrant positioning, collectively building up databases that show defibrillator locations). Although the portal shows a high degree of innovative full online services, the e-government provider runs a comprehensive call center support, which provides help for the users in 170 languages.

This user-oriented approach is well reflected in the results of the global e-governance survey, which underscore New York City's leading position concerning e-government usability, content, and services (see Holzer et al. 2014). For this reason, New York City is a shining example of a user-oriented and service-oriented e-government offering. Figure 75 shows a summary of the key insights from New York City's e-government portal.

Figure 75 Key Insights from the nyc.gov E-Government Offering

| nyc.gov e-government key insights |
|---|
| ▪ Very broad range of useful information that is provided on the portal |
| ▪ High availability of services, especially full online services, that are centrally available through the e-government portal |
| ▪ Extensive provision of highly developed, interactive services |
| ▪ Provision of participative services and suggestion systems |
| ▪ Innovative full online e-payment system |
| ▪ Far-reaching complaint and satisfaction management, which is directly presented at the landing page |
| ▪ Extensive multichannel e-government service offering, especially mobile (16 apps available free of charge) and social media channels (using 10 different applications, such as Facebook, Twitter, YouTube, etc.) |
| ▪ Very strong presence in social media channels. In total, nyc.com uses 330 social media channels |

# 10.2 Hong Kong

Hong Kong, which is officially denominated as Hong Kong Special Administrative Region of the People's Republic of China, is an autonomous territory and represents a major business and trade gateway to China. It covers an area of 426.3 square miles that is shared by 7.2 million inhabitants. Thus, Hong Kong is one of the most densely populated areas in the world.

On a global scale, Hong Kong is the 8th largest trading economy, which is characterized by free trade, low taxation, and minimum government intervention. Chinese and English are the official languages. Although approximately 90% of the population speak Cantonese and only 3.5% are English speakers, English is widely used in the public, legal, and professional sector (Hong Kong 2015).

In the sixth global e-governance survey, the e-government offering of Hong Kong reached the third place (see Holzer et al. 2014). Thus, similarly to the e-government offering of New York City, Hong Kong possesses an appealing, comprehensive, and professional e-government presence. Figure 76 presents a screenshot of Hong Kong's official e-government portal.

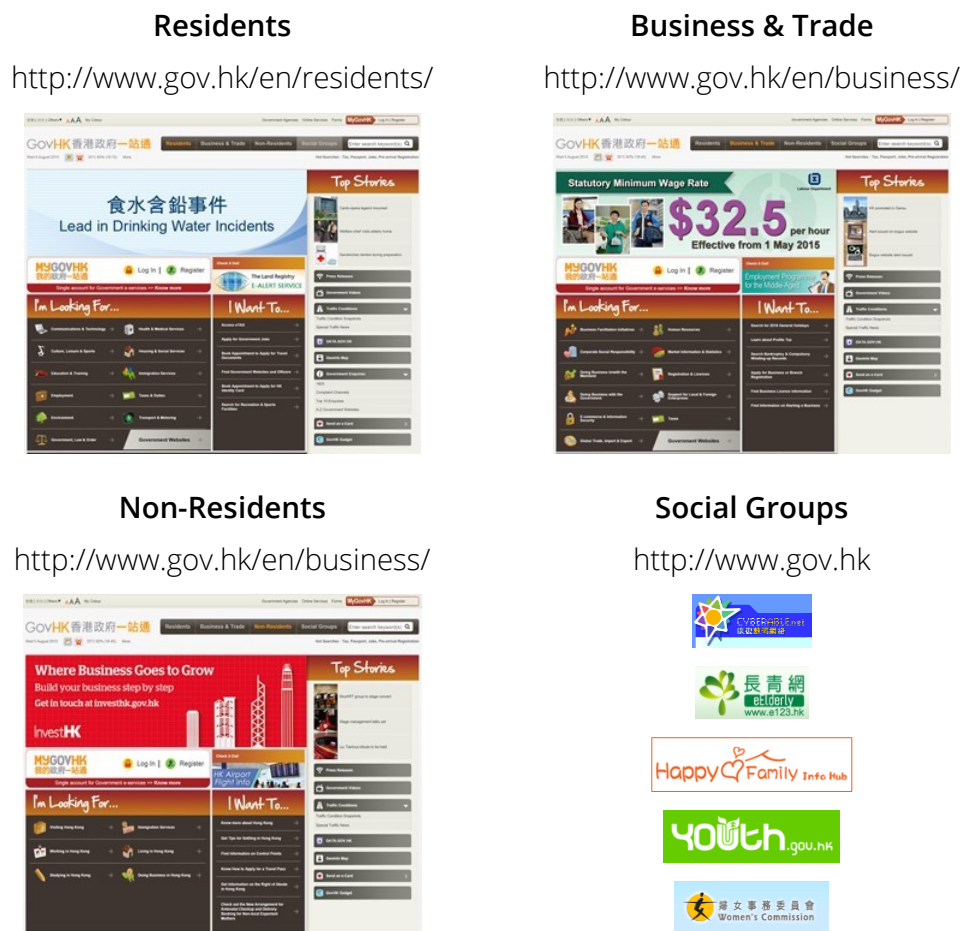Figure 76 Landing Page of Hong Kong's E-Government Portal
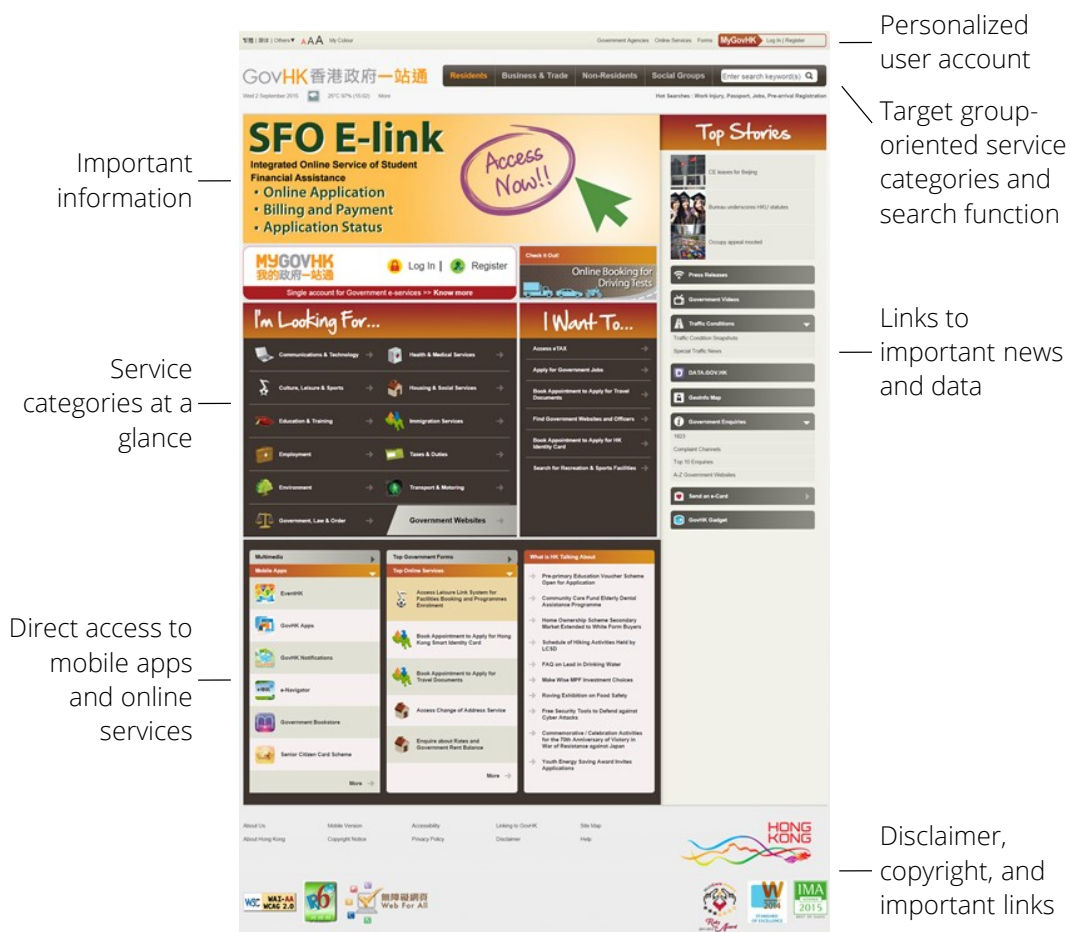


Source: Hong Kong 2015.

Looking at the landing page of Hong Kong's e-government portal, the visitor is presented a clear structure that provides direct access to the different service categories, to mobile apps and mobile services, as well as to important news and data. What is special about the presentation of the e-government service offering, are its strong target group orientation and its personalization feature, which allows

to set up a personalized user account. These two characteristics are positioned right at the top of the website. Apart from these two features, Hong Kong takes special care to provide a mobile e-government service offering. In the middle of the landing page, a selection of mobile apps is given, which leads the visitor directly to the mobile e-government offering. At the time of the analysis, Hong Kong provided 132 mobile apps and 80 mobile government websites.

Coming back to the strong target group orientation of Hong Kong's e-government offering, the initial menu bar of the landing page allows the visitor to select between four customized e-government service offerings: residents, business & trade, non-residents, and social groups. This is illustrated in Figure 77.

Figure 77 Target Group-oriented E-Government Offering of Hong Kong

**Residents**

http://www.gov.hk/en/residents/



**Business & Trade**

http://www.gov.hk/en/business/



**Non-Residents**

http://www.gov.hk/en/business/



**Social Groups**

http://www.gov.hk



Source: Hong Kong 2015.

Concerning residents, business & trade, and non-residents, the respective link leads the visitor to a sub-website that provides e-government information and services tailored to the needs and requirements of the specific user group. The menu item social groups presents five different links to websites that particularly consider the needs and requirements of specific social groups (people with disabilities, family issues, women, youth, and senior citizens). The following figure shows the menu access to the social community groups.

Figure 78 Social Community Groups of Hong Kong's E-Government Offering



Source: Hong Kong 2015.

The e-government services provided are clearly structured in up to four layers (e.g., housing & social services ➔ volunteering & charitable activities ➔ services for persons with disabilities ➔ public transport fare concession scheme for the elderly and eligible persons with disabilities). This detailed classification supports the users in finding the desired service.

A special offer of Hong Kong's e-government service provision are the social community groups, which provide specific content and services for the respective social group. CyberAble.net is an online community that provides information and services to people with disabilities.

The social community eElderly is particularly designed for senior citizens. Happy Family provides citizens with various information concerning children, family, and education issues. Youth.gov.hk is a social platform for young people and the Women's Commission deals with gender-relevant issues.

Summing up, what stands out of the e-government offering of Hong Kong are its special target group orientation, its social group community offers, its personalization possibilities that support customized e-government access and interaction, and the extensive mobile support.

Similarly to the e-government offering of New York City, Hong Kong provides a broad range of target group-oriented information as well as a comprehensive set of advanced e-government services. These also include innovative transaction and integration services, such as full online services for driving licenses and online complaint management, and an innovative full online e-payment system.

Hong Kong's e-government offer shows an extensive integration of mobile services and websites as well as mobile applications. At the time of the analysis, the portal provided links to 132 mobile apps and to 80 mobile government websites. Apart from the official GovHK app, which allows the user to access the e-government portal from a mobile device, many further apps are supported. Examples are event search, family education, information on buildings and locations, health topics, and so on.

In addition, Hong Kong also shows a strong presence in social media channels. They apply nine different social media applications (WordPress, Sina, Twitter, Online Forum, Flickr, YouTube, Facebook, Google+, LinkedIn), which are used to provide 51 social media channels to communicate and interact with its stakeholders.

In particular, the online forum is an interesting application since this mature Internet technology was not used by the 311 portal. Online forums refer to an Internet platform that allows users to log in and exchange information publicly with the community or privately via chats or private messages (Coffey and Woolworth 2004).

The subject-related structure allows ongoing interaction and collaboration on topics, while at the same time being a reference point for knowledge search. For this reason, online forums are regarded to possess considerable potential as participation and collaboration tools (Meijer 2011). Figure 79 summarizes the key insights from the analysis of Hong Kong's e-government offering gov.hk.

Figure 79 Key Insights from the gov.hk E-Government Offering

| gov.hk e-government key insights |
| --- |
| ▪ Very high target group orientation of the e-government offering |
| ▪ Three-way division of e-government offering (residents, business & trade, non-residents) |
| ▪ Offering of special social group communities (people with disabilities, family issues, women, youth, and senior citizens) |
| ▪ Provision of a personalized user account that supports customized e-government access and interaction |
| ▪ Very broad range of target group-oriented information |
| ▪ High availability of services, especially full online services, that are centrally available through the e-government portal |
| ▪ Provision of innovative transaction and integration services |
| ▪ Innovative full online e-payment system |
| ▪ Extensive integration of mobile offers and websites as well as mobile applications (e.g., 132 apps available free of charge and 80 mobile government websites) |
| ▪ Strong presence in social media channels. In total, goh.hk uses 51 social media channels |

## 10.3 London

London is a leading global city and the capital of England as well as the United Kingdom. The city is home to 7.4 million people, sharing its area of 1.12 square miles. Given these figures, London is also the UK's most populous city, showing a diverse range of people, languages, and cultures.

Its long history, its influence in arts, commerce, education, entertainment, fashion, and finance, as well as its high metropolitan GDP, being the fifth or sixth largest in the world depending on the measurement, make London a world societal and cultural capital (Wikipedia contributors 2015). In the sixth global e governance survey, London earned the fifteenth place (see Holzer et al. 2014). Thus, similarly to the e-government offering of New York City and Hong Kong, London possesses a highly developed e-government presence, too.

Within the three selected examples, London performed particularly well in usability, but scored low in service provision (see Holzer et al. 2014). This is understandable when having a look at London's e-government portal (see Figure 80 on the following page). It pursues three particular aims: support and promote London's financial and business activities, partner with local communities to increase skills, employment, and opportunities for all inhabitants, and enhance London's position as a hub of culture, history, and spare time activities (City of London 2015).

The landing page of the City of London presents three dominant menu bars (two at the top and one at the bottom), which provide the visitor with direct links to the particular website content, and a collection of most popular links, which is prominently positioned on the right side of the top page. This way, the visitor has several opportunities to choose or locate her or his desired content.

Similar to the e-government portals of Hong Kong and New York City, London has an integrated search function on the right top of the landing page. In the middle, the portal provides an overview of selected city information and presents the latest local news to the users. The following section of the landing page presents links to access current transport and street work information, to register to the newsletter, and to look for local events. At the bottom of the landing page, a third menu bar is applied— in form of a graphical element using pictures instead of characters. This is followed by direct links to the channels used for the e-government service offering, contact, disclaimer, and copyright information, as well as a selection box to access related websites. The landing page of the City of London is presented in the following figure.

Figure 80 Landing Page of the City of London Portal

Top menu bar
with access to —
specific items

Overview of
selected city —
information

Transport and
street work —
information

Channel
overview and —
contact
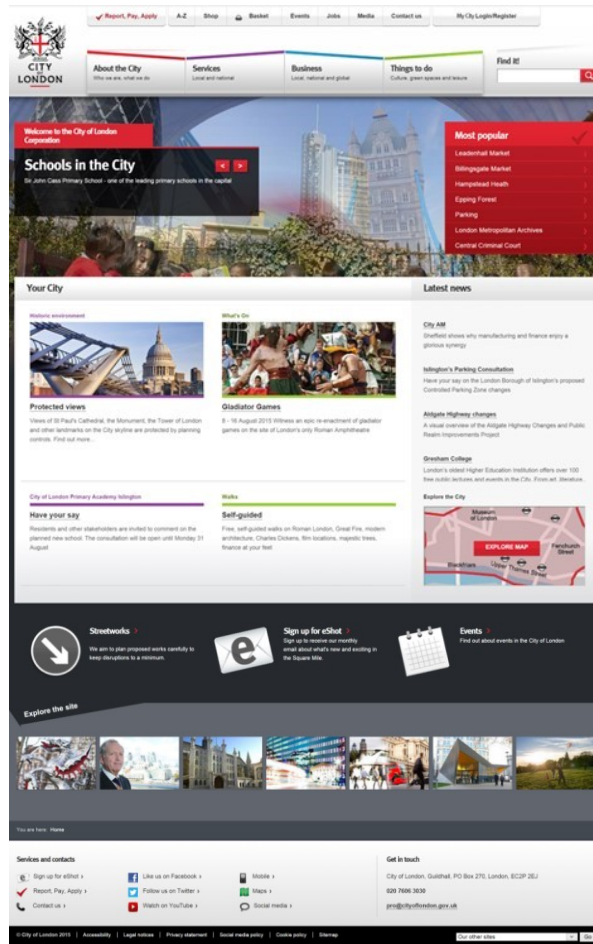


Service and
user-oriented
menu with
search function

Links to most
popular website
items

Presentation of
latest local news

Newsletter
registration and
event search

Additional
menu bar in
graphical form

Disclaimer,
copyright, links
to related sites

Source: City of London 2015.

At the top of the landing page, visitors of London's e-government portal find two menu bars. The first menu bar may be divided into three sections: first, the button "Report, Pay, Apply", second, the buttons from "A-Z" to "Contact us", and third, the button "My City Login/Register". The first button leads the user to an overview of payment services as well as reporting and application forms.

The second section consists of links that provide an overview of all information and services provided in alphabetical order or direct the user to particular website content categories. The third button directs visitors to a registration page or serves as login for registered users. This login, however, is not applied for personalization

purposes. It is required for specific transactions—such as paying council tax, housing rents, and sundry invoices—that cannot be conducted on the e-government portal without prior registration and gives the user the benefit of being able to track the status or the progress of an order or application.

The second menu bar arranges the website content according to four criteria: city-related information, e-government services for citizens, e-government services for businesses, and cultural and leisure activity offers. Figure 81 shows the first and second menu bars of the landing page.

Figure 81 First and Second Menu Bar at the Top of the Portal
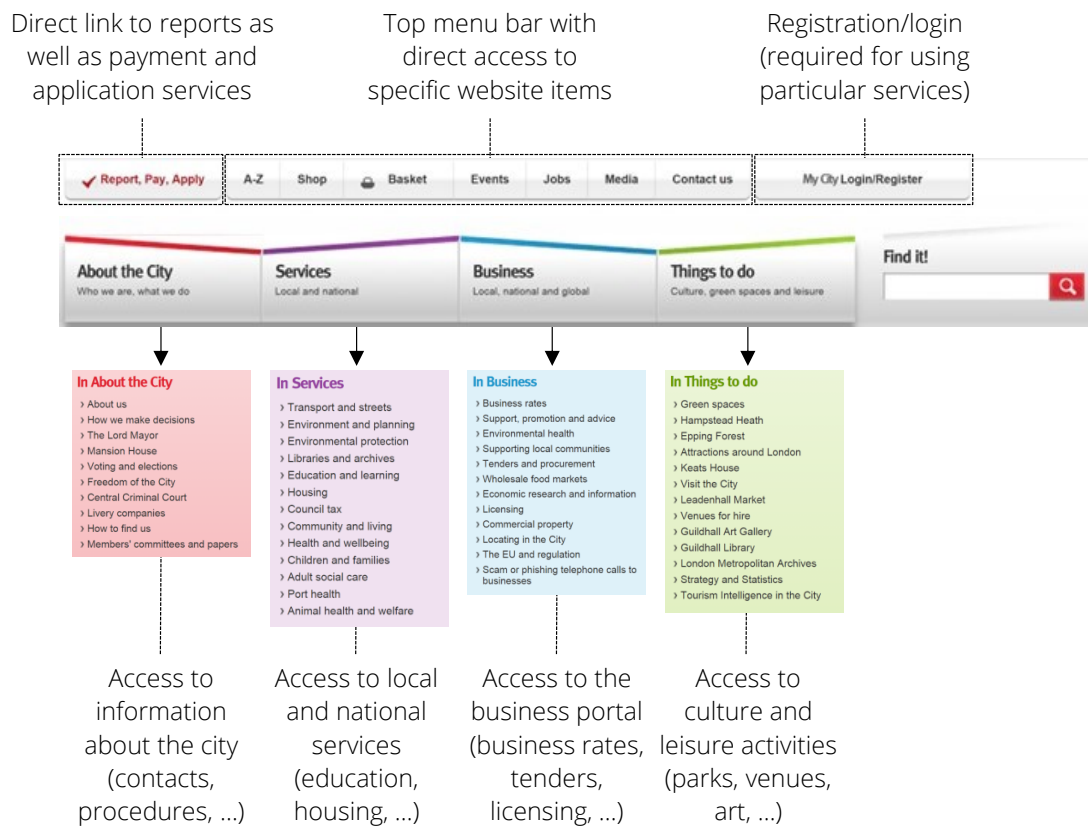


Source: City of London 2015.

The respective sub-content, to which the visitor is directed, is presented and structured in several categories. The sub-content of the e-government service for citizens, for example, is arranged according to a set of umbrella terms, including transport and streets, environment and planning, environmental protection, libraries and archives, housing, council tax, and so on. Here, the visitor can select the associated category to reach the desired information or service.

At the bottom of the landing page, the visitor finds a third menu bar. This menu bar is interesting since it only shows pictures instead of characters and thus, first does not appear as a menu. Here, the portal uses a mouse-over effect, which means that the link title is only faded in when the mouse pointer is moved over the respective picture—its so-called trigger area. The following figures shows a screenshot sample of the third menu bar.

Figure 82 Third Menu Bar at the Bottom of the Portal



Third menu bar at the bottom of the page

Mouse-over effect that shows the link title
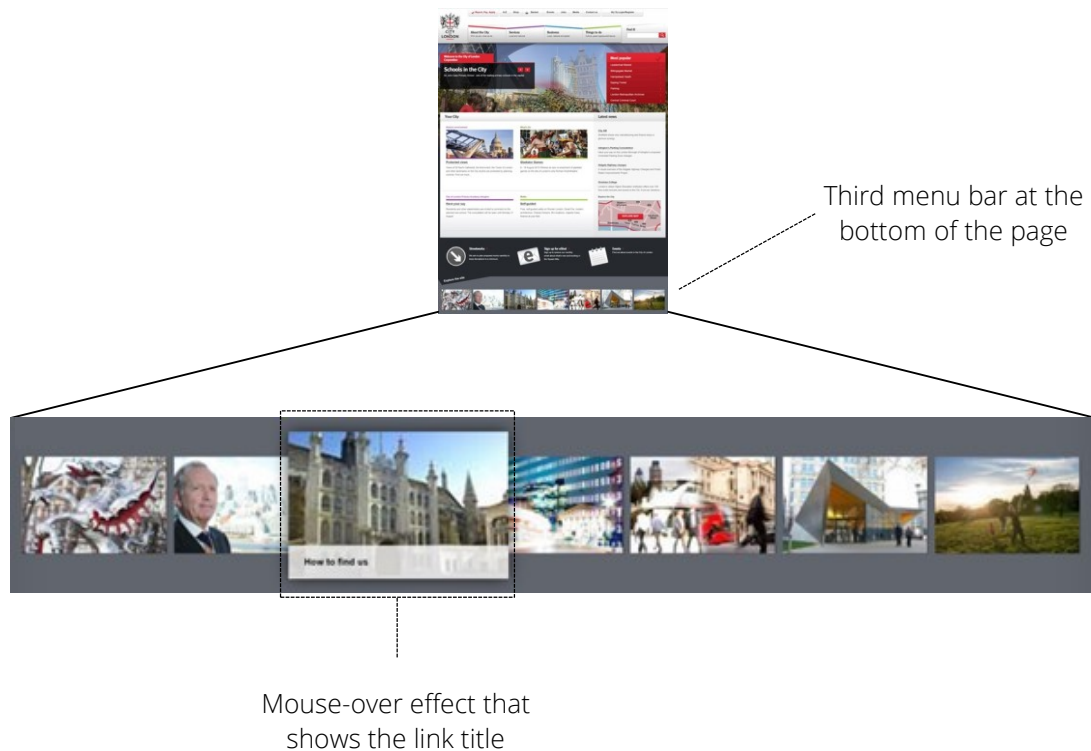
Source: City of London 2015.

The third menu bar provides direct access to the following content items: About us, Lord Mayor information, How to find us, Supporting city competitiveness, Helping foreign financial and business services firms set up and grow in the city, Visit the city, and Green spaces. Thus, this represents a further option for supplying a common housing for particular website content.

Summarizing, what stands out of the e-government offering of the City of London is its search-oriented structure that presents various types of information and service classifications in striking positions. This is underlined by the particularly visible set of most popular information and service requests, helping many users to find current topics instantly.

Compared to Hong Kong and New York City, London's e-government offer also provides a broad range of useful information—albeit not as extensive—to its visitors, but possesses a considerable smaller full online service portfolio. This is in line with the findings of the e-government survey of Holzer et al. (2014).

Concerning mobile integration, the number of available mobile applications is interesting. London provides 11 mobile apps on its e-government portal and maintains a mobile version of the website. Compared to other top-tier mobile e-government service offerings, this is only a small offer of mobile solutions.

Looking at London's social media presence shows a different picture. Although the e-government portal only uses six social media applications (blogs, Facebook, Flickr, Twitter, Pinterest, and Facebook), it applies 91 different social media channels for e-government stakeholder communication and interaction. Figure 83 summarizes the key insights from the analysis of the e-government platform of the City of London.

Figure 83 Key Insights from the cityoflondon.gov.uk E-Government Offering

| cityoflondon.gov.uk e-government key insights |
|---|

- Search-oriented structure of the e-government portal

- Offering several menu bars that guide the visitor

- Provision of a personalized user account, which is required for particular transactions and supports customized e-government access

- Prominent position of most popular links at the top of the website

- Broad range of useful information and services

- Innovative full online e-payment system

- Comparably little integration of mobile solutions. 11 mobile apps and a mobile version of the website are available

- Strong presence in social media channels, although they apply less social media applications (6) than Hong Kong (9) and New York (11). In total, cityoflondon.gov.uk uses 91 social media channels

# 11   E-Government Outlook

Digitalization, connecting individuals and organizations on a worldwide level, and the move from an industrial to an information society are key reasons for the importance of e-government. Especially, the enormous influence of the Internet as a global networking and communication system affects public service provision.

The public—based on their experience with best practice e-service provision from the private sector—demands better public service provision in terms of convenient access and interaction as well as ongoing personalization and customization possibilities. Thus, the public sector needs to move away from traditional bureaucracy and move on to conducting business in a way that satisfies the needs and requirements of public stakeholders.

The required digital evolvement—from simple information access to providing complex processes and networks—as well as the associated transformation of public service provision and the related process landscape are substantial challenges for the public sector. Considering the past e-government development, governments worldwide work on this subject and have partly reached a well-advanced state of public service provision.

Against this background, e-government within the public sector may soon be similarly as important as e-commerce within the private sector. This digital evolution lays down particular requirements for public administration since the e-government offering of most countries is less advanced than comparable e-commerce solutions.

Although the private sector at first glance does not seem to be a direct competitor to public service provision, this situation is a clear competitive disadvantage. Public stakeholders are already used to the fast, transparent, and convenient full online service provision of the private sector, which causes critical user reflection concerning e-government service provision.

Thus, even though public administration has come a long way concerning its e-government development, there remain open issues. Achieving the desired level of user centricity of the e-government offering still requires a further transformational shift of many e-government portals. In light of this, the primary question that e-government service providers need to ask themselves is if their online service offering is really user-oriented or if it still reflects the traditional, internal, process-oriented public administration perspective.

Concerning the efficiency benefits of e-government solutions for public budgets, especially with regard to transaction cost benefits, the shift from offline to online public service provision needs to be pursued more rigorously. The same holds true for an overarching cooperation and integration of services to prevent duplication of administrative functions and tasks. For this purpose, e-government service providers have to increase their efforts concerning adherence and extension of legal and technological requirements even more than before.

Furthermore, this development demands an e-competency profile that clearly differs from the traditional one. However, a shift from offline to online public service provision as well as a change in the competency profile require corresponding adjustments of the public business model.

Considering the underlying advancements, the strategy model of the public sector organization, for example, needs to be redefined since the resulting user-orientation usually requires modifications of the mission and vision statements as well as the planned strategic development and the value proposition. Moreover, the customer/user model—demanding, for example, target group, channel, and customer touchpoint modifications—and the budget model—calling for cost structure adaptations—need to be adjusted.

Furthermore, a change of the skill and competency set demands a modification of the resources model since online public service provision requires differing public core competencies and public core assets than offline service provision. Summing up, all these changes are associated with a profound transformation of public administration service provision.

In addition to the clear user-orientation of e-government service offerings, the open government-related aspirations concerning more transparency, participation, cooperation, and collaborations of public actions are further crucial factors. Although e-government is an ideal medium to realize public demand-related open government claims, the e-government offering of most countries has not yet reached a level that sufficiently reflects the public demand for open government.

Apart from more transparency and greater involvement of citizens and organizations in public actions, communication and responsiveness skills of public sector organizations have to be further developed. Successful e-government thrives on the exchange between the government, its citizens, and the other public stakeholders.

This can, for example, be seen in the changing roles of the online participants. Given modern technological developments, such as social media, citizens today become coproducers or collaborators, generating online content, which again reflects the open government paradigm. This leads to an increasing service culture.

A further trend is customization of public online services. Personal user log-ins and personalization play an important role since users are accustomed to have these possibilities. Moreover, personalization allows tailored information and service provision, which again increases the public value of e-government service provision.

Future e-government service provision needs to take into account a consistent interface allowing a uniform image for customer interaction. These are basic requirements to establish a successful multichannel e-government system. Taking into account that public administration at first sight does not have any competitors can also be regarded as a disadvantage in this context since this reduces the obvious need for action.

Against this background, e-government service providers should benchmark themselves against the online service offering of private sector e-commerce organizations, as citizens will assess online public service provision based on their experience with online private service provision. Furthermore, e-government service providers are well advised to regularly compare their service offering with best practice examples from the public sector to continually enhance their e-government service provision.

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